Jay Project

2014 Plankton Supplemental Baseline Report

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DOMINION DIAMOND

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Abbreviations

Abbreviation	Definition
AEMP	Aquatic Effects Monitoring Program
CCME	Canadian Council of Ministers of the Environment
DAR	Developers Assessment Report
Diavik Mine	Diavik Diamond Mine
DO	dissolved oxygen
Dominion Diamond	Dominion Diamond Ekati Corporation
e.g.	for example
Ekati Mine	Ekati Diamond Mine
et al.	and more than one additional author
FF	far-field
i.e.	that is
No.	number
NWT	Northwest Territories
Project	Jay Project
QA	quality assurance
QA/QC	quality assurance and quality control
QC	quality control
RPD	relative percent difference
sp.	species
spp.	multiple species
SRSi	soluble reactive silica
TKN	total Kjeldahl nitrogen
TN	total nitrogen
TP	total phosphorus
TSI	Trophic State Index
UTM	Universal Transverse Mercator
X	times

Units of Measure

Unit	Definition
%	percent
°C	degrees Celsius
µg/L	micrograms per litre
µm	micrometre or micron
μm^3	cubic micrometre
$\mu m^3/L$	cubic micrometres per litre
cells/L	cells per litre
cm	centimetre
km	kilometre
m	metre
mg	milligram
mg/m^3	milligrams per cubic metre
mg/L	milligrams per litre
mg-P/L	milligrams per litre as phosphorus
mL	millilitre
mm	millimetre
mm^3	cubic millimetre
m/s	metres per second
org/L	organisms per litre

1 INTRODUCTION

1.1 Background

Dominion Diamond Ekati Corporation (Dominion Diamond) is a Canadian-owned and Northwest Territories (NWT) based mining company that mines, processes, and markets Canadian diamonds from the Ekati Diamond Mine (Ekati Mine). Dominion Diamond also markets Canadian diamonds from its 40% ownership of the Diavik Diamond Mine. The existing Ekati Mine is located approximately 200 kilometres (km) south of the Arctic Circle and 300 km northeast of Yellowknife, NWT (Map 1.1-1).

Dominion Diamond is proposing to develop the Jay kimberlite pipe (Jay pipe) located beneath Lac du Sauvage. The proposed Jay Project (Project) will be an extension of the Ekati Mine, which is a large, stable, and successful mining operation that has been operating for 16 years. Most of the infrastructure required to support the development of the Jay pipe and to process the kimberlite currently exist at the Ekati Mine. The Project is located in the southeastern portion of the Ekati claim block approximately 25 km from the main facilities and approximately 7 km to the northeast of the Misery Pit, in the Lac de Gras watershed.

Plankton baseline field programs were completed in 2013 to support an environmental assessment. The Plankton Baseline Report for the Jay Project (Annex XII) of the Developer's Assessment Report (DAR; Dominion Diamond 2014) summarized the data collected during open-water conditions in 2013, and historical reference (pre-mining) and pre-2013 condition data, to characterize plankton in the lakes within the baseline study area.

The purpose of the 2014 plankton field program was to supplement existing plankton baseline data for lakes in the baseline study area. The 2014 plankton field program focused on Lac du Sauvage, Duchess Lake, and key regions of Lac de Gras that could potentially be influenced by the Jay Project. This report summarizes the supplemental baseline plankton data collected from lakes within the study area during the open-water season (late spring, summer, and fall) in 2014.

LEGEND

- JAY PROJECT
- EXISTING MINE OR PROJECT
- TERRITORIAL CAPITAL
- POPULATED PLACE
- HIGHWAY
- ALL-SEASON ROAD
- WINTER ROAD
- TIBBITT TO CONTWOYTO WINTER ROAD
- NORTHERN PORTION OF TIBBITT TO CONTWOYTO WINTER ROAD
- TERRITORIAL/PROVINCIAL BOUNDARY
- TREELINE
- WATERCOURSE
- WATERBODY

150 0 150

SCALE 1:6,000,000 KILOMETRES

REFERENCE

WATER OBTAINED FROM ATLAS OF CANADA
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
PROJECTION: CANADA LAMBERT CONFORMAL CONIC

DOCUMENT

2014 PLANKTON SUPPLEMENTAL BASELINE REPORT

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

LOCATION OF THE JAY PROJECT

Golder Associates

PROJECT		1407256	FILE No. SB_Aqua_007_GIS	
DESIGN	CH	19/02/15	SCALE AS SHOWN	REV. 0
GIS	LMS	07/04/15	MAP 1.1-1	
CHECK	CH	07/04/15		
REVIEW	KM	07/04/15		

G:\CLIENTS\DOMINION\DDEC Jay and Lynx Projects\Figures\13-1328-0041 Jay & Lynx EA\Aquatics\Supplemental Baseline\SB_Aqua_007_GIS.mxd

1.2 Baseline Study Area

The baseline study area for the 2014 plankton program is located within the headwaters of the Coppermine River drainage, and consists of sub-basins that flow directly into Lac du Sauvage and/or Lac de Gras.

The study area for the 2014 plankton baseline program included the following major basins:

- Lac du Sauvage and the Af sub-basin containing Duchess Lake; and,
- Lac de Gras basin, including Slipper Bay[1] and the upper East Bay[2] (Far-field 2 [FF2]) areas.

Further information regarding the physical setting of the Project, and the baseline study area, is available in Annex XII of the DAR (Dominion Diamond 2014).

The basin naming convention used for the 2014 baseline program remains unchanged from 2013. This convention was developed for use during the DAR process by all technical disciplines, including other aquatic components (i.e., hydrology, water quality, aquatic health, and fish and fish habitat). As part of the 2014 program, sampling was undertaken in two areas of Lac de Gras also sampled for the existing Ekati and Diavik Aquatic Effects Monitoring Programs (AEMPs). For the 2014 baseline program, samples were collected in Slipper Bay at the Slipper Bay stations established by Ekati Mine (ERM Rescan 2014) and in the upper East Bay at the FF2 stations established by Diavik Diamond Mine (Diavik Mine) (Golder 2014a). The same station identifiers as used in the Ekati and Diavik studies were also used in this baseline program.

[1] Slipper Bay is sampled as part of the Ekati AEMP. For the 2014 supplemental baseline sampling, the same stations were sampled, and station identifiers used by Ekati were applied to the samples collected from these stations. The results included in this report are independent of the Ekati AEMP.

[2] The upper East Bay is the Far-field 2 (FF2) area sampled as part of the Diavik AEMP. For the 2014 supplemental baseline, the same stations were sampled, and the station identifiers used by Diavik were applied to the samples collected from these stations. The results included in this report are independent of the Diavik AEMP.

1.3 Objectives

The objectives of the 2014 plankton baseline program were to characterize:

- the trophic status of lakes in the baseline study area during open-water conditions;
- phytoplankton and zooplankton communities in lakes in the baseline study area during open-water conditions; and,
- spatial and seasonal variability in phytoplankton and zooplankton communities, where possible.

Section 2 describes the methods for the collection and analysis of plankton data in the 2014 baseline program. Results of the 2014 plankton sampling program are presented in Section 3.

Detailed descriptions of trophic status classification and phytoplankton and zooplankton community metrics are provided in Annex XII of the DAR.

2 METHODS

2.1.1 Sampling Locations and Timing

The study design for the program was developed to optimize the collection of samples during one-to-two-week field programs, while collecting sufficient data to characterize spatial and temporal variability in plankton communities. The 2014 plankton baseline program was completed during three open-water field programs:

- July 16 to 23 (late spring);
- August 6 to 18 (summer); and,
- September 3 to 16 (fall).

Chlorophyll *a* and depth-integrated nutrient samples were collected as part of the plankton program. Light levels were also measured in the field to generate estimates of light attenuation throughout the water column. Detailed nutrient and chlorophyll *a* results and water column light attenuation profiles are presented in the 2014 Water and Sediment Quality Supplemental Baseline Report (Dominion Diamond 2015).

Plankton samples were collected at stations established in the following lakes (Table 2.1-1; Map 2.1-1):

- Lac du Sauvage (eight stations) and the Af sub-basin containing Duchess Lake (one station);
- Lac de Gras Slipper Bay area (four stations); and,
- Lac de Gras FF2 area (five stations).

Not all stations were sampled during each field program. As the sites are located some distance from the camp at the main Ekati Mine site, access to the sites is via helicopter and boat. Weather conditions (e.g., fog, high winds) during the field programs occasionally resulted in the inability to access some planned locations.

Table 2.1-1 Plankton Sampling Stations and Sampling Events in the Jay Project Area, 2014

Basin	Waterbody Name	Station	UTM Coordinates[a]		Total Depth (m)	Phytoplankton and Zooplankton		
			Easting (m)	Northing (m)		Late Spring (July)	Summer (August)	Fall (September)
Lac du Sauvage	Lac du Sauvage	Aa-1	552282	7165025	11.4	-	X	X
		Ab-1	547766	7162266	10.1	X	X	X
		Ac-1	545339	7165138	14.8	X	X	X[b]
		Ac-4	543695	7162938	10.2	X	X	X
		Ac-7	544247	7165068	13.0	X	X	X
		Ad-1	539898	7168781	12.2	-[c]	X	X
		Ad-5	540112	7168316	25.3	X	-[c]	-[c]
		Ae-1	542494	7170252	15.6	X	X	X
	Duchess Lake	Af-1	542155	7173731	15.1	-	X	X
Lac de Gras	Slipper Bay	S2	507638	7164468	6.5	X	X	X
		S3	505912	7164439	12.9	X	X[b]	X
		S5	503125	7161482	17.3	X[b]	X	X
		S6	501976	7159857	25.5	X	X	-
	Far-field 2	FF2-1	541500	7159522	21.5	X	X	X
		FF2-2	541583	7158573	18.8	X	X	X
		FF2-3	543478	7159267	19.5	X	X	X
		FF2-4	543752	7158945	19.3	X	X[b]	X
		FF2-5	544734	7158898	19.1	X[b]	X	X

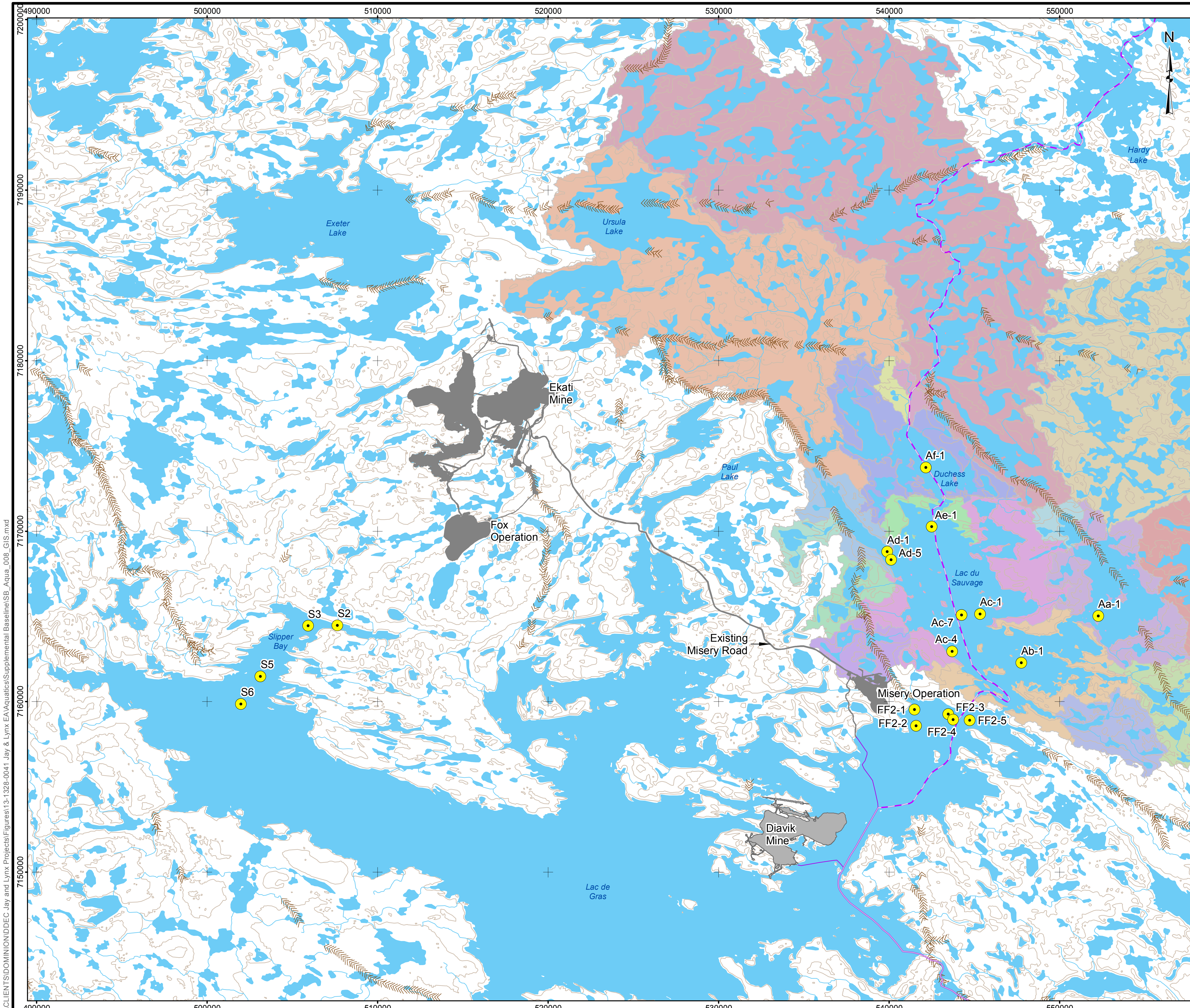
Note: UTM coordinates are in Zone 12V, North American Datum (NAD) 83.

a) UTM coordinates are from the first sampling event at each station.

b) Duplicate phytoplankton and zooplankton samples were collected.

c) During the late spring sampling period, the coordinates sampled for Station Ad-1 were far enough away from the actual Station Ad-1 that this station was assigned a unique station identifier (Station Ad-5). The original Station Ad-1 was sampled during the summer and fall sampling programs.

UTM = Universal Transverse Mercator coordinate system; m = metre; X = samples were collected; - = indicates that samples were not collected due to weather, environment, schedule limitations, or other reasons.



LEGEND

- EKATI MINE FOOTPRINT
- DIAVIK MINE FOOTPRINT
- WINTER ROAD
- TIBBITT TO CONTWOYTO WINTER ROAD
- NORTHERN PORTION OF TIBBITT TO CONTWOYTO WINTER ROAD
- ELEVATION CONTOUR (20 m INTERVAL)
- ESKER
- WATERCOURSE
- WATERBODY
- PLANKTON SAMPLING STATION

BASIN

Aa, Ab, Ac, Ad, Ae, Af, B, C, D, E, F, F2, G, H, I, J, K, L

REFERENCE

NATIONAL TOPOGRAPHIC BASE DATA (NTDB) 1:250,000
NATURAL RESOURCES CANADA, CENTRE FOR TOPOGRAPHIC INFORMATION, 2012
DATUM: NAD83 PROJECTION: UTM ZONE 12N

DOCUMENT

2014 PLANKTON SUPPLEMENTAL BASELINE REPORT

5 0 5
SCALE 1:225,000 KILOMETRES

PROJECT

DOMINION DIAMOND

JAY PROJECT
NORTHWEST TERRITORIES, CANADA

TITLE

PLANKTON SAMPLING LOCATIONS, 2014

Golder Associates

PROJECT		1407256	FILE No. SB_Aqua_008_GIS
DESIGN	CH	19/02/15	SCALE AS SHOWN REV 0
GIS	LMS	07/04/15	
CHECK	CH	07/04/15	MAP 2.1-1
REVIEW	KM	07/04/15	

2.1.2 Field Methods

2.1.2.1 Supporting Variables, Nutrients, and Chlorophyll a

Depth-integrated and discrete nutrient samples, and chlorophyll *a* samples were collected as part of the water quality component, and as supporting data for the plankton component. Depth-integrated nutrient samples and chlorophyll *a* samples were collected from the euphotic zone, which is defined as the extent of the water column that is exposed to sufficient sunlight for photosynthesis to occur (typically to a depth where 1 percent [%] of the surface irradiance is measured). During the field program, the euphotic zone was calculated as two times the Secchi depth (Koenings and Edmundson 1991; AENV 2006). Discrete nutrient samples were collected from one of the top, mid, or bottom depths depending on the presence of thermal or oxic stratification (Dominion Diamond 2015).

Stratification was determined by meeting temperature and dissolved oxygen (DO) criteria as follows:

- temperature difference of 1 degree Celsius (°C) or greater over 1 metre (m) depth within the water column; and,
- DO difference of greater than, or equal to, 5 milligrams per litre (mg/L) between the top and the bottom of the water column; or
- DO in the top of the water column greater than the chronic guideline for the protection of aquatic life (6.5 mg/L for cold water species) and DO at the bottom of the water column less than the aquatic life guideline (CCME 2004).

If either of these conditions were met, the water column was considered to be stratified and discrete surface (top) and bottom (bottom) samples were collected. If neither of these conditions were met, the station was considered to be fully mixed or homogenous, and a single mid-column (mid) sample was collected. Lake stations were typically stratified during the under-ice period and fully mixed during the open-water period.

The depth-integrated samples were analyzed for nutrients (i.e., total nitrogen [TN], total dissolved nitrogen, total Kjeldahl nitrogen [TKN], dissolved Kjeldahl nitrogen, total ammonia, nitrate, nitrite, total phosphorus [TP], total dissolved phosphorus, dissolved orthophosphate, and soluble reactive silica [SRSi]) and chlorophyll *a*. Nutrient samples were analyzed by ALS Environmental, Edmonton, Alberta. Chlorophyll *a* samples were analyzed for total chlorophyll *a* by the Biogeochemical Analytical Service Laboratory at University of Alberta, Edmonton, Alberta.

In situ water quality profiles (i.e., pH, temperature, dissolved oxygen, and specific conductivity), light levels, and Secchi depths were measured in conjunction with the water quality baseline program. Detailed field methods for the collection and analysis of the nutrient and chlorophyll *a* samples, and field measurements are presented in the 2014 Water and Sediment Quality Supplemental Baseline Report (Dominion Diamond 2015).

2.1.2.2 Phytoplankton

Phytoplankton samples were collected from the euphotic zone, defined as two times the Secchi depth. At each station, discrete water samples were collected at 2 m intervals within the euphotic zone using a

Kemmerer sampler. For example, if the water depth was 6 m, then samples were collected at the surface (0 m), 2 m, 4 m, and 6 m. If the water depth was less than 6 m, then samples were collected at surface (0 m), 2 m, and 4 m. If the water depth was less than the Secchi depth, then samples were collected every 2 m from the surface to a depth of 2 m above the lake bottom.

Equal volumes of water from each depth were combined in a large clean bucket and mixed thoroughly to form a composite sample. Samples of water were taken from this composite water sample and used to fill individual 250 millilitre (mL) amber Nalgene bottles for phytoplankton. Phytoplankton samples were preserved with six to eight drops (approximately 2.5 mL) of acid Lugol's solution. Samples were stored in the dark at 4°C before shipping to EcoAnalysts, Inc. (EcoAnalysts) in Moscow, Idaho, United States for taxonomic identification (to the lowest practical taxonomic level), and abundance and biomass estimates.

2.1.2.3 Zooplankton

Maximum water depth was measured before plankton sampling to determine zooplankton sampling depth. A 30 centimetre (cm) diameter, 80 micron (µm) mesh Turtox plankton tow net was used to collect a single zooplankton sample at each station. A single vertical haul was taken for each zooplankton sample. The plankton net was lowered to a depth of 1 m above the bottom and then pulled vertically through the water column at a rate of approximately 0.5 metres per second (m/s).

Haul depths were recorded for each sample and were used to calculate the volume of water filtered through the net (Table 2.1-2). The plankton net was rinsed by splashing lake water on the outside to wash clinging zooplankton into the bottom of the plankton net. A 250 mL clear Nalgene bottle was placed below the tube of the plankton net. The stop-cock was then opened and the sample was transferred into the sample bottle below.

Before preservation, one half of an Alka-Seltzer tablet was added as a narcotizing agent to each sample bottle to prevent the zooplankton from being contorted by the preservative, thereby allowing for easier identification by the taxonomist. Each sample was preserved by doubling the sample volume with 10% buffered formalin solution. Samples were stored at 4°C and sent to EcoAnalysts for taxonomic identification to the lowest practical taxonomic level, and abundance and biomass estimates.

Table 2.1-2 Zooplankton Haul Depths for Stations Sampled in the Jay Project Area, 2014

Basin	Waterbody Name	Station	Zooplankton Haul Depth (m)		
			Late Spring	Summer	Fall
Lac du Sauvage	Lac du Sauvage	Aa-1	-	9.7	8.7
		Ab-1	8.7	10.7	11.7
		Ac-1	12.7	10.7	9.7
		Ac-4	8.7	9.7	10.7
		Ac-7	11.7	10.7	10.7
		Ad-1	-[(a)]	10.7	8.7
		Ad-5	23.7	-[(a)]	-[(a)]
		Ae-1	13.7	9.7	8.7
	Duchess Lake	Af-1	-	13.7	9.7

Table 2.1-2 Zooplankton Haul Depths for Stations Sampled in the Jay Project Area, 2014

Basin	Waterbody Name	Station	Zooplankton Haul Depth (m)		
			Late Spring	Summer	Fall
Lac de Gras	Slipper Bay	S2	4.7	4.7	5.7
		S3	10.7	11.7	9.7
		S5	15.7	16.7	12.7
		S6	23.7	25.7	-
	Far-field 2	FF2-1	19.7	19.7	17.7
		FF2-2	17.7	16.7	17.7
		FF2-3	17.7	15.7	18.7
		FF2-4	17.7	18.7	18.7
		FF2-5	17.7	19.7	18.7

a) During the late spring sampling period, the coordinates sampled for Station Ad-1 were far enough away from the actual Station Ad-1 that this station was assigned a unique station identifier (Station Ad-5). The original Station Ad-1 was sampled during the summer and fall sampling programs.

m = metre; - = indicates that samples were not collected due to weather, environment, schedule limitations, or other reasons.

2.1.3 Laboratory Methods

2.1.3.1 Phytoplankton

Phytoplankton samples were analyzed at the lowest possible taxonomic level (typically species), and abundance and biomass by EcoAnalysts (2009a). A 5 to 25 mL aliquot was extracted for analysis of soft-bodied algae and diatoms depending on cell and detritus density. Samples were homogenized and aliquots were placed into a Utermohl counting chamber (22 by 22 millimetres [mm]) to allow them to settle overnight. Samples were examined at 630 times (X) magnification using a Leica inverted microscope to evaluate whether the sample was too dense or dilute to achieve a desirable cell count (approximately 15 to 20 counting units per field of view). Samples were diluted or concentrated, as necessary, and the new volume and concentration ratios were noted.

Soft-bodied algae and diatom units were counted and identified at 630X to the lowest practical taxonomic level using the transect method. A minimum of 300 units were counted for each sample. Counting units were individual cells, filaments, or colonies, depending on the organization of the algae and diatoms. Transects totaling 44 mm (1 full horizontal and 1 full vertical transect) were also counted at 200X enumerating only soft-bodied and diatom taxa between 20 to 100 µm in size. Lastly, a full chamber, high-level scan at 100X was completed to enumerate large, rare soft-bodied and diatom taxa over 100 µm in size. Taxonomic identifications were based on standard taxonomic references (Dillard 1991a,b, 1993; Wehr and Sheath 2003; Siver et al. 2005; Pfeil 2010; John et al. 2011).

Biovolume (cubic micrometre [μm^3]) of each soft-bodied and diatom species was estimated from the average dimensions and related to geometric shapes (Hillerbrand et al. 1999). The number of measurements recorded for each taxon in each sample was based on the level of scan and the relative abundance of the taxa. At 630X, at least one biovolume measurement was made for each soft-bodied and diatom taxon, representing less than 5% relative abundance in the sample. At least 10 biovolume measurements were made for every taxon representing greater than 5% of the sample. For the high-level (i.e., 200X and 100X) scans, at least one biovolume measurement was made, but no more than five, for every soft-bodied and diatom taxon encountered. If the taxonomist observed strong discontinuities in the size distribution of a taxon, then a minimum of 20 measurements were recorded per taxon per sample. Biovolumes for each taxon were then averaged together for one final value. The biovolumes of colonial taxa were based on the number of individuals within each colony. If a taxon was identified in more than one level of scan, the biovolume measurements were combined to provide an average biovolume for that taxon.

Average biovolume (cubic micrometres per litre [$\mu m^3/L$]) was converted to biomass for all individual phytoplankton taxa by assuming a specific gravity of 1 (i.e., $1x10^9$ μm^3 = 1 mm^3 = 1 milligram [mg]). Total sample biomass (reported as milligrams per cubic metre [mg/m^3] wet weight) for each taxon was calculated by multiplying average biomass by the total abundance (reported as cells per litre [cells/L]).

2.1.3.2 Zooplankton

Zooplankton samples were analyzed at the lowest possible taxonomic level (typically species), abundance, and biomass according to methods provided by EcoAnalysts (2009b). Zooplankton samples were rinsed into a 400 mL beaker with 70% ethanol and allowed to settle overnight. To attain a reasonable density for counting, the supernatant was decanted from the samples using a variable flow chemical pump. The samples were decanted to a safe level to avoid disturbing the settled portion of the sample. Once a reasonable dilution was reached, the sample volumes were measured and recorded.

The sample was mixed thoroughly and a subsample was extracted using a 1 mL Hensen-Stempel pipette. Care was taken to capture the subsample while the sample was thoroughly mixed, to avoid bias resulting from the sinking of heavier organisms.

The 1 mL subsample was rinsed with water (with a drop of soap added to reduce surface tension) into a gridded Corning counting chamber. To achieve the target count of 200 to 400 organisms, adjustments were made either by increasing or reducing the volume, or taking aliquots from the first dilution into a second beaker and further diluting the subsample. To facilitate even distribution of organisms in the counting chamber, no more than 3 mL volumes were counted at one time and each dish was counted in its entirety. Coarse (non-rotifers) and fine (rotifers and copepod nauplii) zooplankters were identified separately. A Leica S8A10 Stereoscope (80X maximum) and a Zeiss Axiolab Compound scope (100X maximum) were used at an average magnification of 40X to identify and enumerate the zooplankton.

After the target count was reached, the ratio of volume counted to original volume was used to calculate abundances for the entire sample. The uncounted portion of the sample was scanned to identify any large or rare taxa that were not encountered during the analysis. Large or rare taxa identified during the scan of the uncounted portion were only included in the taxonomic richness and presence/absence data, and were excluded from the abundance and biomass estimates.

Cyclopoid and calanoid copepod specimens (mature and immature) were identified to species, with the exception of nauplii, which were classified as “copepod nauplii”. Organisms that could not be identified to species were identified to genus. Taxonomic identifications were based primarily on Alberti et al. (2007), Edmondson (1959), and Stemberger (1979).

Dry weight biomass (mg/m^3) for each zooplankton taxon was based on published length-weight regressions and mean length measurements (Dumont et al. 1975; US EPA 2012). For each sample, length measurements were made for up to 15 individuals of each taxon contributing to the target count. Biomass calculations were based on the average of the 15 (or fewer, if less than 15 individuals were present in the counted portion of the sample) measurements for each taxon. Zooplankton lengths were determined directly on the microscope fitted with an ocular micrometer.

2.1.4 Data Analysis

2.1.4.1 Trophic Status Classification

The trophic status of each major waterbody was evaluated by examining the nutrient concentrations, chlorophyll *a*, and water transparency (Secchi depth). The trophic status was determined using the Vollenweider (1970) trophic classification scheme for lakes (using TP, TN, chlorophyll *a*, and Secchi depth), the Canadian Council of Ministers of the Environment (CCME 2004) trophic classification scheme for Canadian lakes and streams (using TP), and the Trophic State Index (TSI) developed by Carlson (1977). The TSI is a numerical trophic state index for lakes that classifies lakes on a scale of 0 to 100 (Carlson 1977). The index number is calculated from Secchi depth, chlorophyll *a*, and TP using the following equations (Carlson 1977):

$$TSI(TP) = 10\left(6 - \frac{ln\frac{48}{TP}}{\ln 2}\right)$$ [Equation 2.1-1]

$$TSI(Chl) = 10\left(6 - \frac{2.04-0.68\ln Chl}{\ln 2}\right)$$ [Equation 2.1-2]

$$TSI(SD) = 10\left(6 - \frac{lnSD}{\ln 2}\right)$$ [Equation 2.1-3]

where:

TSI = trophic state index;

TP = total phosphorus;

ln = the natural logarithm;

Chl = chlorophyll *a*; and

SD = Secchi depth.

Values calculated using these equations are multiplied by 10 to give the scale a range of 0 to 100. The numerical scales for each of the trophic status indices are presented in the 2013 Water and Sediment Quality Baseline Report, Annex XI, of the DAR (Dominion Diamond 2014).

2.1.4.2 Plankton Data Analysis

Phytoplankton and zooplankton data were analyzed separately, but the same approach was used to analyze both the datasets. Abundance and biomass data were divided into major taxonomic groups. Phytoplankton groups were Cyanobacteria, Chlorophyceae (chlorophytes), Chrysophyceae (chrysophytes), Cryptophyceae (cryptophytes), Dinophyceae (dinoflagellates), Bacillariophyceae (diatoms), and Euglenophyceae (euglenoids). Zooplankton groups were Cladocera (cladocerans), Calanoida (calanoid copepods), Cyclopoida (cyclopoid copepods), Rotifera (rotifers), and copepod nauplii. Cyclopoid and calanoid copepods were considered separately because of taxonomic and ecological differences. Copepod nauplii were not identified as either cyclopoid or calanoid copepods, but occurred in high abundances in certain samples; therefore, they were treated as a unique taxonomic group for plotting purposes.

Total abundance and total biomass for phytoplankton and zooplankton were plotted as bar graphs by major taxonomic groups. For stations where duplicate quality control (QC) samples were collected, total abundance and total biomass were calculated as the average of the two duplicate samples. The relative proportion accounted for by each major taxonomic group, based on both abundance and biomass, was calculated separately for each station to evaluate variability in community structure among stations.

Total taxonomic richness at the genus level was summarized for each station and plotted as a bar graph for both phytoplankton and zooplankton. Taxonomic richness provides an indication of the diversity at a station; higher richness values typically indicate more healthy and balanced communities. For stations where duplicate QC samples were collected, total taxonomic richness was calculated as the average richness of the two duplicate samples.

2.1.5 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) practices determine data integrity and are relevant to all aspects of this baseline sampling program. These practices are applied throughout the activities undertaken within the program, from sample collection to data analysis, and reporting. Quality assurance (QA) encompasses management and technical practices designed to make sure that the data generated are of consistent high quality. Quality control is an aspect of QA that includes the procedures used to measure and evaluate data quality, and the corrective actions to apply when data quality objectives are not met.

The QA/QC procedures were applied during all aspects of the plankton component to verify that the data collected were of acceptable quality. The QA/QC practices applied during this study are described in this section. An evaluation of the QC data and a description of the implications of QC results to the interpretation of study results are provided in Section 3.3.

2.1.5.1 Field Quality Control Procedures

During each sampling program (i.e., late spring, summer, and fall), two pairs of duplicate phytoplankton and zooplankton samples were collected and submitted to the taxonomist for QC purposes. Duplicate samples were used to check within-site variation, and the precision of field sampling methods and laboratory analysis.

Detailed QC methods and results for the supporting variables (i.e., depth-integrated nutrients and chlorophyll *a*) are presented in Appendix A of the 2014 Water and Sediment Quality Supplemental Baseline Report (Dominion Diamond 2015).

2.1.5.2 Laboratory Quality Control

EcoAnalysts performed an internal QC of the phytoplankton and zooplankton data by having a separate taxonomist re-analyze 10% of the samples to verify taxonomic accuracy and reproducibility of the processing and analytical methods. The percent similarity index was calculated from the two independent plankton counts. The internal QC standards set by EcoAnalysts required that the dominant plankton taxa were aligned, percent similarity was greater than or equal to 50%, and the common plankton taxa accounting for more than 10% relative abundance were identified similarly by both taxonomists. If any one of these criteria were not met, the original sample and its corresponding QC sample were reanalyzed. Discrepancies between taxonomists were resolved by re-examining digital images and/or preserved specimens, and the final organism counts and identifications were adjusted according to the recommendations of both taxonomists.

2.1.5.3 Quality Control Data Evaluation

To examine the variability introduced by field sampling procedures, taxonomic accuracy, and reproducibility of the processing and analysis methods, duplicate phytoplankton and zooplankton samples were analyzed by two QC approaches: Bray-Curtis index, and relative percent difference (RPD).

The Bray-Curtis dissimilarity index is a measure of the ecological distance between two communities. The Bray-Curtis index was calculated in SYSTAT (2009), according to the formula below, to evaluate the overall dissimilarity between the original and duplicate plankton samples:

$$b = \frac{\sum_{k=1}^{n}|x_{ik} - x_{jk}|}{\sum_{k=1}^{n}(x_{ik} + x_{jk})} \quad \text{[Equation 2.1-4]}$$

where,

x_{ik} *and* x_{jk} = the abundance from the original and duplicate samples, respectively.

Since the Bray-Curtis index only allows comparisons of entire samples, the RPD was also calculated to compare abundances of each major group between duplicate samples. The RPD was calculated using the following formula:

$$RPD = \left| \frac{(sample - duplicate)}{\frac{(sample + duplicate)}{2}} \right| \times 100 \quad \text{[Equation 2.1-5]}$$

where,

| | = the absolute value;

sample = the abundance in the original sample; and,

duplicate = the abundance in the duplicate sample.

The QC assessment criteria for duplicate samples required the following:

- dominant taxa were aligned;
- the RPD values comparing abundances of major taxa met the established criterion (i.e., less than 50%); and,
- the Bray-Curtis dissimilarity index comparing the original and duplicate samples was less than 0.5.

If any one of these criteria was not met, the sample was flagged. Flagged data were not automatically rejected; rather, they were evaluated on a case-by-case basis, as a certain level of within-station variability is expected in plankton data.

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3 RESULTS

Raw phytoplankton data are presented in Appendix A, Tables A-3 to A-6 and summarized in Appendix A, Table A-7. Raw zooplankton data are presented in Appendix A, Tables A-8 to A-11 and summarized in Appendix A, Table A-12.

Supporting information, including depth-integrated nutrient concentrations, chlorophyll *a* results, and light attenuation profiles, are presented in the 2014 Water and Sediment Quality Supplemental Baseline Report (Dominion Diamond 2015).

3.1 Lac du Sauvage Basin

3.1.1 Lac du Sauvage and Duchess Lake

3.1.1.1 Trophic Status Classification

Trophic status was evaluated by examining the concentrations of TP, chlorophyll *a,* and water transparency (Secchi depth) (Vollenweider 1970). The discrete water sampling program for Lac du Sauvage yielded mean annual concentrations of 0.0078 milligrams per litre as phosphorus (mg-P/L) for TP and 5.6 m for Secchi depth. The corresponding TSI values were 33.8 using TP and 35.1 using Secchi depth, for a rounded average of 34.5. The depth-integrated sampling program yielded mean annual concentrations of 0.0083 mg-P/L for TP, 5.6 m for Secchi depth, and 2.35 micrograms per litre (µg/L) for chlorophyll *a* (Dominion Diamond 2015). The corresponding TSI values were 34.7 using TP, 38.9 using chlorophyll *a*, and 35.1 using Secchi depth, for a rounded average of 36.3. Based on these TSI values, and the classification systems of Vollenweider (1970), and Carlson (1977), Lac du Sauvage is classified as an oligotrophic lake. Lac du Sauvage can also be classified as oligotrophic (i.e., between 0.004 and 0.01 mg-P/L), based on CCME (2004) TP trigger ranges for Canadian lakes.

The discrete water sampling program for Duchess Lake yielded mean annual concentrations of 0.0125 mg-P/L for TP and 3.6 m for Secchi depth. The corresponding TSI values were 40.6 using TP and 41.5 using Secchi depth, for a rounded average of 41.1. The depth-integrated sampling program yielded mean annual concentrations of 0.015 mg-P/L for TP, 6.79 µg/L for chlorophyll *a*, and 3.6 m for Secchi depth (Dominion Diamond 2015). The corresponding TSI values were 43.2 using TP, 49.4 using chlorophyll *a*, and 41.5 using Secchi depth, for a rounded average of 44.7. Based on these TSI values, Duchess Lake is classified as mesotrophic using Vollenweider (1970) and Carlson (1977). Duchess Lake can also be classified as mesotrophic (i.e., between 0.01 and 0.02 mg-P/L), based on CCME (2004) TP trigger ranges for Canadian lakes.

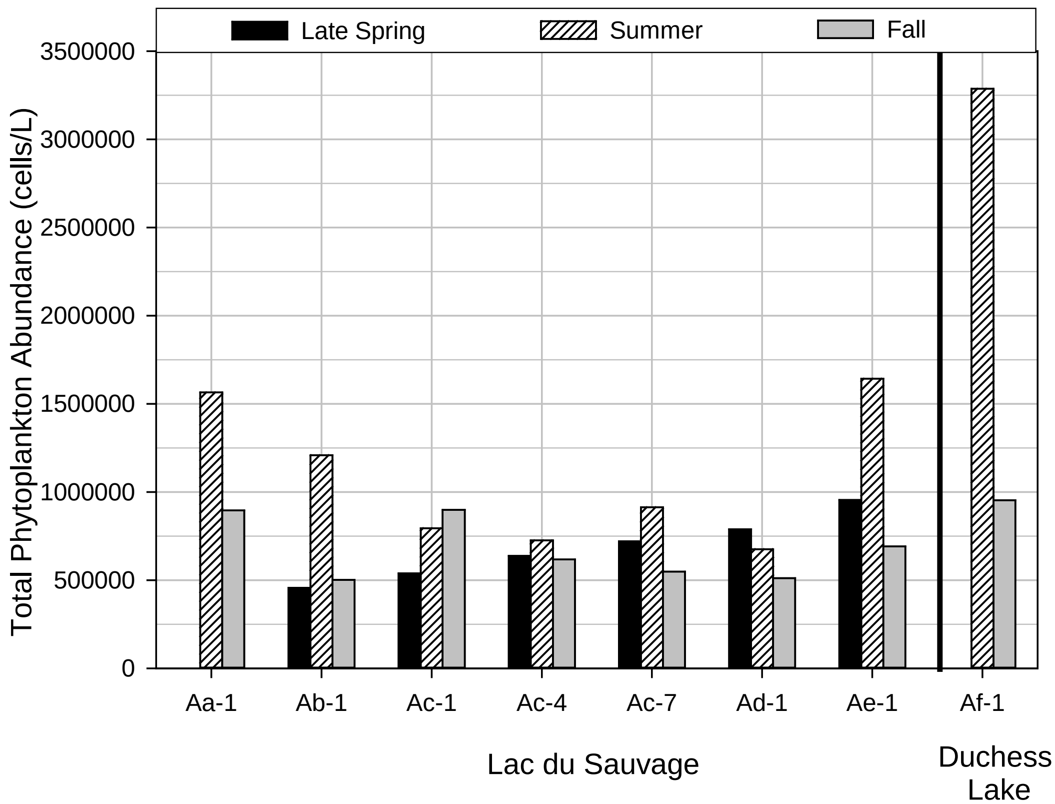
3.1.1.2 Phytoplankton

Abundance and Biomass

Seasonal and spatial variation in total phytoplankton abundance was observed in Lac du Sauvage and Duchess Lake during the open-water season (Figure 3.1-1). Total phytoplankton abundance peaked in the summer at the majority of stations in Lac du Sauvage. The highest phytoplankton abundance was observed at stations Aa-1 (1,565,282 cells/L) and Ae-1 (1,643,909 cells/L) in summer. The extent of spatial variation observed in phytoplankton abundance in Lac du Sauvage was greater in the summer (676,103 to 1,643,908 cells/L) compared to late spring (457,734 to 955,784 cells/L) and fall (502,497 to

899,589 cells/L). Phytoplankton abundance varied little among seasons at stations Ac-1, Ac-4, Ac-7, and Ad-1. Phytoplankton abundance in Duchess Lake in fall was similar to Lac du Sauvage stations; however, total abundance in Duchess Lake in summer (3,287,508 cells/L) was notably higher than in Lac du Sauvage (676,103 to 1,643,908 cells/L). The high phytoplankton abundance observed at Station Af-1 in summer was driven by the chrysophyte, *Ochromonas* spp., and to a lesser extent the chrysophyte, *Uroglenopsis americana* and the cryptophyte, *Komma caudata*.

Figure 3.1-1 Total Phytoplankton Abundance in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014

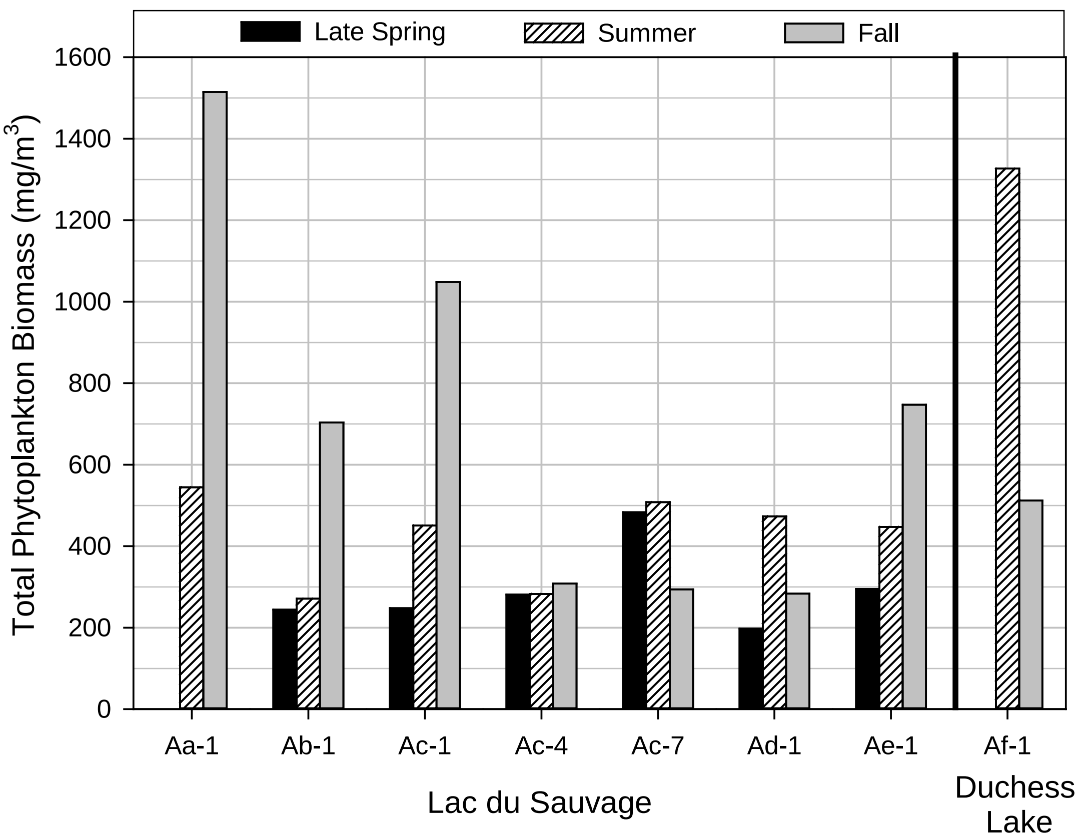


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; late spring samples were not collected at stations Aa-1 and Af-1.

cells/L = cells per litre,

During the open-water season, phytoplankton biomass in Lac du Sauvage ranged from 197 to 747 mg/m^3, with the exception of stations Aa-1 and Ac-1; however, no clear seasonal trend in total phytoplankton biomass was observed (Figure 3.1-2). Unusually high phytoplankton biomass was observed in fall at Station Aa-1 (1,515 mg/m^3), and to a lesser extent Ac-1 (1,049 mg/m^3). Total phytoplankton biomass was consistently lower in late spring compared to summer and fall, with values at the majority of stations below 747 mg/m^3. Four out of seven stations (Aa-1, Ab-1, Ac-1, and Ae-1) exhibited increases in total phytoplankton biomass throughout the open-water season. The relatively high biomass observed at Station Aa-1 in fall was largely driven by the large dominant dinoflagellate, *Peridinium* sp., the chrysophytes, *Ochromonas* spp. and *Mallomonas* sp., and the diatom, *Asterionella formosa*. The dominant taxa driving the high phytoplankton biomass at Station Ac-1 in fall was the chrysophyte, *Mallomonas* sp. (298 mg/m^3) and the diatom, *Tabellaria fenestrate* (214 mg/m^3). Unusually high phytoplankton biomass was also observed at Station Af-1 in Duchess Lake in summer (1,327 mg/m^3); high biomass at Duchess Lake in summer was largely driven by the chrysophyte, *Dinobryon divergens*.

Figure 3.1-2 Total Phytoplankton Biomass in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014

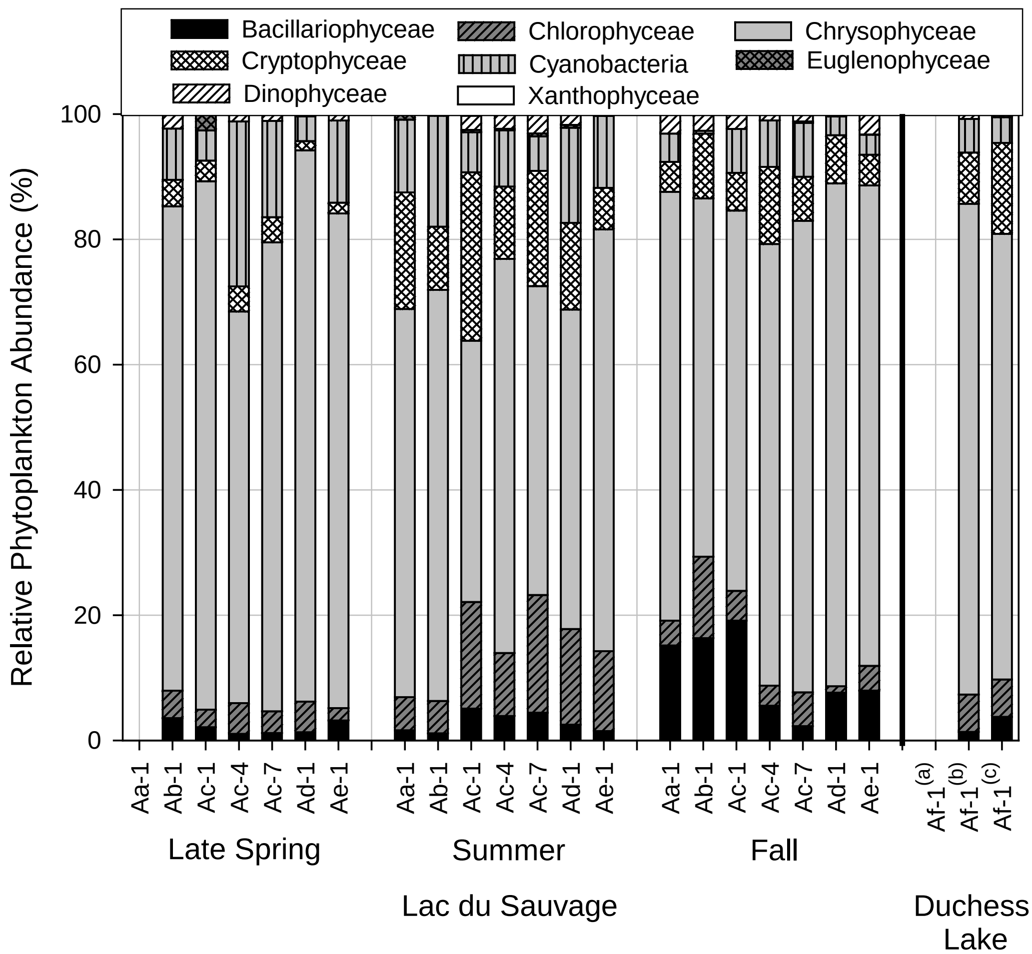


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; late spring samples were not collected at stations Aa-1 and Af-1.
mg/m^3 = milligrams per cubic metre.

Community Composition

Chrysophytes consistently dominated the community composition by abundance in Lac du Sauvage and Duchess Lake throughout the open-water season, making up 63% to 88% of the phytoplankton assemblage in late spring, 42% to 78% in summer, and 57% to 80% in fall (Figure 3.1-3). Other major taxonomic groups such as cryptophytes (less than 27%), chlorophytes (less than 19%), cyanobacteria (less than 26%), and diatoms (less than 19%) were present in Lac du Sauvage at varying relative abundances throughout the open-water season. Together, euglenoids, dinoflagellates, and xanthophytes made up less than 8% of the phytoplankton assemblage by abundance in Lac du Sauvage and Duchess Lake throughout the open-water season.

Figure 3.1-3 Relative Phytoplankton Abundance in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014



Note: Late spring samples were not collected at stations Aa-1 and Af-1; bars represent a single composite sample collected within the euphotic zone.

a) late spring.

b) summer.

c) fall.

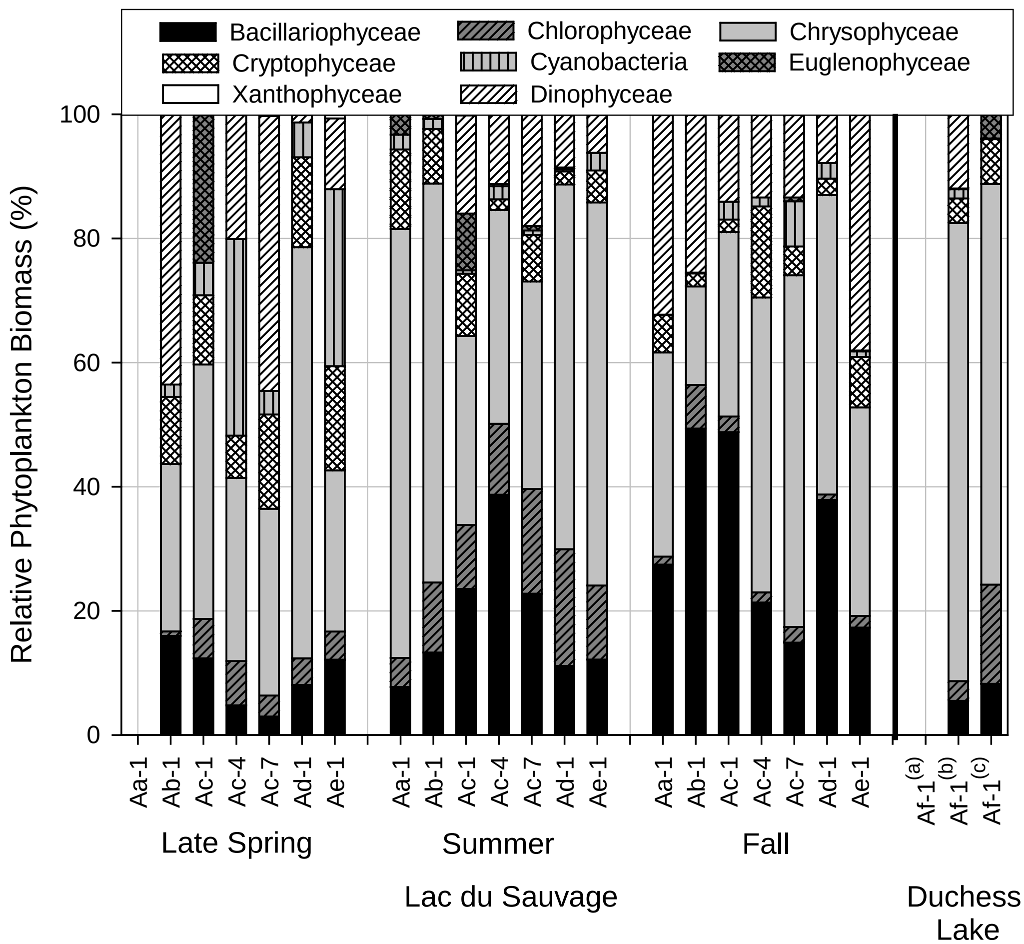
% = percent.

In terms of biomass, the phytoplankton community composition in Lac du Sauvage varied seasonally and spatially throughout the open-water season (Figure 3.1-4). In late spring, stations Ab-1 and Ac-7 were co-dominated by dinoflagellates (44% and 44%, respectively) and chrysophytes (27% and 30%, respectively). Stations Ac-4 and Ae-1 were co-dominated by cyanobacteria (32% and 29%, respectively) and chrysophytes (30% and 26%, respectively). Two major taxonomic groups, chrysophytes (41%) and euglenoids (24%), made up the majority of the phytoplankton biomass at Station Ac-1 in the late spring. Station Ac-1 was the only station in Lac du Sauvage with a notable (greater than 20%) biomass of euglenoids in late spring. Chrysophytes (66%) dominated the phytoplankton assemblage by biomass at Station Ad-1 in late spring; the composition closely resembled the composition of station Aa-1 in the summer. Cryptophytes (7% to 17%) and diatoms (37% to 16%) made up a relatively small proportion of the biomass in Lac du Sauvage in late spring.

In the summer, the phytoplankton community in Lac du Sauvage was co-dominated by chrysophytes (31% to 69%) and diatoms (8% to 39%); however, the percentages of these groups varied among stations. The remainder of the phytoplankton assemblage was made up of mainly chlorophytes (less than 19%), dinoflagellates (less than 18%), and cryptophytes (less than 13%). In fall, the dominant phytoplankton taxonomic groups by biomass were consistent among stations in Lac du Sauvage; however, the percentages of these groups varied among stations. A mixture of diatoms (15% to 49%), chrysophytes (16% to 57%), and dinoflagellates (8% to 38%) dominated the phytoplankton biomass in Lac du Sauvage in fall.

Chrysophytes dominated the phytoplankton assemblage by biomass in Duchess Lake in the summer and fall (no late spring sample was collected at Station Af-1); the composition closely resembled that at certain stations in Lac du Sauvage in the summer.

Figure 3.1-4 Relative Phytoplankton Biomass in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014



Note: Late spring samples were not collected at stations Aa-1 and Af-1; bars represent a single composite sample collected within the euphotic zone.

a) late spring.

b) summer.

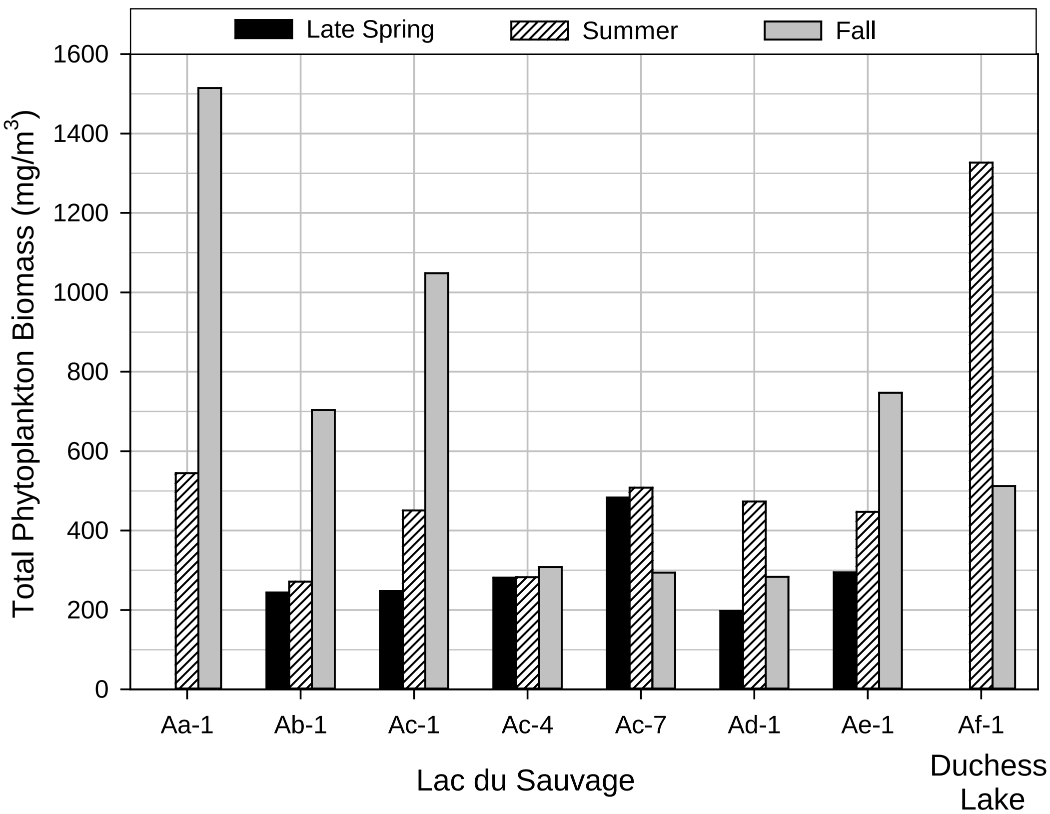
c) fall.

% = percent.

In total, 118 phytoplankton taxa were identified in Lac du Sauvage in 2014: 52 chlorophytes, 18 diatoms, 16 chrysophytes, 15 cyanobacteria, 7 dinoflagellates, 7 cryptophytes, 2 euglenoids, and 1 xanthophyte (Appendix A, Table A-3). In total, 42 phytoplankton taxa were identified in Duchess Lake in 2014: 19 chlorophytes, 6 chrysophytes, 5 cyanobacteria, 4 diatoms, 4 cryptophytes, 3 dinoflagellates, and 1 euglenoid (Appendix A, Table A-4). The lower total phytoplankton richness observed in Duchess Lake reflects the lower sampling effort (i.e., a single sampling station) in this lake compared to Lac du Sauvage. Seasonal variation in phytoplankton taxonomic richness was observed in Lac du Sauvage, with richness values ranging from 18 taxa (stations Aa-1 and Ad-1) in fall to 48 taxa (Station Ac-1) in summer.

A similar level of richness was observed at Station Af-1 in Duchess Lake, with 34 taxa in summer and 16 taxa in fall. The highest phytoplankton richness was observed in the summer (30 to 48 taxa) at all stations in Lac du Sauvage and Duchess Lake (Figure 3.1-5).

Figure 3.1-5 Total Phytoplankton Taxonomic Richness in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; late spring samples were not collected at stations Aa-1 and Af-1.

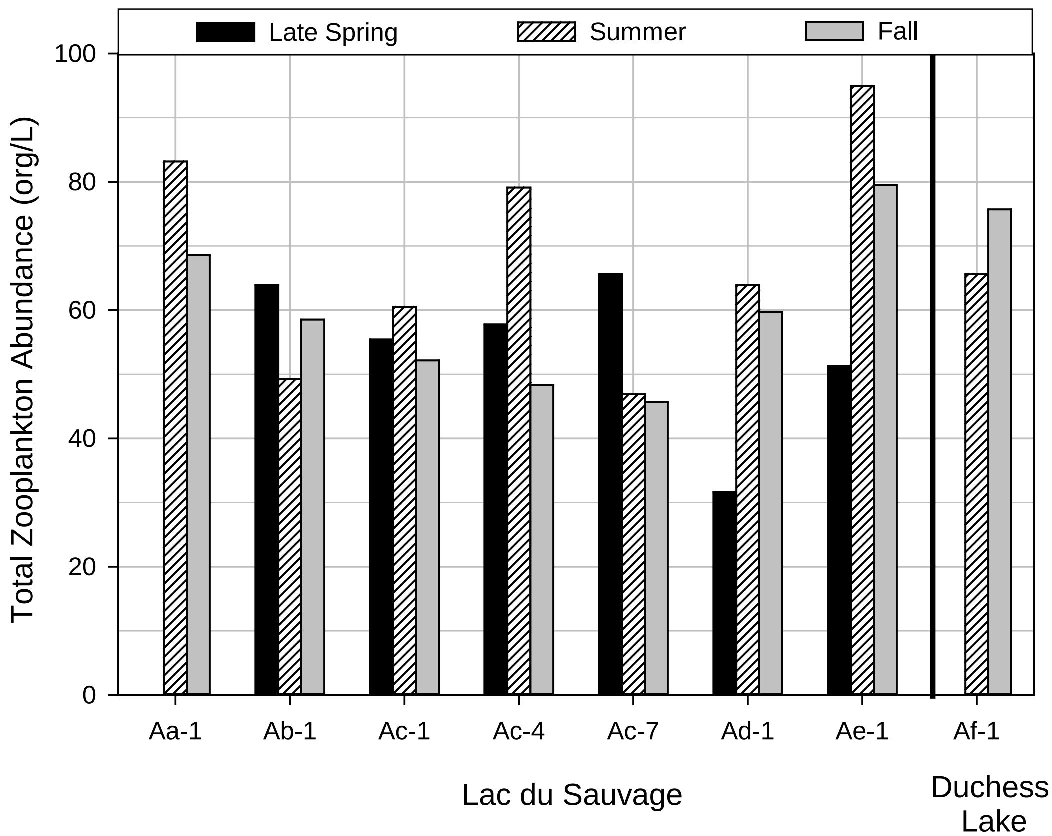
No. = number.

3.1.1.3 Zooplankton

Abundance and Biomass

Seasonal and spatial variation were observed in total zooplankton abundance in Lac du Sauvage and Duchess Lake; however, no consistent trends were observed (Figure 3.1-6). Overall, zooplankton abundance in Lac du Sauvage and Duchess Lake ranged from 32 to 66 organisms per litre (org/L) in late spring, 47 to 95 org/L in summer, and 46 to 80 org/L in fall. Seasonal peaks in total zooplankton abundance were observed in the summer at five stations (Aa-1, Ac-1, Ac-4, Ad-1, and Ae-1) in Lac du Sauvage, while abundance was lowest in the summer at Station Ab-1. Total zooplankton abundance at Station Ac-7 decreased throughout the open-water season, while abundance at Station Af-1 in Duchess Lake increased from summer to fall.

Figure 3.1-6 Total Zooplankton Abundance in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014

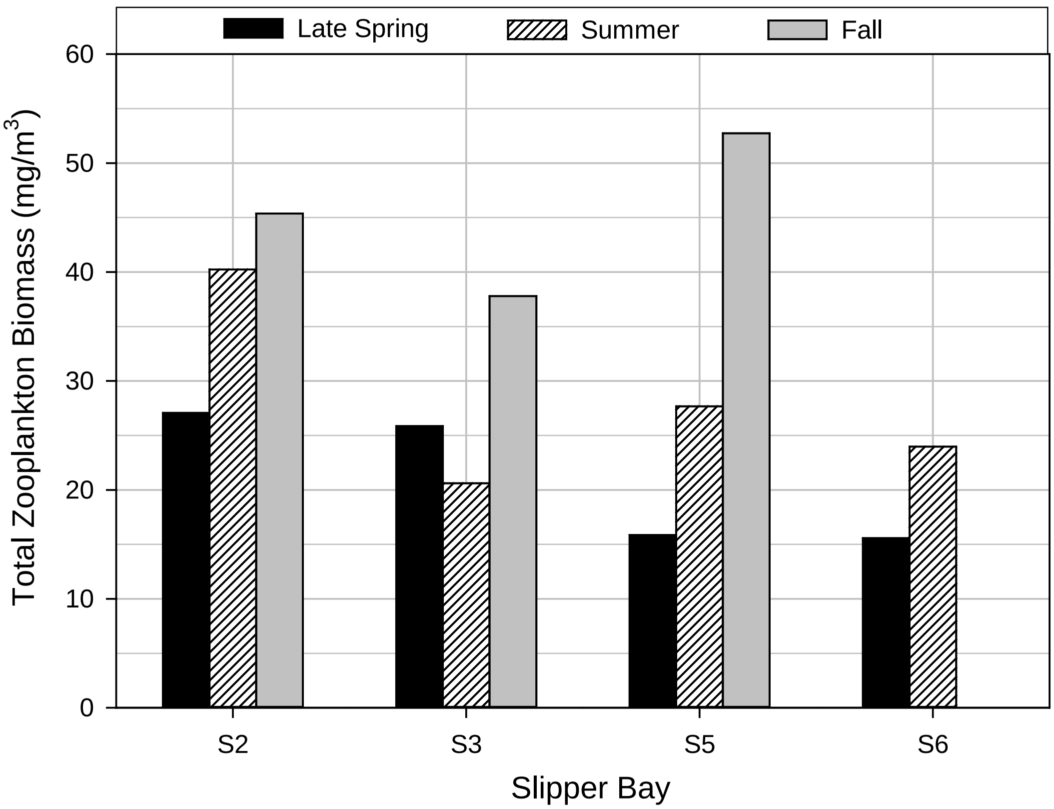


Note: Bars represent a single a vertical haul taken throughout the water column; a mean value for field duplicates are shown; late spring samples were not collected at stations Aa-1 and Af-1.

org/L = organisms per litre.

Seasonal and spatial variation in total zooplankton biomass were observed in Lac du Sauvage and Duchess Lake (Figure 3.1-7). Total zooplankton biomass peaked in summer at all stations in Lac du Sauvage and Duchess Lake, ranging from 41 to 152 mg/m^3, compared to late spring (13 to 50 mg/m^3) and fall (29 to 55 mg/m^3). Spatial variability among stations in total zooplankton biomass was greatest in the summer, with lower variability observed in the late spring or fall. Two stations, Ac-4 and Ae-1, had notably higher zooplankton biomass in the summer (97 and 152 mg/m^3, respectively) compared to other stations and sampling periods. The dominant taxa driving the high zooplankton biomass in summer at stations Ac-4 and Ae-1 were the cladocerans, *Holopedium gibberum*, *Daphnia thomasii,* and *Daphnia longiremis*. Total zooplankton biomass in Duchess Lake in the summer and fall (41 and 33 mg/m^3, respectively) was similar to Lac du Sauvage, particularly stations Ac-7 and Ad-1.

Figure 3.1-7 Total Zooplankton Biomass in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014



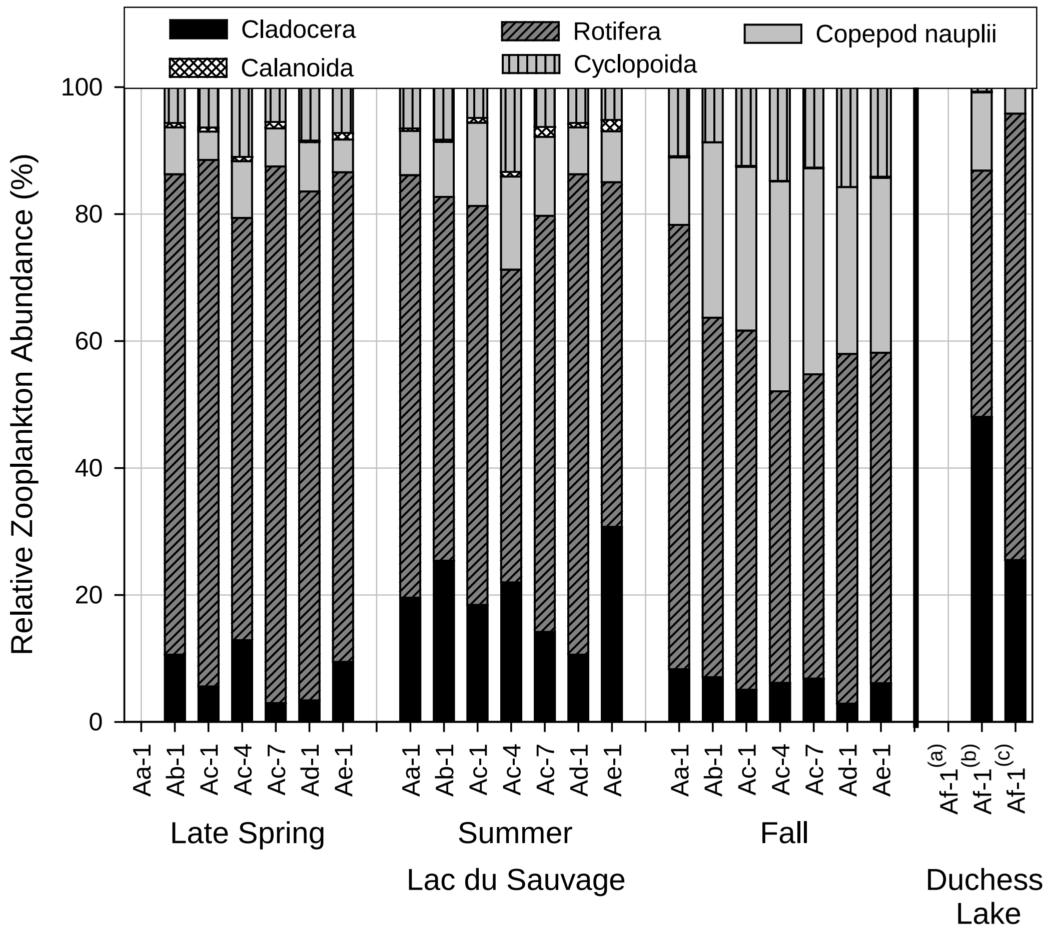
Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; late spring samples were not collected at stations Aa-1 and Af-1.
mg/m^3 = milligrams per cubic metre.

Community Composition

Zooplankton community composition by abundance in Lac du Sauvage was similar among stations, but varied with sampling period (Figure 3.1-8). In late spring and summer, zooplankton abundance in Lac du Sauvage was dominated by rotifers (67% to 85% and 49% to 76%, respectively). The relative abundance of rotifers in Lac du Sauvage was lower in fall (46% to 70%), as the proportion of copepod nauplii (11% to 32%) and cyclopoid copepods (9% to 16%) increased. Calanoid copepods made up a very small fraction of the total zooplankton abundance in Lac du Sauvage (less than 2%) and Duchess Lake (less than 1%) throughout the open-water season. Cladocera made up 11% to 31% of the zooplankton abundance in summer in Lac du Sauvage, compared to the late spring (3% to 13%) and fall (3% to 8%).

In summer and fall, the zooplankton assemblage by abundance in Duchess Lake was co-dominated by Cladocera (25% and 48%, respectively) and rotifers (39% and 70%, respectively); however, the proportion of rotifers was higher in fall. Copepod nauplii made up a small proportion of the total abundance in Duchess Lake in summer (12%) and fall (4%).

Figure 3.1-8 Relative Zooplankton Abundance in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014



Note: Late spring samples were not collected at stations Aa-1 and Af-1; bars represent a single composite sample collected within the euphotic zone.

a) late spring.

b) summer.

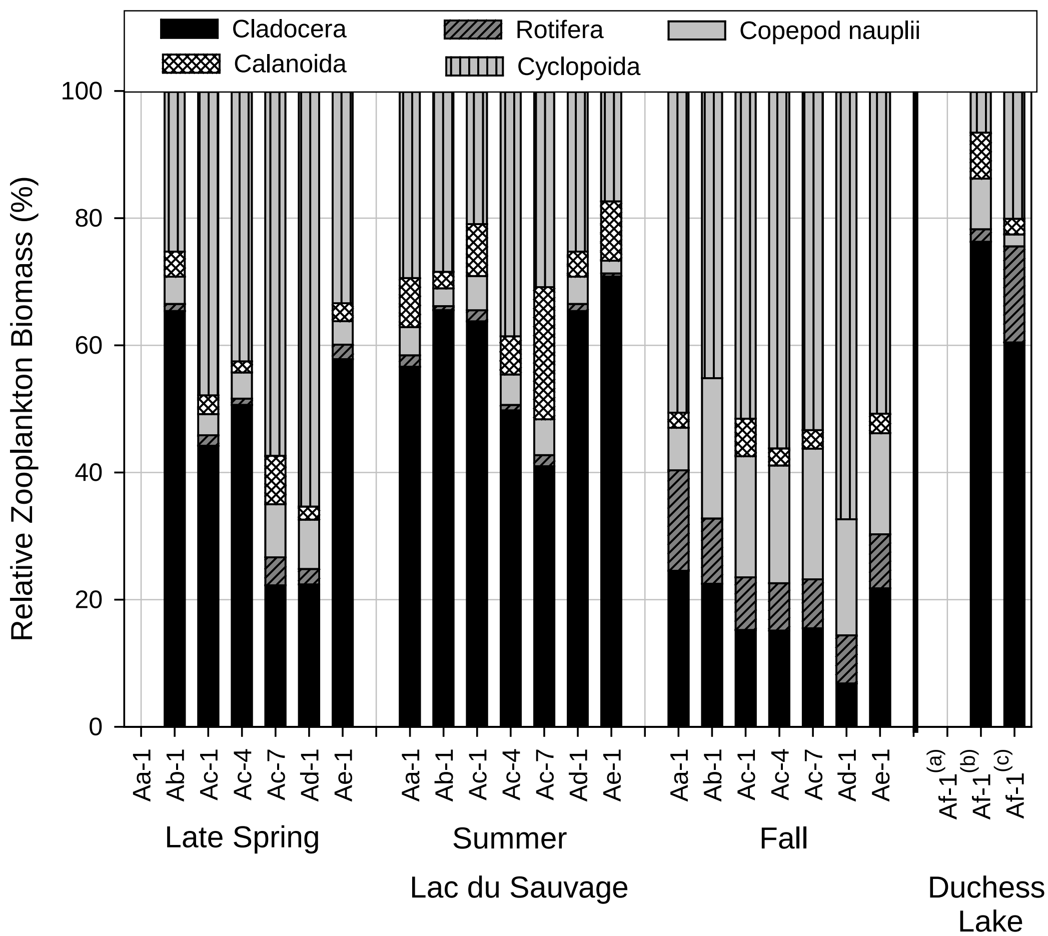
c) fall.

% = percent.

Zooplankton community composition by biomass in Lac du Sauvage varied among stations and throughout the open-water season (Figure 3.1-9). In general, stations in Lac du Sauvage were co-dominated by Cladocera and cyclopoid copepods in late spring and summer. In late spring, the zooplankton community by biomass in Lac du Sauvage was made up of 22% to 65% Cladocera and 25% to 65% cyclopoid copepods. In summer, Cladocera (41% to 71%) made up more of the zooplankton assemblage by biomass in Lac du Sauvage than cyclopoid copepods (17% to 39%). The relative proportions of these two major taxonomic groups varied among stations in late spring and summer. Stations Ac-7 and Ad-1 had higher proportions of cyclopoid copepods in late spring than the other stations in Lac du Sauvage.

In terms of biomass, Lac du Sauvage stations were dominated by cyclopoid copepods (45% to 67%) in fall. Cladocera (7% to 25%), copepod nauplii (7% to 22%), and rotifers (7% to 16%) made up the majority of the remaining zooplankton biomass in Lac du Sauvage in fall. Throughout the open-water season, the total zooplankton biomass in Lac du Sauvage and Duchess Lake consisted of up to 21% calanoid copepods. The zooplankton assemblage by biomass in Duchess Lake was dominated by Cladocera in summer and fall (76% and 60%, respectively). Despite making up a large proportion of the zooplankton abundance in Lac du Sauvage and Duchess Lake (Figure 3.1-8), rotifers made up a small proportion of total zooplankton biomass due to their small body size (Figure 3.1-9). Rotifers made up a larger fraction of the zooplankton biomass in Lac du Sauvage and Duchess Lake in fall, ranging from 7% to 15%, compared to late spring (less than 4%) and summer (less than 2%).

Figure 3.1-9 Relative Zooplankton Biomass in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014



Note: Late spring samples were not collected at stations Aa-1 and Af-1; bars represent a single composite sample collected within the euphotic zone.

a) late spring.

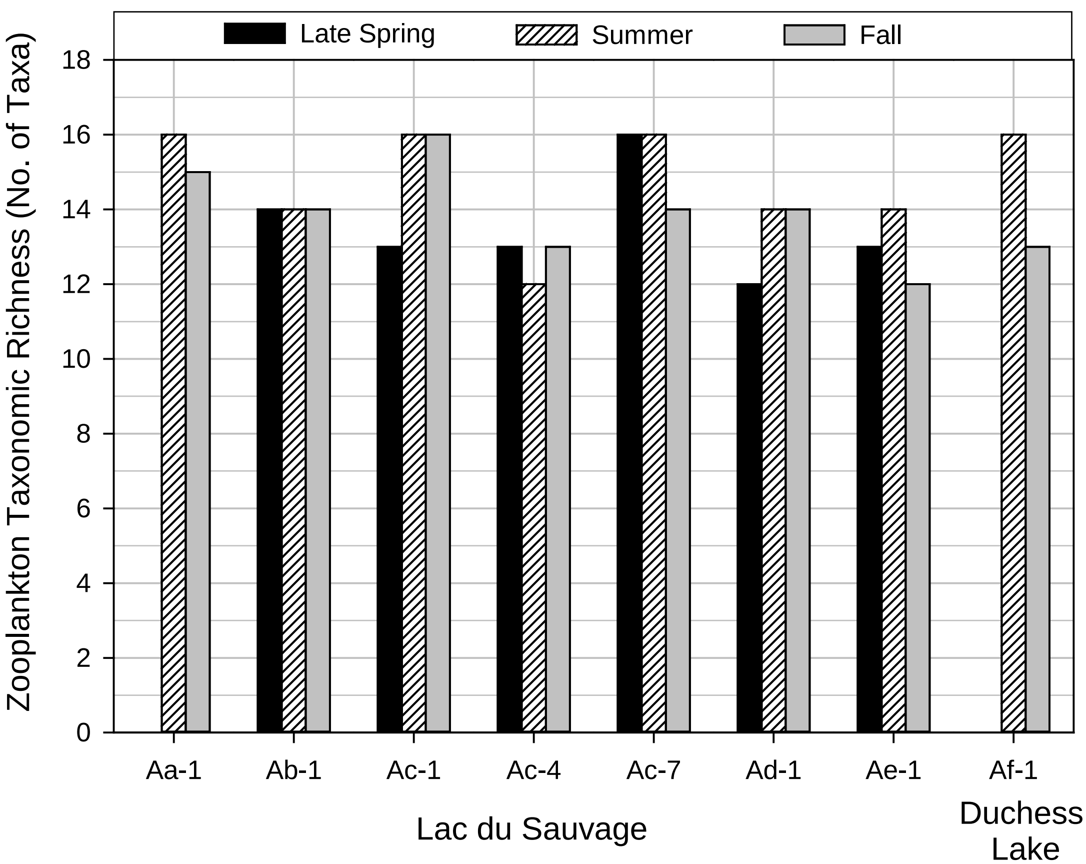
b) summer.

c) fall.

% = percent.

In total, 31 zooplankton taxa were identified in Lac du Sauvage in 2014: 18 rotifers, 6 cladocerans, 5 calanoid copepods, and 2 cyclopoid copepods (Appendix A, Table A-8). In total, 19 zooplankton taxa were identified in Duchess Lake in 2014: 13 rotifers, 3 cladocerans, 2 calanoid copepods, and 1 cyclopoid copepod (Appendix A, Table A-9). The lower total zooplankton richness observed in Duchess Lake reflects the lower sampling effort (i.e., a single sampling station) in this lake compared to Lac du Sauvage. Zooplankton taxonomic richness in Lac du Sauvage was similar among stations and seasons, ranging from 12 to 16 taxa (Figure 3.1-10). Zooplankton richness in Duchess Lake in the summer and fall was similar to Lac du Sauvage (16 and 13 taxa, respectively). Some stations in Lac du Sauvage (Aa-1 [16 taxa], Ac-7 [16 taxa], and Ae-1 [14 taxa]) and Duchess Lake station Af-1 (16 taxa) showed a small peak in zooplankton richness in summer, while a slight drop in richness was observed in summer at other stations (Ab-1 and Ac-4).

Figure 3.1-10 Total Zooplankton Taxonomic Richness in Lac du Sauvage and Duchess Lake in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; late spring samples were not collected at stations Aa-1 and Af-1.

No. = number.

3.1.2 Comparison of 2013 and 2014 Plankton Data

Results from the 2014 supplemental baseline plankton sampling program were compared to baseline data collected in 2013 (from Lac du Sauvage and Duchess Lake) (Annex XII of the DAR) to describe the range in temporal variation in plankton communities present in these lakes.

3.1.2.1 Trophic Status Classification

The 2014 baseline study evaluated trophic status as the TSI, based on discrete and depth-integrated TP, Secchi depth, and chlorophyll *a* concentrations from the open-water season. The trophic status of the lakes sampled in 2014 ranged from oligotrophic (Lac du Sauvage) to mesotrophic (Duchess Lake). Results from the 2014 trophic status classifications are consistent with the 2013 classifications for Lac du Sauvage and Duchess Lake.

3.1.2.2 Phytoplankton

Based on comparing the 2013 and 2014 phytoplankton data for Lac du Sauvage and Duchess Lake, the following conclusions were made:

- Total phytoplankton abundance and biomass in Lac du Sauvage in 2014 were within the range observed in 2013. However, seasonal and spatial variability in the timing of peak total phytoplankton abundance and biomass in Lac du Sauvage was not consistent among stations or sampling years.
- In 2013, Duchess Lake had higher phytoplankton biomass than Lac du Sauvage, but abundance was comparable between lakes. In 2014, phytoplankton abundance was higher in Duchess Lake than in Lac du Sauvage, while biomass was comparable between the two lakes.
- The peak in total phytoplankton abundance observed in Duchess Lake in the summer of 2014 was two times higher than the maximum abundance observed in Duchess Lake in 2013. However, the phytoplankton abundance in Duchess Lake in fall of 2014 was within the 2013 range.
- The peak in total phytoplankton biomass observed in Duchess Lake in the summer of 2014 was less than half the maximum biomass observed in Duchess Lake in 2013. However, the phytoplankton biomass in Duchess Lake in fall of 2014 was within the 2013 range.
- Chrysophytes consistently dominated the community composition by abundance in Lac du Sauvage throughout the open-water season in 2013 and 2014, while the phytoplankton community by abundance in Duchess Lake differed between years.
- Seasonal and spatial differences in community composition by biomass in Lac du Sauvage and Duchess Lake were observed in 2013 and 2014, and no consistent dominant major taxonomic group was identified.

Overall, the variation observed in community metrics in the baseline phytoplankton dataset underscores the importance of having multiple years of data to characterize the phytoplankton communities present in Lac du Sauvage and Duchess Lake.

3.1.2.3 Zooplankton

Based on comparing the 2013 and 2014 zooplankton data for Lac du Sauvage and Duchess Lake, the following conclusions were made:

- Total zooplankton abundance in Lac du Sauvage in 2014 was within the range observed in Lac du Sauvage in 2013.
- Total zooplankton biomass in Lac du Sauvage in 2014 was notably higher than the range in biomass observed in Lac du Sauvage in 2013. The annual difference in zooplankton biomass in Lac du Sauvage was mainly attributed to the large peaks in biomass recorded in the summer of 2014.
- Total zooplankton abundance and biomass in Duchess Lake in 2014 were within the range observed in Duchess Lake in 2013.
- The timing of seasonal peaks in total zooplankton abundance and biomass in Lac du Sauvage and Duchess Lake were not consistent between 2013 and 2014.
- In 2014, zooplankton community composition by abundance in Lac du Sauvage was similar among stations, but varied with sampling period; the same was true for 2013.
- The zooplankton community by abundance in Lac du Sauvage in the late spring and summer 2014 was similar to the open-water season in 2013 (dominated by rotifers), but differed in fall (co-dominated by rotifers and copepod nauplii).
- The zooplankton assemblage by abundance in Duchess Lake was consistent between 2013 and 2014 (co-dominated by Cladocera and rotifers).
- Zooplankton community composition by biomass varied seasonally and spatially in Lac du Sauvage and Duchess Lake in 2013 and 2014.

Overall, the variation observed in community metrics in the baseline zooplankton dataset underscores the importance of having multiple years of data to characterize the zooplankton communities present in Lac du Sauvage and Duchess Lake.

3.2 Lac de Gras Basin

3.2.1 Slipper Bay Stations

3.2.1.1 Trophic Status Classification

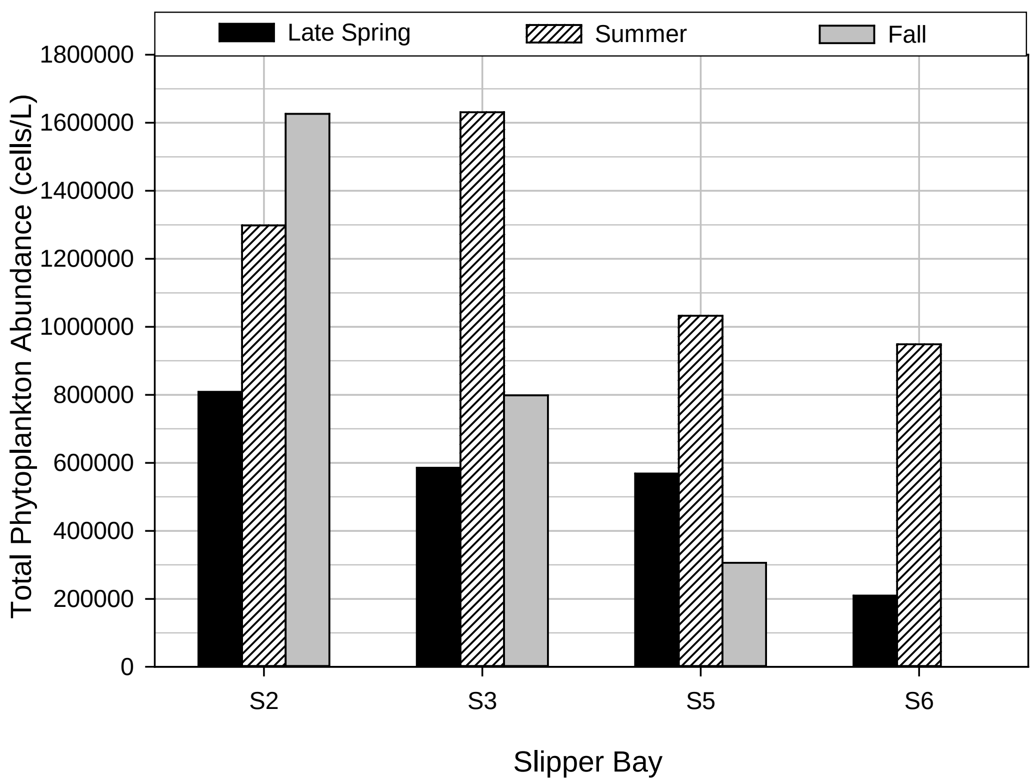
The discrete water sampling program for Slipper Bay yielded mean annual concentrations of 0.0041 mg-P/L for TP and 8.0 m for Secchi depth. The corresponding TSI values were 24.5 using TP and 30.0 using Secchi depth, for a rounded average of 27.3. The depth-integrated sampling program yielded mean annual concentrations of 0.0033 mg-P/L for TP, 1.49 µg/L for chlorophyll *a*, and 8.0 m for Secchi depth (Dominion Diamond 2015). The corresponding TSI values were 24.1 using TP, 34.5 using chlorophyll *a*, and 30.0 using Secchi depth, for a rounded average of 28.6. Based on these TSI values, and the classification systems of Vollenweider (1970) and Carlson (1977), the Slipper Bay area of Lac de Gras is classified as oligotrophic. The Slipper Bay area can also be classified as oligotrophic (i.e., between 0.004 and 0.01 mg-P/L), based on CCME (2004) TP trigger ranges for Canadian lakes.

3.2.1.2 Phytoplankton

Abundance and Biomass

Total phytoplankton abundance in Slipper Bay varied seasonally and spatially (Figure 3.2-1). Total phytoplankton abundance was lowest in late spring (209,568 to 808,527 cells/L) at all stations, with the exception of Station S5. Peaks in total phytoplankton abundance occurred in the summer at stations S3 (1,631,311 cells/L), S5 (1,032,607 cells/L), and S6 (948,606 cells/L). Station S2 exhibited a peak in total phytoplankton abundance in fall (1,626,511 cells/L). A spatial gradient in phytoplankton abundance was observed in the Slipper Bay area, whereby stations located closest to the inflow (i.e., stations S2 and S3) had higher abundances than those closer to the open-water basin of Lac de Gras (i.e., stations S5 and S6). This gradient may be related to mine discharge from the Ekati Mine that enters Slipper Bay through the inflow near Station S2.

Figure 3.2-1 Total Phytoplankton Abundance in Slipper Bay Area, Lac de Gras in Late Spring, Summer, and Fall, 2014

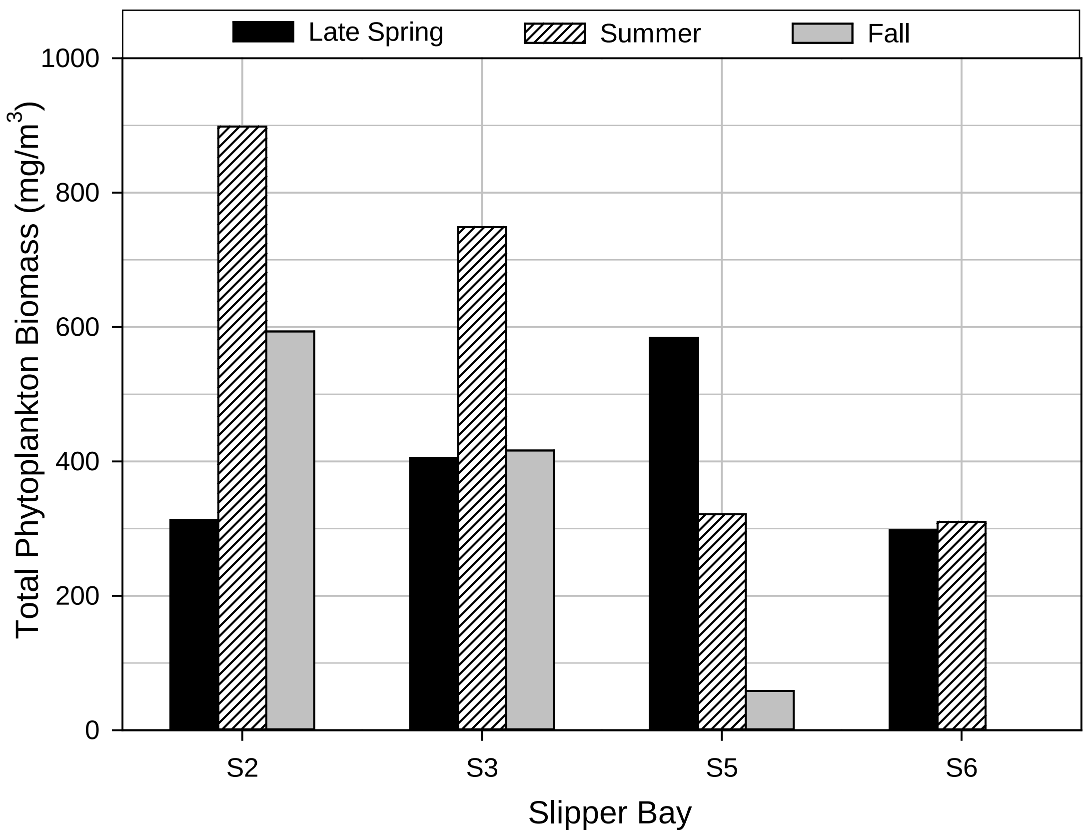


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.

cells/L = cells per litre.

Seasonal and spatial variability were observed in total phytoplankton biomass in Slipper Bay; however, no clear seasonal trends were observed (Figure 3.2-2). Total phytoplankton biomass peaked in summer at stations S2 (898 mg/m^3) and S3 (749 mg/m^3) and was 2.5 to 3 times higher than at stations S5 (322 mg/m^3) and S6 (310 mg/m^3) in summer. One chrysophyte, *Ochromonas* spp., and one diatom, *Cyclotella* sp., were the main drivers of the high phytoplankton biomass observed at Station S2 in the summer. The dominant taxa driving the high biomass at Station S3 in summer were the chrysophyte, O*chromonas* sp., and the diatom, C*yclotella*. In late spring, phytoplankton biomass was highest at Station S5 (584 mg/m^3), while Station S2 had the highest biomass in fall (593 mg/m^3). Total phytoplankton biomass at Station S6 exhibited little variation between late spring (298 mg/m^3) and summer (310 mg/m^3). A spatial gradient in phytoplankton biomass was observed in the Slipper Bay Area during the summer and fall. Stations located closest to the inflow (i.e., stations S2 and S3) had higher biomass than those closer to the open-water basin of Lac de Gras (i.e., stations S5 and S6), possibly related to mine discharge from the Ekati Mine that enters Slipper Bay through the inflow near Station S2.

Figure 3.2-2 Total Phytoplankton Biomass in Slipper Bay Area, Lac de Gras in Late Spring, Summer, and Fall, 2014

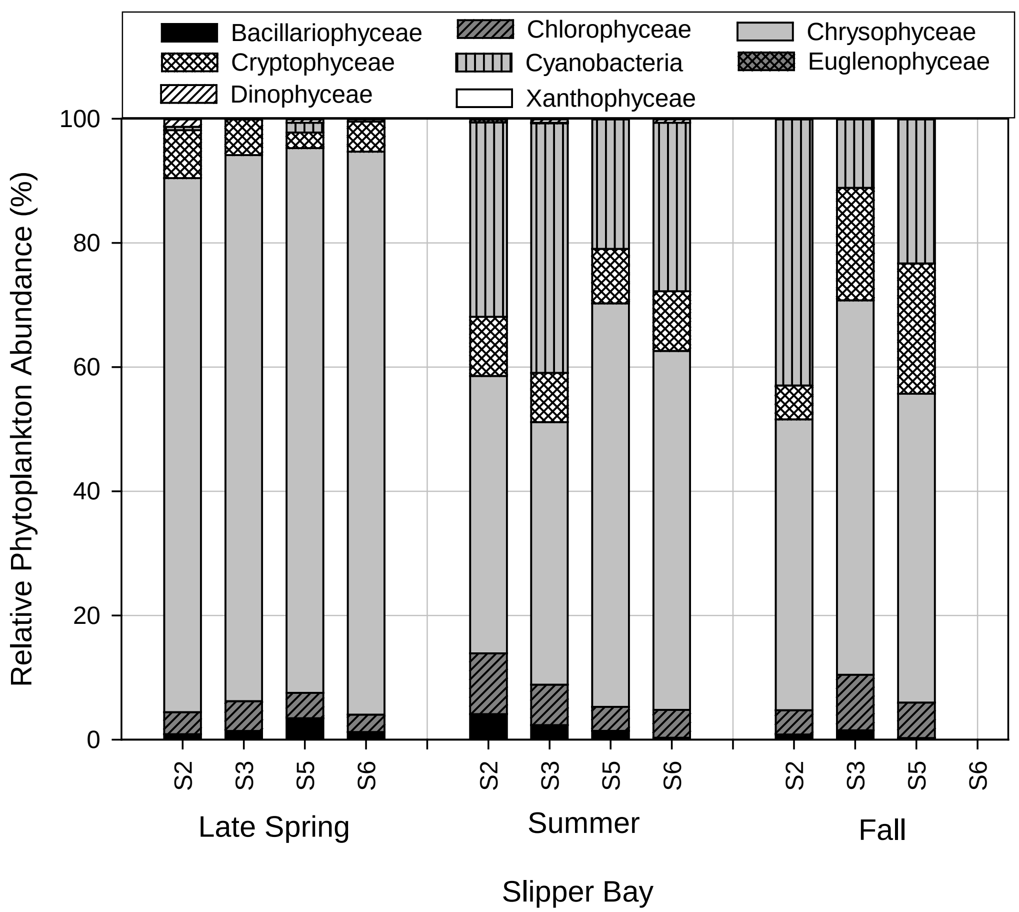


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.
mg/m^3 = milligrams per cubic metre.

Community Composition

In general, the phytoplankton assemblage by abundance in Slipper Bay was relatively consistent among stations, but varied among sampling periods (Figure 3.2-3). Chrysophytes (86% to 91%) made up the majority of the phytoplankton assemblage by abundance in late spring. In general, two major taxonomic groups (i.e., chrysophytes and cyanobacteria) dominated the phytoplankton assemblage by abundance in the summer (42% to 65% and 21% to 40%, respectively) and fall (47% to 60% and 1% to 43%, respectively). Other taxonomic groups (cryptophytes, chlorophytes, and diatoms) made up a small fraction of the phytoplankton community composition by abundance in Slipper Bay and the percentages of these groups varied, particularly among sampling periods.

Figure 3.2-3 Relative Phytoplankton Abundance in Slipper Bay Area, Lac de Gras in Late Spring, Summer, and Fall, 2014

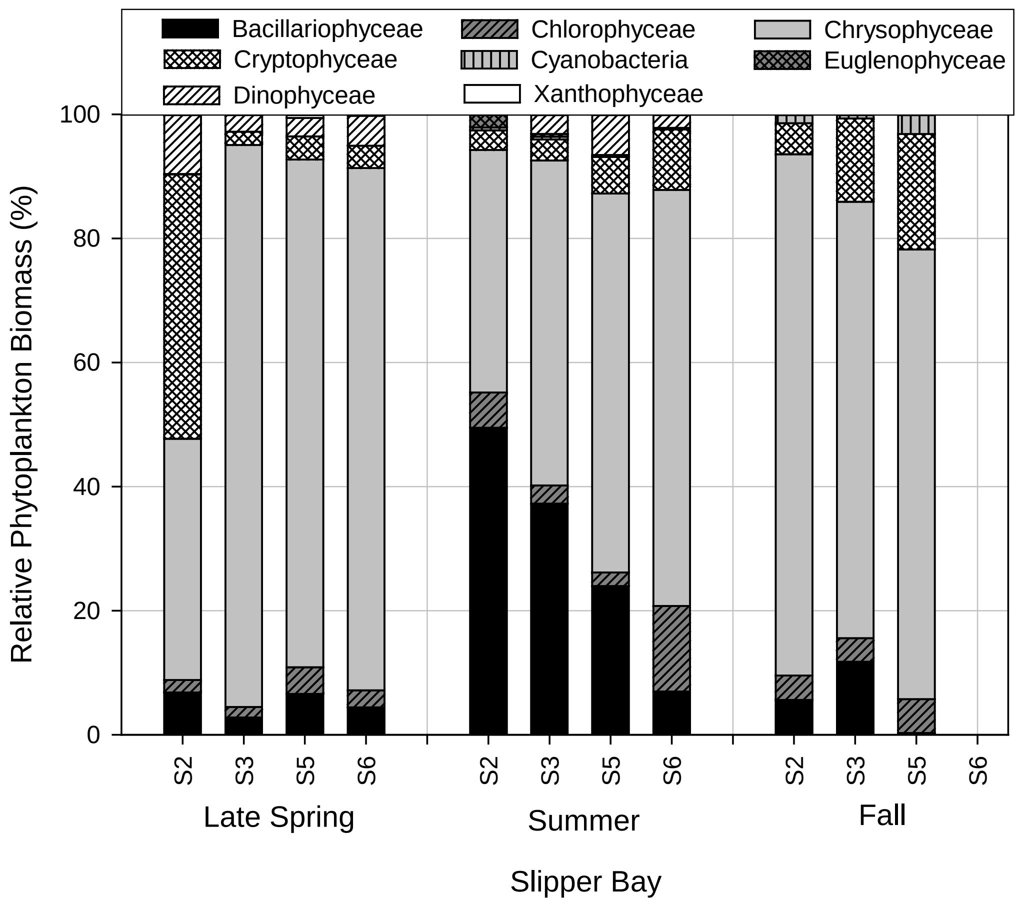


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.

% = percent.

Chrysophytes dominated the phytoplankton composition by biomass at all stations in Slipper Bay in late spring (82% to 91%), with the exception of Station S2, which was co-dominated by chrysophytes (39%) and cryptophytes (43%) (Figure 3.2-4). The remainder of the community in late spring consisted of variable amounts of diatoms (less than 49%), chlorophytes (less than 14%), and dinoflagellates (less than 10%). In the summer, stations S2 and S3 were co-dominated by chrysophytes (39% and 52%, respectively) and diatoms (49% and 37%, respectively). Chrysophytes made up the majority of the phytoplankton assemblage by biomass at stations S5 and S6 in the summer (61% and 67%, respectively). Diatoms were present at stations S5 and S6 (24% and 7%, respectively) in the summer, but represented a smaller percentage of the community compared to stations S2 and S3 (37% and 49%, respectively). In fall, chrysophytes dominated the phytoplankton community in Slipper Bay by biomass (70% to 84%). The remainder of the phytoplankton biomass in fall was made up mainly of varying proportions of cryptophytes (5% to 19%), diatoms (0% to 12%), and chlorophytes (4% to 5%).

Figure 3.2-4 Relative Phytoplankton Biomass in Slipper Bay Area, Lac de Gras in Late Spring, Summer, and Fall, 2014



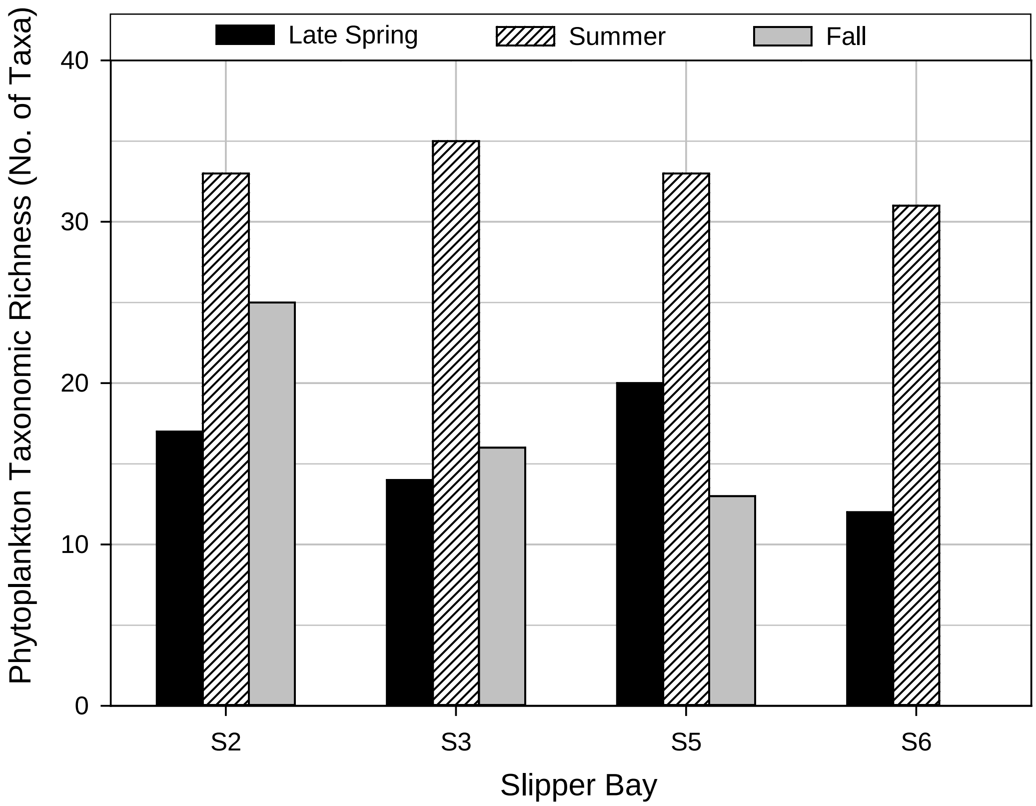
Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.

% = percent.

In total, 93 phytoplankton taxa were identified in Slipper Bay in 2014: 41 chlorophytes, 10 diatoms, 14 cyanobacteria, 14 chrysophytes, 6 dinoflagellates, 6 cryptophytes, 1 euglenoid, and 1 xanthophyte (Appendix A, Table A-5). Phytoplankton taxonomic richness was highest in the summer at all stations in

Slipper Bay (31 to 35 taxa) (Figure 3.2-5). Overall, taxonomic richness exhibited less spatial variation in the summer (31 to 35 taxa) compared to late spring (12 to 17 taxa) and fall (13 to 25 taxa).

Figure 3.2-5 Total Phytoplankton Taxonomic Richness in Slipper Bay Area, Lac de Gras in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.

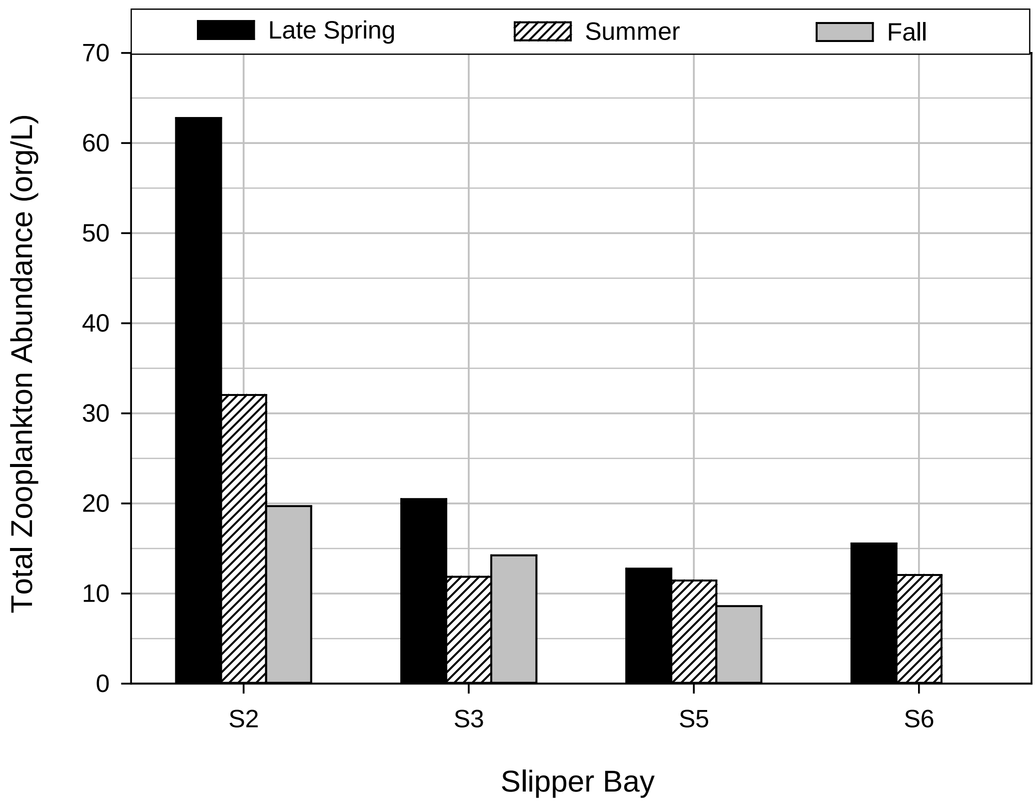
No. = number.

3.2.1.3 Zooplankton

Abundance and Biomass

In general, total zooplankton abundance decreased throughout the open-water season in Slipper Bay; abundance ranged from 13 to 63 org/L in late spring, compared to summer (11 to 32 org/L) and fall (9 to 20 org/L) (Figure 3.2-6). Station S2 showed the largest decrease in total zooplankton abundance throughout the open-water season, ranging from 63 org/L in late spring to 20 org/L in fall. Station S2 also had notably higher zooplankton abundance compared to the other Slipper Bay stations, particularly in the late spring and summer. The high total zooplankton abundance observed at Station S2 in late spring was driven by the rotifers, *Kellicottia longispina* and *Conochilus unicornis*. A spatial gradient in zooplankton abundance was observed in the Slipper Bay Area. Station S2, located closest to the inflow, had higher zooplankton abundance than stations closer to the open-water basin of Lac de Gras, possibly related to the inflow of discharge from the Ekati Mine.

Figure 3.2-6 Total Zooplankton Abundance in Slipper Bay Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014

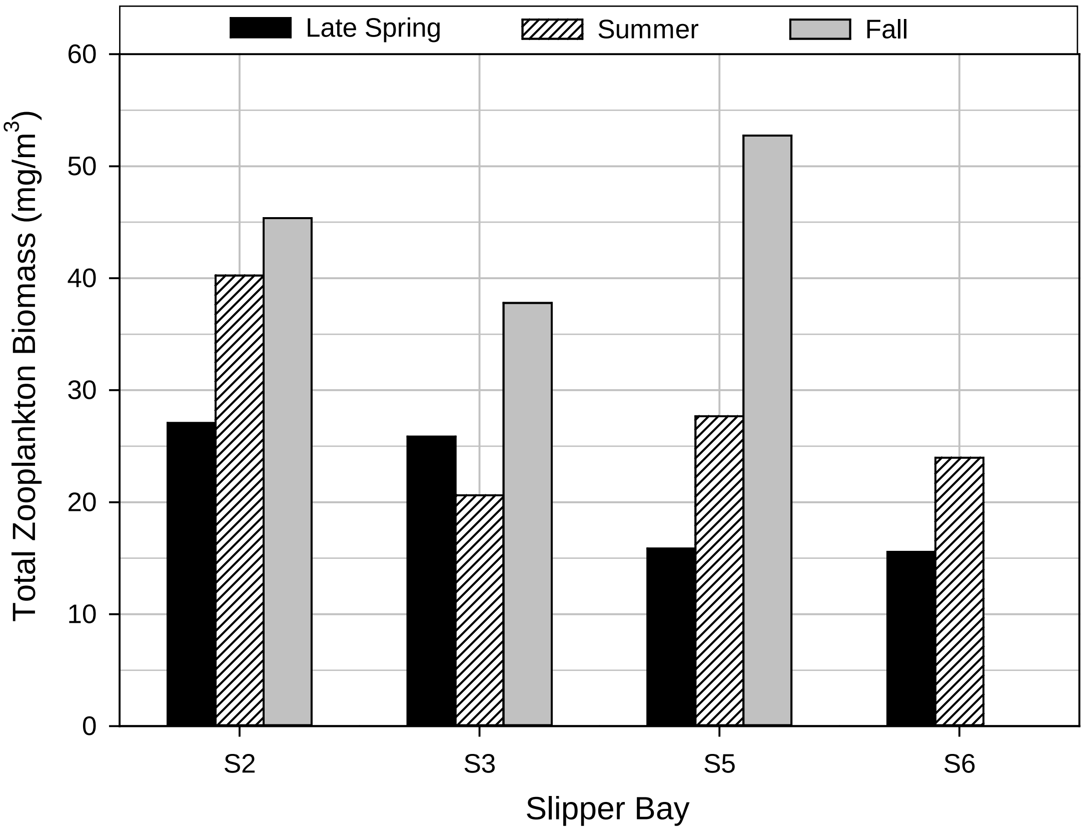


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.

org/L = organisms per litre.

Clear seasonal patterns in total zooplankton biomass were observed in Slipper Bay (Figure 3.2-7). In general, total zooplankton biomass increased throughout the open-water season, with the exception of Station S3 where a slight decrease was observed in summer. Total zooplankton biomass in Slipper Bay ranged from 38 to 53 mg/m^3 in fall compared to late spring (16 to 27 mg/m^3) and summer (21 to 40 mg/m^3). Despite having the highest zooplankton abundance, zooplankton biomass at Station S2 was comparable to the other Slipper Bay stations throughout the open-water season.

Figure 3.2-7 Total Zooplankton Biomass in Slipper Bay Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



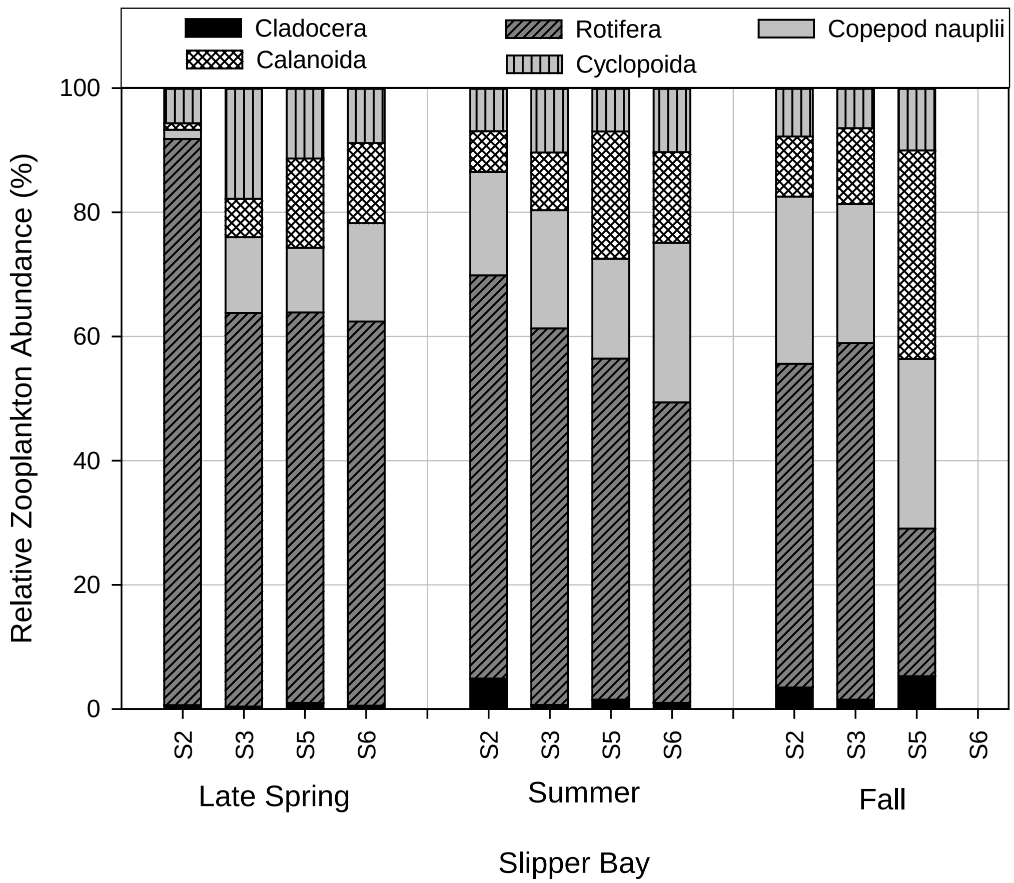
Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.

mg/m^3 = milligrams per cubic metre.

Community Composition

Zooplankton community composition by abundance was generally similar among stations and seasons in Slipper Bay (Figure 3.2-8). Rotifers dominated the zooplankton community by abundance (48% to 91%) throughout the open-water season, with the exception of Station S5 in fall (24%). The zooplankton assemblage by abundance at Station S5 in fall was made up of calanoid copepods (34%) copepod nauplii (27%), and rotifers (24%). Station S2 was dominated by rotifers throughout the open water season, but unlike the other stations in Slipper Bay, copepod nauplii made up less than 2% of the abundance at Station S2 in late spring. Copepod nauplii (1% to 27%), calanoid copepods (1% to 34%), and cyclopoid copepods (6% to 18%) made up varying proportions of the total zooplankton abundance in Slipper Bay throughout the open-water season. Cladocera made up less than 5% of the total zooplankton abundance in Slipper Bay throughout the open-water season.

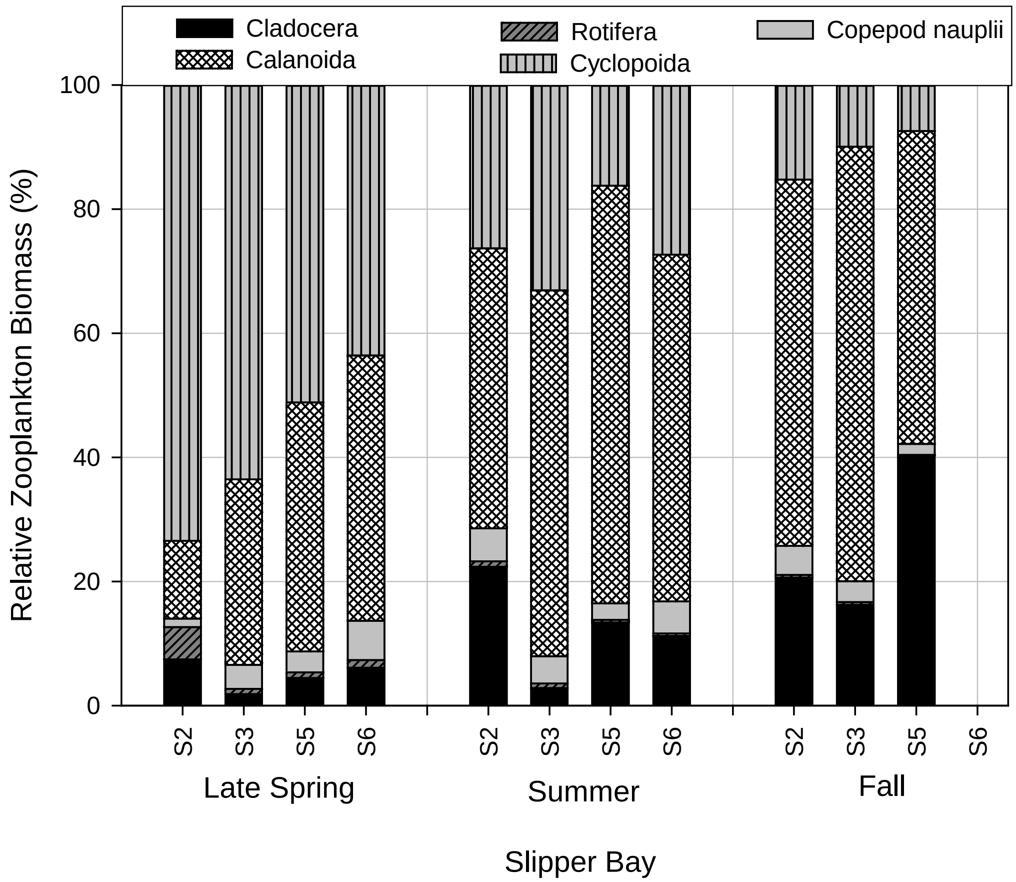
Figure 3.2-8 Relative Zooplankton Abundance in Slipper Bay Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.
% = percent.

Zooplankton community by biomass was relatively consistent among stations in Slipper Bay, but the relative biomass of the major taxonomic groups varied with sampling period (Figure 3.2-9). Together, cyclopoid and calanoid copepods made up 58% to 92% of the zooplankton assemblage by biomass in Slipper Bay throughout the open-water season. The relative biomass of cyclopoid copepods decreased throughout the open-water season, from 44% to 73% in late spring to 7% to 15% in fall, as the relative proportion of calanoid copepods and Cladocera increased. Calanoid copepods made up 12% to 43% of the zooplankton biomass in late spring, compared to summer (45% to 67%) and fall (50% to 70%). The relative biomass of cyclopoid copepods decreased from late spring (44% to 73%) to fall (7% to 15%). Copepod nauplii were present in relatively low abundances in Slipper Bay throughout the open-water season (less than 6%). Overall, rotifers represented only a small fraction of the total zooplankton biomass in Slipper Bay, particularly in summer (less than 1%) and fall (less than 1%).

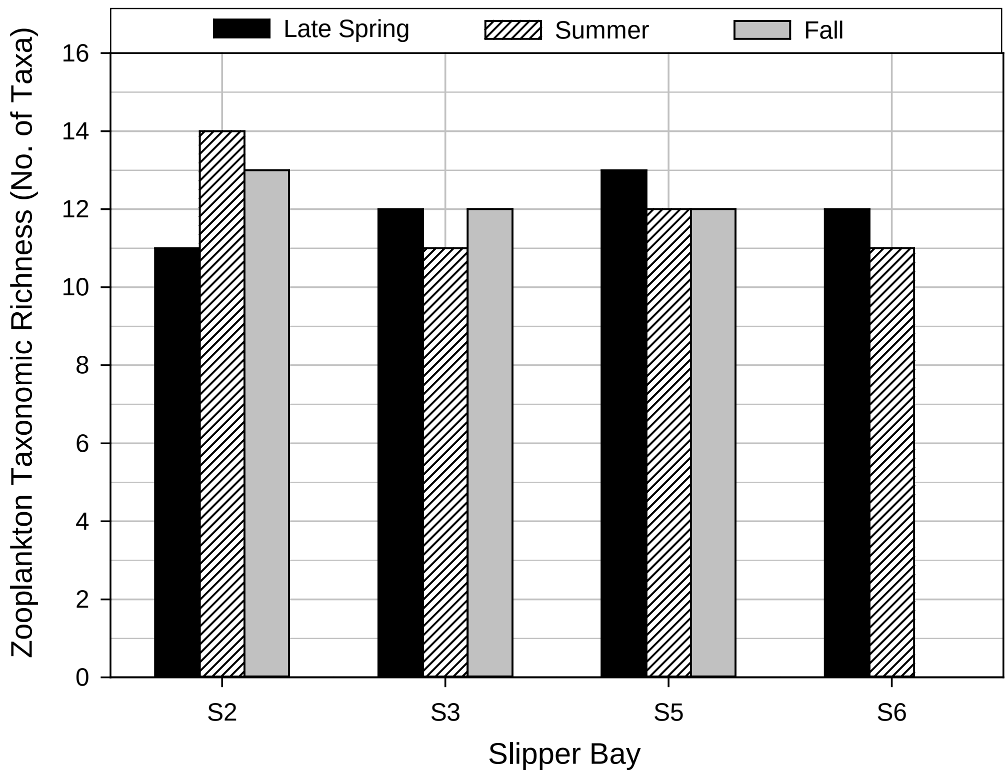
Figure 3.2-9 Relative Zooplankton Biomass in Slipper Bay Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.
% = percent.

In total, 31 zooplankton taxa were identified in Slipper Bay in 2014: 17 rotifers, 8 calanoid copepods, 4 cladocerans, and 2 cyclopoid copepods (Appendix A, Table A-10). There was little seasonal or spatial variability in total zooplankton richness in Slipper Bay throughout the open-water season (Figure 3.2-10). The highest and lowest zooplankton taxonomic richness in Slipper Bay was observed at Station S2 in summer (14 taxa) and late spring (11 taxa), respectively.

Figure 3.2-10 Total Zooplankton Taxonomic Richness in Slipper Bay, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown; fall samples were not collected at Station S6.

No. = number.

3.2.2 Far-field 2 Stations

3.2.2.1 Trophic Status Classification

The discrete water sampling program in the FF2 area of Lac de Gras yielded mean annual concentrations of 0.0048 mg-P/L for TP and 5.8 m for Secchi depth. The corresponding TSI values were 26.8 using TP and 34.6 using Secchi depth, for a rounded average of 30.7. The depth-integrated sampling program yielded mean annual concentrations of 0.0047 mg-P/L for TP, 2.99 µg/L for chlorophyll *a*, and 5.8 m for Secchi depth (Dominion Diamond 2015). The corresponding TSI values were 26.5 using TP, 41.3 using chlorophyll *a*, and 34.6 using Secchi depth, for a rounded average of 34.1.

Based on these TSI values, and the classification system of Vollenweider (1970), the FF2 area of Lac de Gras is classified as oligotrophic. According to the classification system of Carlson (1977), FF2 area is classified as oligotrophic based on TP and Secchi depth and mesotrophic based on chlorophyll *a*. The FF2 area can also be classified as oligotrophic (i.e., between 0.004 and 0.01 mg-P/L), based on CCME (2004) TP trigger ranges for Canadian lakes.

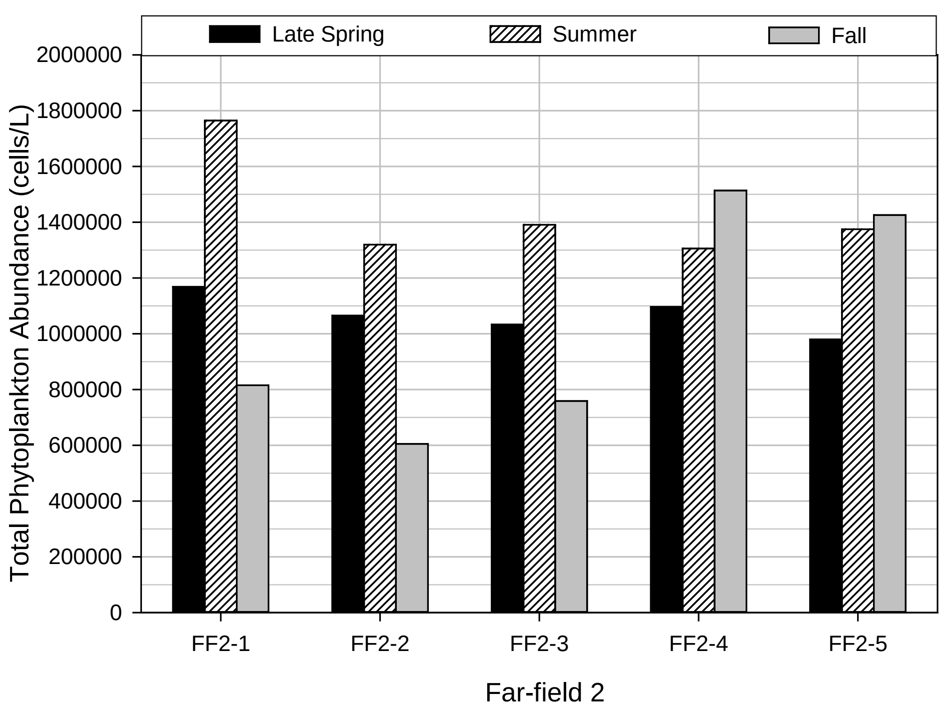
3.2.2.2 Phytoplankton

Abundance and Biomass

Total phytoplankton abundance in the FF2 area varied seasonally and spatially (Figure 3.2-11). Peaks in total phytoplankton abundance occurred in the summer at stations FF2-1, FF2-2, and FF2-3. Station FF2-1 had higher total phytoplankton abundance in the summer (1,764,661 cells/L), compared to the other stations (1,306,209 to 1,391,157 cells/L). The relatively high abundance observed at Station FF2-1 in late spring was largely driven by the chrysophyte, *Ochromonas* spp. and the cyanobacteria, *Leptolyngbya* sp. and *Aphanothece clathrata*. At stations FF2-1, FF2-1, and FF2-3, phytoplankton abundance was higher in the late spring (1,033,300 to 1,168,780 cells/L) compared to fall (605,545 to 815,498 cells/L). Total phytoplankton abundance in fall was highest at stations FF2-4 (1,514,140 cells/L) and FF2-5 (1,426,239 cells/L). Station FF2-4 exhibited an increasing trend throughout the open-water season, while Station FF2-5 exhibited little variation in total phytoplankton abundance between summer (1,375,229 cells/L) and fall (1,426,239 cells/L).

The timing of seasonal peaks in phytoplankton abundance appears to follow a spatial gradient, possibly related to the inflow of more productive waters from Lac du Sauvage. Phytoplankton abundance peaked during fall at the stations located closest to the outflow from Lac du Sauvage (i.e., FF2-4 and FF2-5), while abundance peaked in summer at the stations located furthest from the Lac du Sauvage outflow (i.e., FF2-1 and FF2-2).

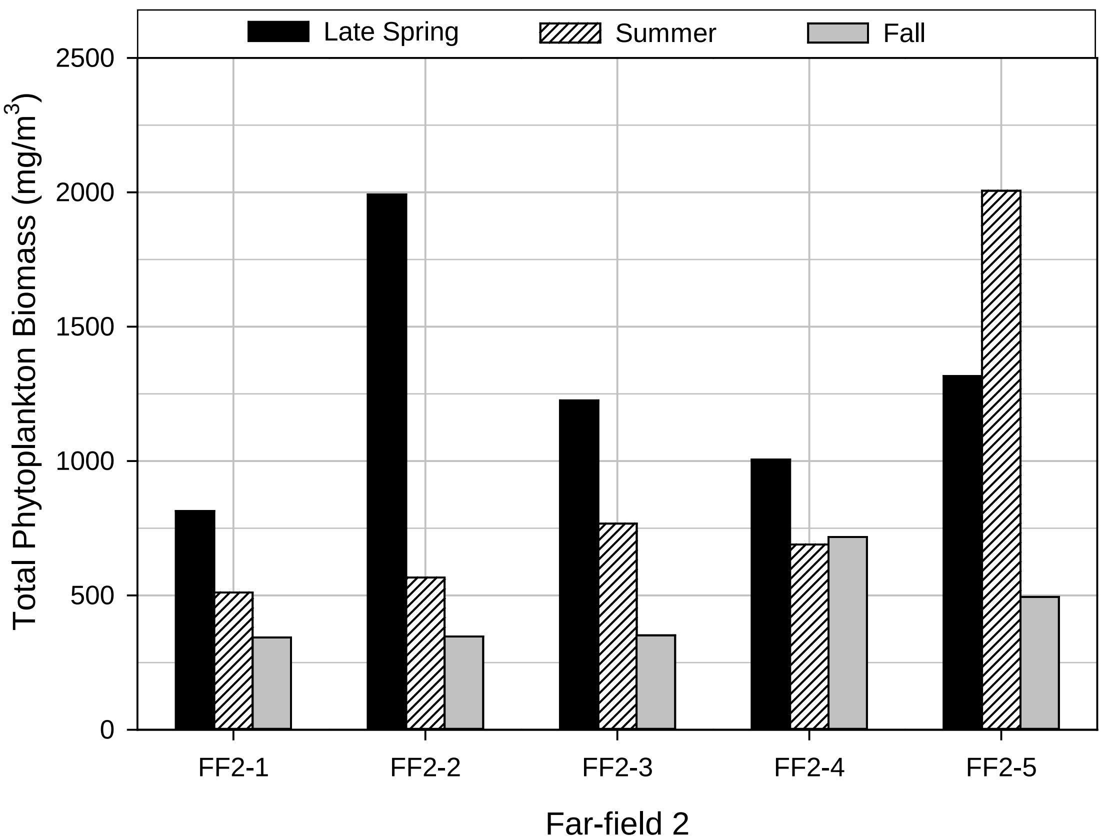
Figure 3.2-11 Total Phytoplankton Abundance in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown.
cells/L = cells per litre.

Seasonal and spatial variability were observed in total phytoplankton biomass in the FF2 area (Figure 3.2-12). Total phytoplankton biomass was highest in late spring (1,006 to 1,993 mg/m^3), with the exception of Station FF2-5 (814 mg/m^3). Total phytoplankton biomass decreased throughout the open-water season at stations FF2-1, FF2-2, and FF2-3, from 814 to 1,993 mg/m^3 in late spring to 344 to 351 mg/m^3 in fall. Little variation in phytoplankton biomass was observed at Station FF2-4 between summer (690 mg/m^3) and fall (718 mg/m^3). The highest phytoplankton biomass in the late spring was observed at Station FF2-2 (1,993 mg/m^3). Total phytoplankton biomass peaked in summer at Station FF2-5 (2,006 mg/m^3); biomass values at this station were higher than the other FF2 stations in summer, but comparable to Station FF2-2 in the late spring. The high phytoplankton biomass observed at Station FF2-2 in late spring was largely driven by the chrysophyte, *Dinobryon divergens,* while the high biomass at Station FF2-5 in summer was largely driven by the diatom, *Cyclotella* sp*.* Phytoplankton biomass was generally low at all FF2 stations in fall (344 to 718 mg/m^3).

Figure 3.2-12 Total Phytoplankton Biomass in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014

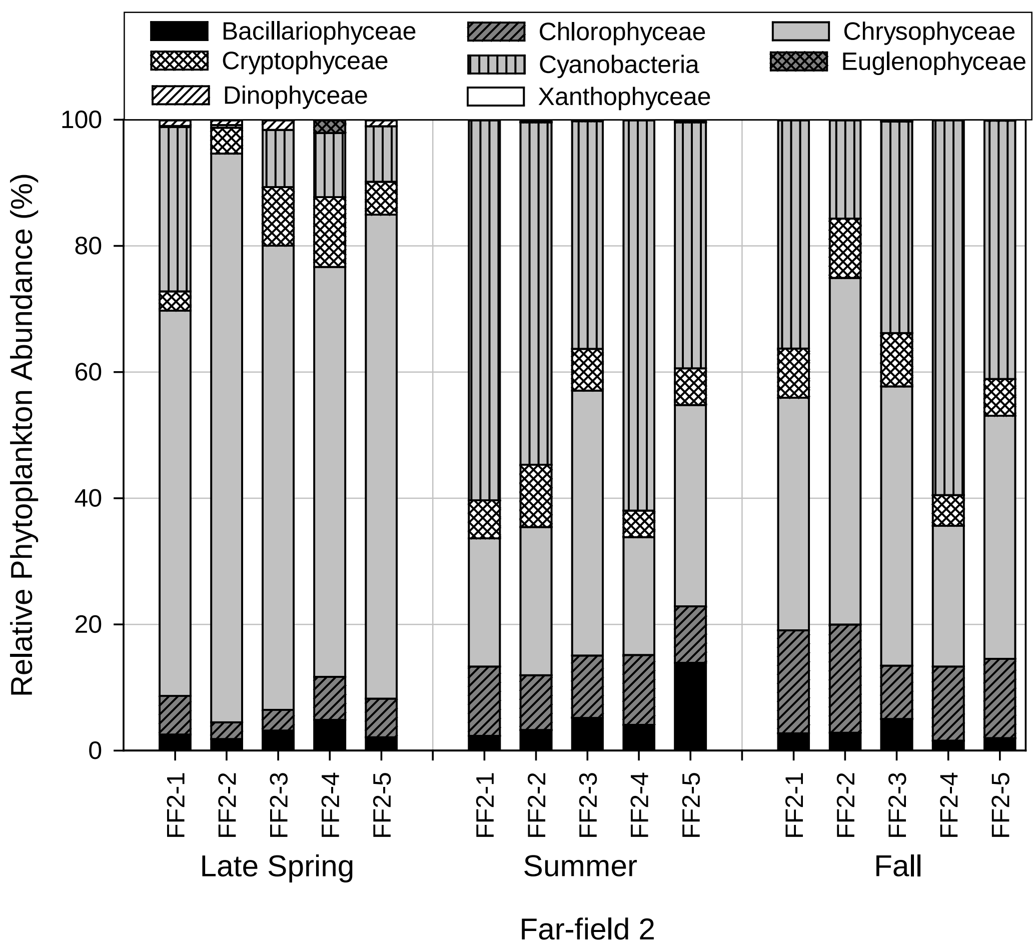


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown.
mg/m^3 = milligrams per cubic metre.

Community Composition

In general, two major taxonomic groups (i.e., chrysophytes and cyanobacteria) dominated the phytoplankton assemblage by abundance in the FF2 area throughout the open-water season, but the percentages of these groups varied among stations and sampling periods (Figure 3.2-13). The phytoplankton community by abundance was co-dominated by cyanobacteria and chrysophytes in summer (36% to 62% and 19% to 42%, respectively) and fall (16% to 60% and 22% to 55%, respectively). Chrysophytes made up the majority of the phytoplankton assemblages in late spring (61% to 90%); cyanobacteria made up a smaller percentage of the community composition in the FF2 area in late spring compared to summer and fall. The remainder of the phytoplankton abundance was made up of varying percentages of chlorophytes (3% to 17%), cryptophytes (3% to 11%), diatoms (2% to 14%), and dinoflagellates (less than 2%). Together, euglenoids and xanthophytes (less than 2%) made up a small fraction of the total phytoplankton abundance in the FF2 area throughout the open-water season.

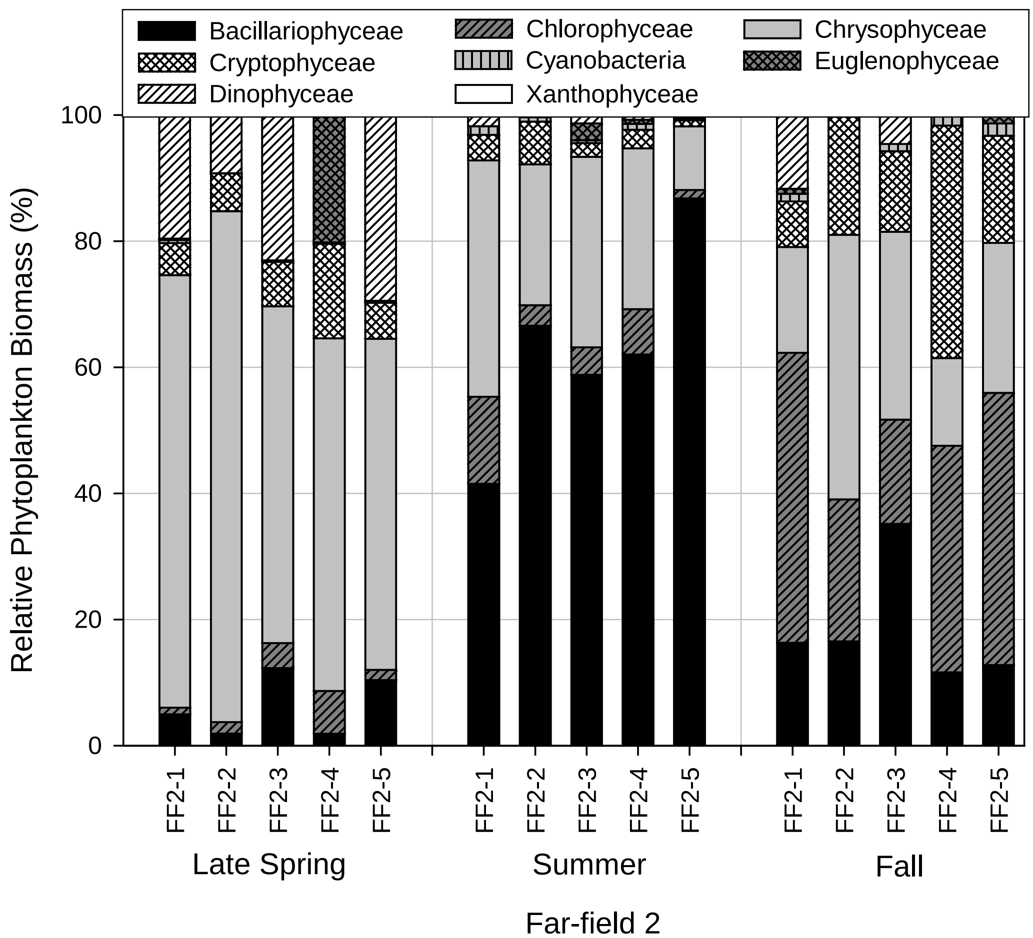
Figure 3.2-13 Relative Phytoplankton Abundance in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown.
% = percent.

Phytoplankton composition by biomass in the FF2 area varied seasonally and spatially (Figure 3.2-14). Chrysophytes (53% to 81%) dominated the phytoplankton community by biomass in late spring. Together, dinoflagellates and cryptophytes made up 15% to 35% of the phytoplankton assemblage by biomass in late spring. Throughout the open-water season, xanthophytes and euglenoids made up a small percentage of the total biomass in the FF2 area, with the exception of Station FF2-4 in the late spring (20% euglenoids). Diatoms (41% to 87%) and chrysophytes (22% to 37%) co-dominated the phytoplankton assemblage by biomass in summer. A mixture of chlorophytes (17% to 46%), chrysophytes (17% to 42%), diatoms (12% to 35%), and cryptophytes (7% to 37%) made up the majority of the phytoplankton biomass in the FF2 area in fall.

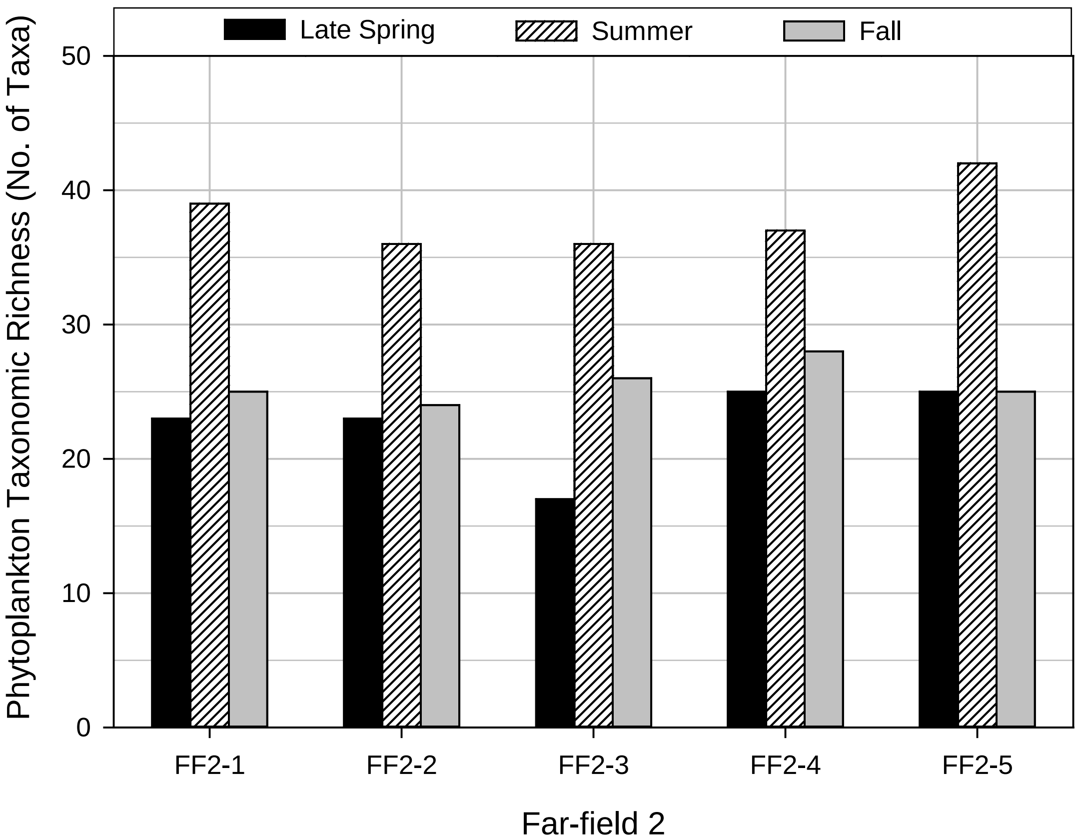
Figure 3.2-14 Relative Phytoplankton Biomass in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown.
% = percent.

In total, 108 phytoplankton taxa were identified in the FF2 area in 2014: 48 chlorophytes, 10 diatoms, 19 cyanobacteria, 15 chrysophytes, 6 dinoflagellates, 6 cryptophytes, 2 euglenoids, and 2 xanthophytes (Appendix A, Table A-6). Seasonal variation in phytoplankton taxonomic richness was observed in this area, but spatial variation was not apparent (Figure 3.2-15). Phytoplankton richness peaked in summer at all stations in the FF2 area (36 to 42 taxa); richness observed in the summer was higher compared to late spring (17 to 25 taxa) and fall (24 to 28 taxa).

Figure 3.2-15 Total Phytoplankton Taxonomic Richness in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown.
No. = number.

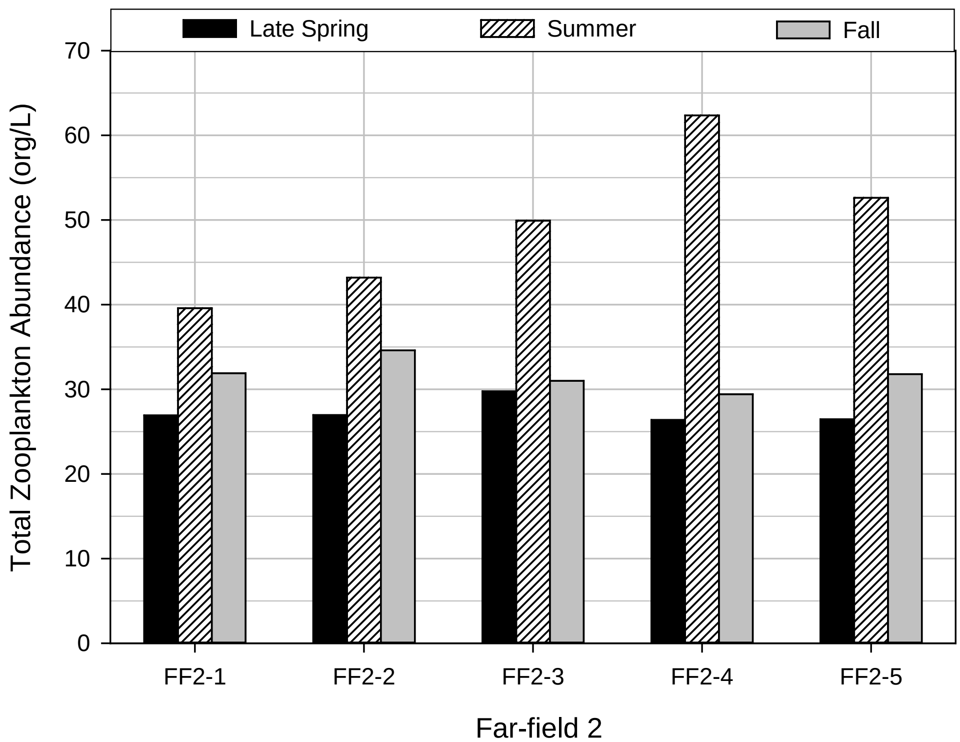
3.2.2.3 Zooplankton

Abundance and Biomass

Stations in the FF2 area showed similar trends in total zooplankton abundance throughout the open-water season (Figure 3.2-16). Total zooplankton abundance peaked in summer at all stations in this area, ranging from 40 to 62 org/L, compared to late spring (26 to 30 org/L) and fall (29 to 35 org/L). The spatial variability in the range of zooplankton abundance in the FF2 area was also greatest in the summer.

During the summer, a spatial gradient in zooplankton abundance was observed in the FF2 area, possibly related to the inflow of more productive waters from Lac du Sauvage. Zooplankton abundance was higher at the stations located closest to the outflow from Lac du Sauvage (i.e., FF2-3, FF2-4, and FF2-5), compared to the stations located further from the Lac du Sauvage outflow (i.e., FF2-1 and FF2-2).

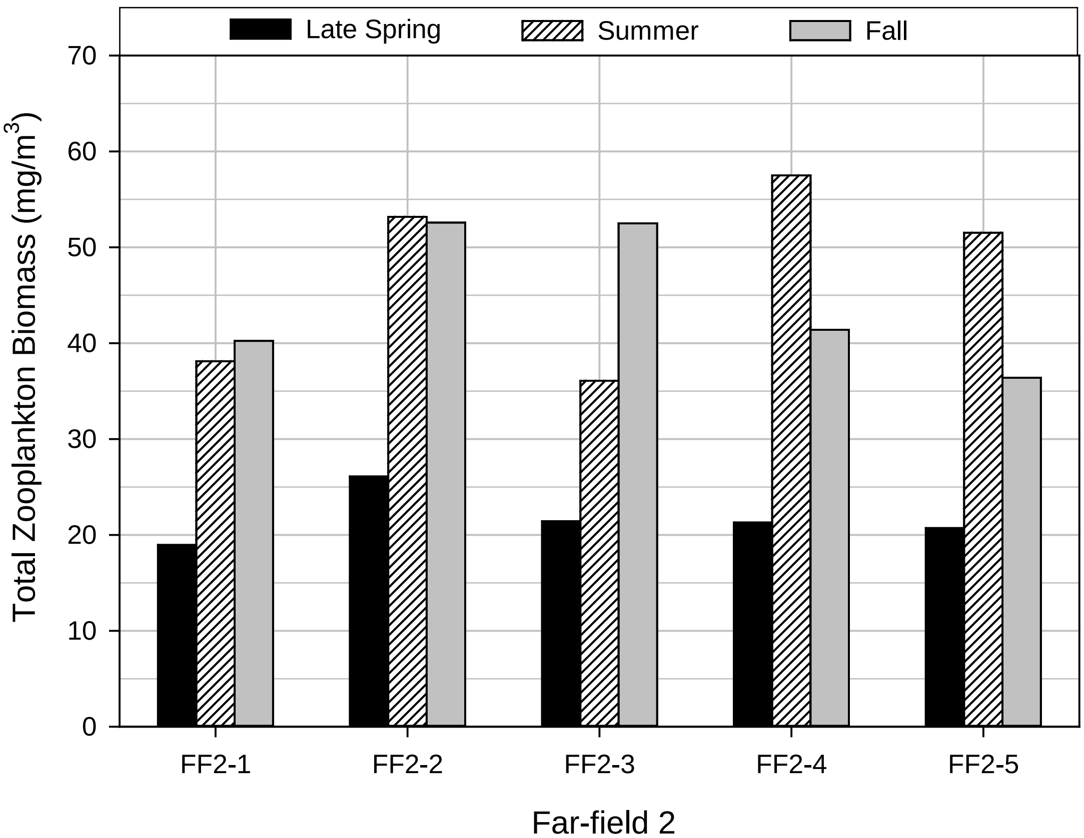
Figure 3.2-16 Total Zooplankton Abundance in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown.
org/L = organisms per litre.

Seasonal and spatial patterns in total zooplankton biomass were observed in the FF2 area (Figure 3.2-17). Total zooplankton biomass at FF2 stations was generally lower in late spring (21 to 26 mg/m^3) compared to summer (36 to 57 mg/m^3) and fall (36 to 53 mg/m^3). At stations FF2-1 and FF2-2, zooplankton biomass increased from late spring (19 mg/m^3 and 26 mg/m^3, respectively) to summer (38 mg/m^3 and 53 mg/m^3, respectively) and then remained steady in fall (40 mg/m^3 and 53 mg/m^3, respectively). A steady increase in zooplankton biomass throughout the open-water season was observed at Station FF2-3 (from 21 to 53 mg/m^3), while biomass peaked in summer at stations FF2-4 (57 mg/m^3) and FF2-5 (52 mg/m^3).

Figure 3.2-17 Total Zooplankton Biomass in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014

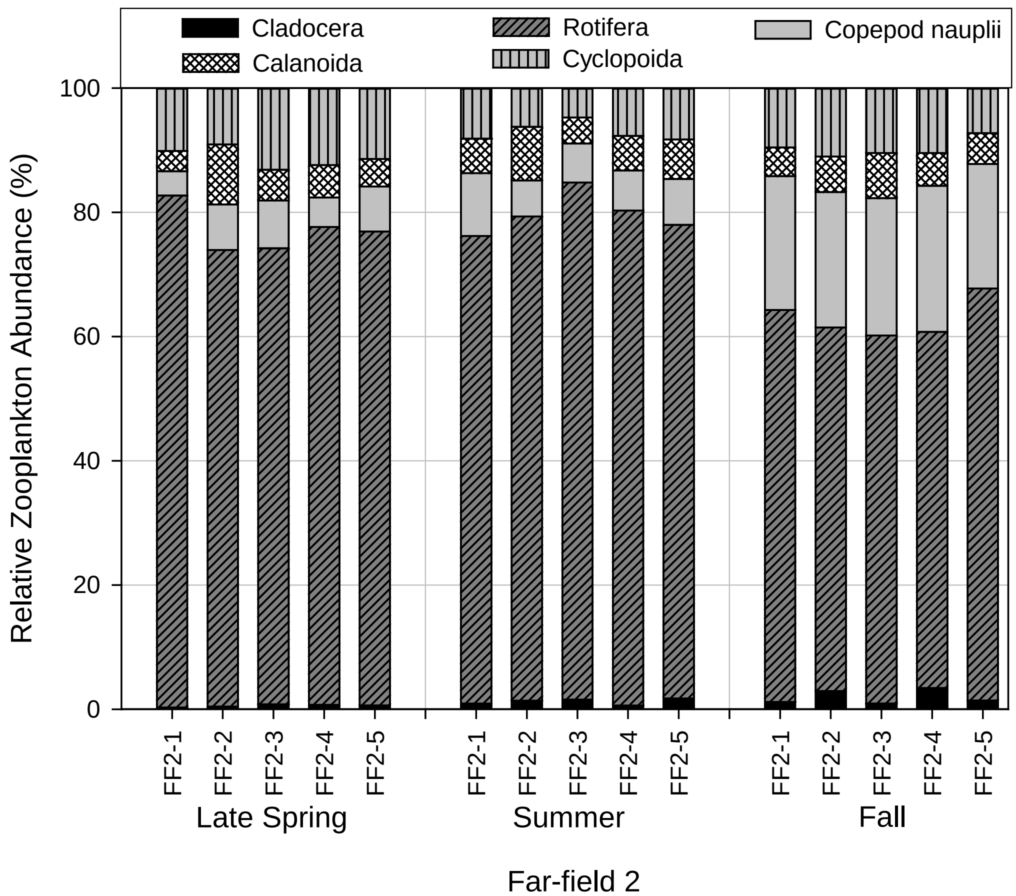


Note: Bars represent a single composite sample collected within the euphotic zone; a mean value for field duplicates are shown.
mg/m^3 = milligrams per cubic metre.

Community Composition

The zooplankton community by abundance in the FF2 area remained relatively consistent throughout the open-water season (Figure 3.2-18). Rotifers dominated the zooplankton abundance at all stations in this area during all three sampling periods (late spring: 73% to 82%; summer 75% to 83%; fall: 57% to 66%). Copepods (including copepod nauplii, cyclopoid copepods and calanoid copepods) made up the majority of the remaining zooplankton abundance throughout the open-water season. The relative proportion of cyclopoid and calanoid copepods at the FF2 stations varied little seasonally. The relative proportion of copepod nauplii at the FF2 stations was higher in fall (20% to 24%) compared to late spring and summer (4% to 7% and 6% to 10%, respectively). Cladocera made up less than 4% of the zooplankton abundance in the FF2 area throughout the open-water season.

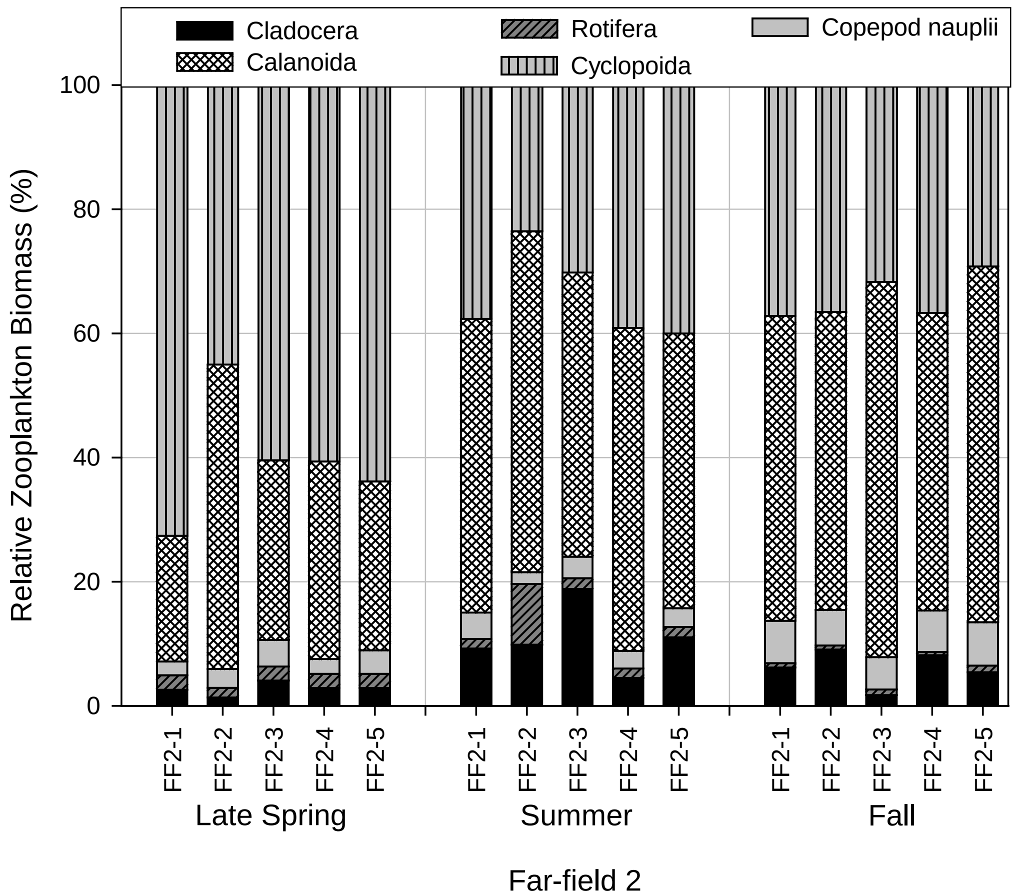
Figure 3.2-18 Relative Zooplankton Abundance in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single a vertical haul taken throughout the water column.
% = percent.

Two major taxonomic groups (i.e., calanoid and cyclopoid copepods) dominated the zooplankton assemblage by biomass at all stations in the FF2 area throughout the open-water season, but the percentages of these groups varied among sampling periods (Figure 3.2-19). Cyclopoid copepods made up a higher percentage of the relative biomass in late spring (45% to 73%) compared to summer and fall (24% to 40% and 29% to 37%, respectively). The proportion of calanoid copepods was higher in summer and fall (44% to 55% and 48% to 60%, respectively) compared to late spring (20% to 49%). Cladocera (1% to 19%), rotifers (1% to 10%), and copepod nauplii (2% to 7%) made up the remaining zooplankton biomass in the FF2 area throughout the open-water season.

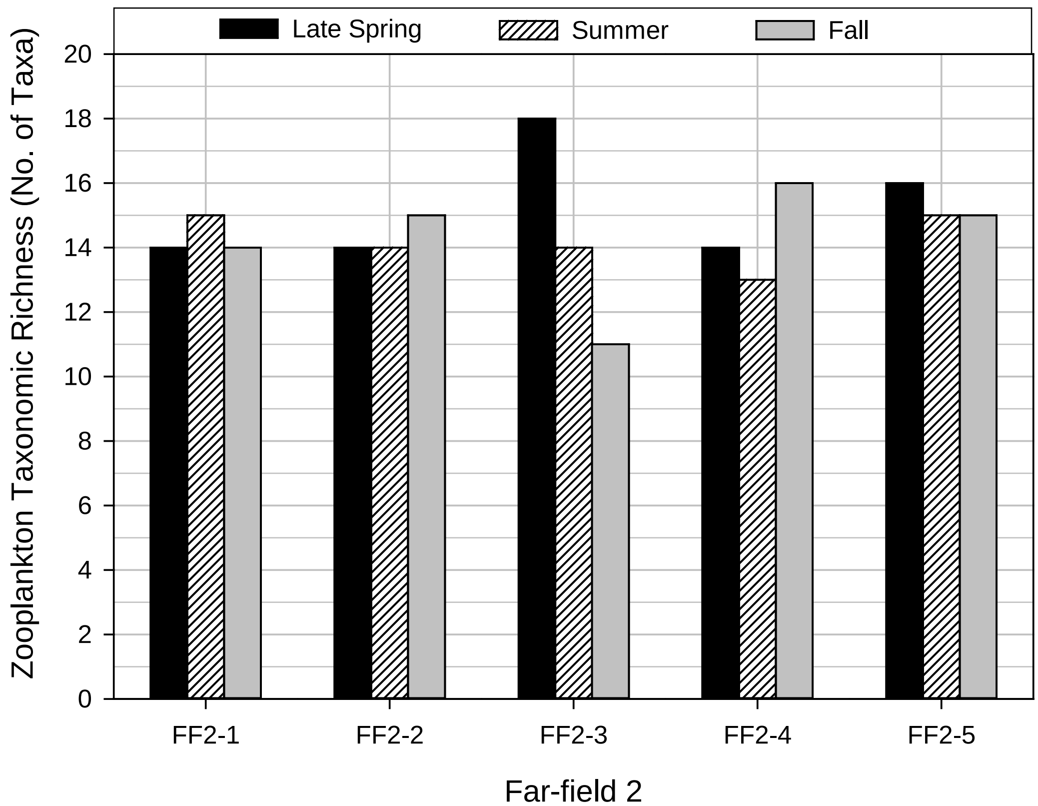
Figure 3.2-19 Relative Zooplankton Biomass in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single a vertical haul taken throughout the water column.
% = percent.

In total, 37 zooplankton taxa were identified in the FF2 area in 2014: 21 rotifers, 8 calanoid copepods, 6 cladocerans, and 2 cyclopoid copepods (Appendix A, Table A-11). With the exception of Station FF2-3, zooplankton taxonomic richness in this area was similar among stations and sampling periods, ranging from 13 to 16 taxa (Figure 3.2-20). At Station FF2-3, zooplankton richness decreased throughout the open-water season from 18 taxa in late spring to 11 taxa in fall.

Figure 3.2-20 Total Zooplankton Taxonomic Richness in Far-Field 2 Area, Lac de Gras, in Late Spring, Summer, and Fall, 2014



Note: Bars represent a single a vertical haul taken throughout the water column; a mean value for field duplicates are shown.
No. = number.

3.2.3 Comparison of 2014 Plankton Data to Previously Collected Data

Results from the 2014 supplemental baseline plankton sampling program were compared to data collected by previous studies in Lac de Gras (stations FF2-2, FF2-5, S2, and S3) to describe the range in temporal variation in plankton communities present in this lake. Historical data for Lac de Gras, previously summarized in Annex XII of the DAR (Dominion Diamond 2014), were obtained from the following sources:

- baseline and long-term AEMP data collected in the FF2 area from 1997 to 2013 for the Diavik Mine (Golder 2011; DDMI 2012, 2013; Golder 2014a,b); and,
- baseline and long-term AEMP data collected in Slipper Bay at stations S2 and S3 from 1997 to 2012 for the Ekati Mine (ERM Rescan 2013).

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Phytoplankton biomass results for Slipper Bay could not be compared in this section, because historical phytoplankton biomass data are not available. In addition, previous estimates of zooplankton biomass were based on wet weight biomass derived from length-weight regressions (FF2 area) and dry weight AFDM estimates (Slipper Bay). Therefore, the historical and recent (i.e., 2012 and 2013) zooplankton biomass data for Lac de Gras were not comparable to the dry weight biomass results from 2014.

3.2.3.1 Trophic Status Classification

Based on the TSI calculations for discrete and depth-integrated TP, Secchi depths, and chlorophyll *a* concentrations from the open-water season in 2014, the trophic status of Slipper Bay was in the oligotrophic range. The FF2 area was also classified as oligotrophic based on Vollenweider (1970) and CCME (2004), and within the range of an oligotrophic to mesotrophic system based on the Carlson (1977) classification. Results are consistent with previous baseline and historical data for Lac de Gras; the FF2 area and Slipper Bay (and Lac de Gras in general) were classified as oligotrophic based on chlorophyll *a* data collected from 1997 to 2012 (Golder 2011; DDMI 2012, 2013; ERM Rescan 2013).

3.2.3.2 Phytoplankton

Based on comparing the previously collected and 2014 phytoplankton data for Lac de Gras, the following conclusions were made:

- Between 1997 and 2012, total phytoplankton abundance ranged from 285,133 to 1,877,100 cells/L at Station S2 and from 194,130 to 1,161,400 cells/L at Station S3. Total phytoplankton abundances observed in Slipper Bay in 2014 (209,568 to 1,631,311 cells/L) were within the historical range.
- In 2014, total phytoplankton abundance in the FF2 area ranged from 605,545 to 1,764,661 cells/L and was within the range observed in this area between 2003 and 2013 (1,228,280 cells/L and 6,254,450 cells/L).
- Between 2003 and 2013, phytoplankton biomass in the FF2 area ranged from 171 mg/m^3 in 2004 to 701 mg/m^3 in 2013. Total phytoplankton biomass in this area in 2014 ranged from 344 to 2,006 mg/m^3, and were generally higher than historical values.
- Cyanobacteria were the dominant group at stations S2 and S3 in 1997 and 1998. Since 1998, chrysophytes, chlorophytes, and diatoms accounted for the majority of the phytoplankton community by abundance at stations S2 and S3. In 2014, seasonal differences were observed in phytoplankton composition by abundance in Slipper Bay; chrysophytes made up the majority of the phytoplankton assemblage in late spring, while chrysophytes and cyanobacteria dominated the phytoplankton assemblage in the summer and fall.
- Chrysophytes and cyanobacteria co-dominated the phytoplankton community by abundance in the FF2 area from 2003 to 2006, and 2008 to 2010, and 2013; in 2007, “others” dominated the community and in 2011 cyanobacteria were dominant. Chrysophytes and cyanobacteria also co-dominated the phytoplankton assemblage by abundance in the FF2 area throughout the open-water season in 2014.
- Between 2003 and 2013, cyanobacteria and chrysophytes generally co-dominated the phytoplankton community by biomass in the FF2 area, while the phytoplankton composition by biomass in 2014 varied seasonally and spatially. Chrysophytes dominated in late spring, diatoms and chrysophytes co-

dominated in summer, and a mixture of chlorophytes, chrysophytes, diatoms, and cryptophytes made up the majority of the phytoplankton biomass in the FF2 area in fall.

Overall, the variation observed in community metrics in the baseline phytoplankton dataset underscores the importance of having multiple years of data to characterize the phytoplankton communities present in the Slipper Bay and FF2 areas of Lac de Gras.

3.2.3.3 Zooplankton

Based on comparing the previously collected and 2014 zooplankton data for Lac de Gras, the following conclusions were made:

- Summer zooplankton abundances at stations S2 and S3 have varied since 1997, ranging between 9 and 41 org/L. Despite seasonal fluctuations, total zooplankton abundance in Slipper Bay in 2014 (9 to 63 org/L) were generally comparable to historical values.
- Historical (i.e., 2008 to 2013) zooplankton abundances in the FF2 area ranged from 5 to 62 org/L. Total zooplankton abundance in this area in 2014 ranged from 26 to 62 org/L and were generally comparable to historical values.
- In general, rotifers dominated the zooplankton community by abundance in Slipper Bay throughout the open-water season in 2014, consistent with historical (i.e., 1997 to 2012) results for stations S2 and S3.
- In 2014, rotifers dominated the zooplankton abundance at all stations in the FF2 area during all three sampling periods, consistent with historical (i.e., 2008 to 2013) results for this area.
- Between 2008 and 2012, the zooplankton community by biomass in the FF2 area was dominated by calanoid copepods; cyclopoid copepods were the sub-dominant group. The same two major taxonomic groups (i.e., calanoid and cyclopoid copepods) co-dominated the zooplankton assemblage by biomass at all stations in this area throughout the open-water season in 2014, while total zooplankton biomass in the FF2 area in 2013 was dominated by a mixture of cladocerans, calanoid copepods, and cyclopoid copepods.

Overall, the variation observed in community metrics in the baseline zooplankton dataset underscores the importance of having multiple years of data to characterize the zooplankton communities present in the Slipper Bay and FF2 areas of Lac de Gras.

3.3 Quality Assurance and Quality Control

Detailed QC results for phytoplankton and zooplankton are presented in Appendix A, Tables A-1 and A-2. Overall, differences between original and QC samples were within the range of variability expected for plankton samples and subsampling variance.

3.3.1.1 Laboratory Quality Control

For phytoplankton QC comparisons, EcoAnalysts re-counted two samples from late spring (stations Ac-1 and FF2-4), two samples from summer (stations Ad-1 and FF2-5), and two samples from fall (stations

Ac-1 and FF2-4). All six phytoplankton QC samples were above the 50% sample similarity criterion (ranging from 83% to 93%). QC results indicate that the dominant phytoplankton taxa (i.e., *Ochromonas* sp., *Komma caudata, and Cyclotella*) were the same in both the original and the QC samples.

For zooplankton QC comparisons, EcoAnalysts re-counted two samples from late spring (stations Ac-4 and S6), two samples from summer (stations FF2-5 and S6), and two samples from fall (stations Ae-1 and S2). All six zooplankton QC samples were above the 50% similarity criterion in both the fine and coarse fractions (ranging from 84% to 99%). QC results indicate that the dominant zooplankton taxa in the coarse fraction (i.e., *Daphnia longiremis*, *Cyclops strenuous*, cyclopoid copepodites, and calanoid copepodites) and fine fraction (i.e., *Kellicottia longispina*, *Keratella cochlearis*, *Conochilus unicornis*, and copepod nauplii) were the same in both the original and QC samples.

Internal QC results indicate that the overall occurrence of dominant taxa was consistent between the original and duplicate samples for phytoplankton and zooplankton. Sample percent similarities met the 50% criterion for all internal laboratory QC comparisons for both phytoplankton and zooplankton. The taxonomist concluded that differences observed between the original and QC samples for phytoplankton and zooplankton were due to sub-sampling variance. Overall, internal QC comparison results by EcoAnalysts suggest that the phytoplankton and zooplankton data are of acceptable quality.

3.3.1.2 Quality Control Data Evaluation

Duplicate phytoplankton and zooplankton samples were collected from stations FF2-5 and S5 in late spring, Stations FF2-4 and S3 in summer, and Station Ac-1 in fall. Only one set of duplicate samples was collected in fall, because of field sampling error.

The Bray-Curtis index values for the phytoplankton samples were acceptable for abundance, and ranged from 0.04 to 0.29 (Appendix A, Tables A-1). For zooplankton abundance, the Bray-Curtis index values ranged from 0.01 to 0.08 and no data required further investigation (Appendix A, Table A-2). For phytoplankton and zooplankton abundance, duplicate samples yielded RPD values lower than 50% in the major taxonomic group comparison (Appendix A, Tables A-1 and A-2).

Overall, differences between original and QC phytoplankton and zooplankton samples were deemed minor, and within the range of variability expected in plankton data. Therefore, QC results indicated that the 2014 phytoplankton and zooplankton data were considered to be of acceptable quality and no data were invalidated.

4 SUMMARY

The 2014 plankton sampling program was designed to supplement the existing plankton baseline dataset. The 2014 program was carried out over three sampling programs (late spring, summer, and fall) during open-water conditions. In total, 18 stations were sampled for plankton across three lakes (Lac du Sauvage, Duchess Lake, and Lac de Gras). A high-level summary of the findings from the 2014 sampling program is provided in this section.

4.1 Trophic Status Classification

Based on the TSI calculations for discrete and depth-integrated TP concentrations, Secchi depths, and chlorophyll *a* concentrations from the open-water season in 2014, the trophic status of Lac du Sauvage and Slipper Bay were oligotrophic, while Duchess Lake was mesotrophic (Table 4.1-1). The FF2 area of Lac de Gras was classified as oligotrophic based on Vollenweider (1970) and CCME (2004), and as oligotrophic to mesotrophic based on the Carlson (1977) classification.

Table 4.1-1 Summary of Baseline Plankton Community, 2014

Community Variable	Lac du Sauvage	Duchess Lake	Lac de Gras	
			Slipper Bay Area	Far-field 2 Area
Trophic Status	oligotrophic	mesotrophic	oligotrophic	oligotrophic to mesotrophic[(a)]
Phytoplankton				
Total Abundance (cells/L)	457,734 to 1,643,909	954,969 to 3,287,508	209,568 to 1,761,738	605,545 to 1,764,661
Total Biomass (mg/m^3)	198 to 1,515	512 to 1,327	59 to 898	344 to 2,006
Total Richness (No. of taxa)	118	42	93	108
Zooplankton				
Total Abundance (org/L)	32 to 95	66 to 76	9 to 63	25 to 67
Total Biomass (mg/m^3)	13 to 152	33 to 41	16 to 53	18 to 59
Total Richness (No. of taxa)	31	19	31	37

a) Oligotrophic system based on Vollenweider (1970) and CCME (2004); oligotrophic to mesotrophic system based on Carlson (1977).

cells/L = cells per litre; mg/m^3 = milligrams per cubic metre; No. = number; org/L = organisms per litre.

4.2 Phytoplankton

Total phytoplankton abundance and biomass varied both within and among lakes in 2014 (Table 4.1-1). Seasonal and spatial variability was observed in total phytoplankton abundance and biomass in Lac du Sauvage, Duchess Lake, and Lac de Gras. Total phytoplankton abundance peaked in the summer at the majority of lake stations, while the timing of peak total phytoplankton biomass was not consistent among lakes.

The range in total phytoplankton abundance was comparable among lakes, with the exception of a peak in total phytoplankton abundance in Duchess Lake. Slipper Bay had the lowest total phytoplankton biomass, consistent with its classification as an oligotrophic system. Lac du Sauvage was also classified as an oligotrophic system; however, the range in total phytoplankton biomass was higher than in Slipper

Bay, because of the occurrence of seasonal peaks. High total phytoplankton biomass was observed in the FF2 area of Lac de Gras, including numerous seasonal peaks greater than 1,000 mg/m^3, reinforcing the oligotrophic to mesotrophic classification. Total phytoplankton biomass in Duchess Lake was lower than in the FF2 area and comparable to Lac du Sauvage (an oligotrophic system), despite being classified as an oligotrophic to mesotrophic system.

The total number of phytoplankton taxa identified in Lac du Sauvage, Duchess Lake, and Lac de Gras ranged from 42 taxa (Duchess Lake) to 118 taxa (Lac du Sauvage). The lower richness in Duchess Lake reflects the lower sampling effort in this lake in 2014 compared to Lac du Sauvage and Slipper Bay. Chrysophytes consistently dominated the community by abundance in Lac du Sauvage and Duchess Lake throughout the open-water season. Chrysophytes also made up the majority of the phytoplankton assemblage by abundance in Slipper Bay and the FF2 area in late spring, while chrysophytes and cyanobacteria co-dominated the phytoplankton assemblage by abundance in these areas of Lac de Gras in summer and fall.

In terms of biomass, the phytoplankton community composition in Lac du Sauvage, Duchess Lake and the FF2 area varied seasonally and spatially throughout the open-water season. However, no consistent trends in dominant major taxonomic groups were identified. Chrysophytes dominated the phytoplankton composition by biomass at the majority of stations in Slipper Bay and Duchess Lake throughout the open-water season.

4.3 Zooplankton

Total zooplankton abundance and biomass varied both within and among lakes in 2014 (Table 4.1-1). Seasonal and spatial variability was observed in total zooplankton abundance and biomass in Lac du Sauvage, Duchess Lake, and Lac de Gras. The timing of seasonal peaks in total zooplankton abundance and biomass were not consistent among lakes. Total zooplankton abundance peaked in summer at Lac du Sauvage and the FF2 area of Lac de Gras, fall in Duchess Lake, and late spring in Slipper Bay. Summer peaks in total zooplankton biomass were observed in Lac du Sauvage and Duchess Lake, while biomass peaked in fall in Slipper Bay; the FF2 area exhibited no consistent seasonal peak.

In general, lakes in the Lac du Sauvage basin (Lac du Sauvage and Duchess Lake) had higher total zooplankton abundance throughout the open-water season compared to lakes in the Lac de Gras basin (Slipper Bay and FF2 area). With the exception of Station S2, Slipper Bay had notably lower zooplankton abundance compared to the FF2 area and Lac du Sauvage basin lakes. Total zooplankton biomass was similar among Slipper Bay, FF2 area, and Duchess Lake, and was generally lower than the biomass observed in Lac du Sauvage.

The total number of zooplankton taxa identified in lakes in the Lac du Sauvage and Lac de Gras basins ranged from 19 taxa (Duchess Lake) to 37 taxa (FF2). The lower richness in Duchess Lake reflects the lower sampling effort in this lake in 2014 compared to Lac du Sauvage and Slipper Bay. Rotifers dominated the zooplankton community by abundance at the majority of stations in Slipper Bay and the FF2 area throughout the open-water season. Rotifers also dominated the zooplankton abundance in Lac du Sauvage in late spring and summer, while the assemblage in fall was co-dominated by rotifers and copepod nauplii. Zooplankton abundance in Duchess Lake was co-dominated by Cladocera and rotifers.

The same two major taxonomic groups (i.e., calanoid and cyclopoid copepods) made up the majority of the zooplankton assemblage by biomass in Slipper Bay and the FF2 area in Lac de Gras throughout the open-water season. The zooplankton community composition by biomass in the Lac du Sauvage basin lakes differed from Lac de Gras basin lakes. In late spring and summer, the zooplankton community by biomass in Lac du Sauvage was co-dominated by Cladocera and cyclopoid copepods, while the assemblage was dominated by cyclopoid copepods in fall. The zooplankton assemblage by biomass in Duchess Lake was dominated by Cladocera.

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6 GLOSSARY

Term	Description
Abundance	The number of individuals in a given area or sample.
Aquatic Effects Monitoring Program	A monitoring program designed to evaluate the effect of mining activities and mitigation on the aquatic environment. Also referred to as an AEMP.
Bacillariophyceae	Diatoms; a group of algae that are encased within a frustule (shell) made of silica; a component of phytoplankton.
Baseline	A base for measurement or comparison.
Biomass	The weight of living matter in a given area or sample.
Bray-Curtis Index	A distance measure used to quantify the compositional dissimilarity between two different communities, based on counts of organisms.
Calanoida	An order of copepods (crustaceans); small animals in the water column that are a component of zooplankton.
Chlorophyll a	The primary photosynthetic pigment contained in the phytoplankton (primary producers; small plants in the water column).
Chlorophyceae	Chlorophytes; Green algae; a component of phytoplankton.
Chrysophyceae	Chrysophytes; Golden-brown algae; a component of phytoplankton.
Cladocera	A group of small planktonic animals (crustaceans) also known as water fleas; a component of zooplankton.
Community composition	The assortment of different organisms that constitute an ecological community.
Composite sample	A sample taken by combining several volumes of water from different depths within the water column of a lake into a common vessel. A composite sample can also be obtained as a combination of samples taken from different parts of a waterbody laterally.
Colonial	Individuals of the same species clustered together to form a group.
Conductivity	A measure of the ability of a solution to conduct electrical current; an indirect measure of the salinity of the water.
Copepoda	An order of planktonic crustaceans; a component of zooplankton.
Cryptophyceae	Cryptophytes; flagellated algae also known as cryptomonads; a component of phytoplankton.
Crustaceans	A large group of primarily aquatic arthropods of the class Crustacea, which are free-living, have a segmented body and an exoskeleton.
Cyanobacteria	Blue-green algae; a component of phytoplankton.
Cyclopoida	An order of copepods (crustaceans); small animals in the water column that are a component of zooplankton.
Depth-integrated composite sample	A sample made up of subsamples of equal volume collected from discrete depths throughout the water column that represents the average composition of the water column.
Dinophyceae	Dinoflagellates; a group of unicellular flagellated algae, many of which are motile; a component of phytoplankton.
Dissolved oxygen	Oxygen dissolved within the water column.
Diversity	A numerical index that incorporates evenness and richness; the diversity index measures the proportional distribution of organisms in the community.
Euglenophyceae	Euglenoids; one of the best-known groups of flagellated algae; a component of phytoplankton.
Euphotic zone	The upper layer of a waterbody as defined by light penetration, with the upper limit determined by the water surface and the lower limit determined as the depth to which sufficient light for photosynthesis can penetrate (nominally 1% of the surface ambient light, measured as photosynthetically active radiation, or PAR).
Eutrophic	Trophic state classification for lakes characterized by high level of productivity and nutrient inputs (particularly total phosphorus).
Headwater	The source of water at the top of a watershed, typically a lake or marsh.
Hydrology	The study of flowing water and effects of flowing water on the Earth's surface, in the soil and underlying

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Term	Description
	rocks, and in the atmosphere.
In situ measurement	The on-site measurement of physical water quality constituents in a waterbody.
Kimberlite	Igneous rocks that originate deep in the Earth's mantle and intrude the Earth's crust. These rocks typically form narrow pipe-like deposits that sometimes contain diamonds.
Kimberlite pipe	A more or less vertical, cylindrical body of kimberlite that resulted from the forcing of the kimberlite material to the Earth's surface.
Mesotrophic	Trophic state classification for lakes characterized by moderate productivity and nutrient inputs (particularly total phosphorus).
Nutrients	Environmental substances (elements or compounds) such as nitrogen or phosphorus, which are necessary for the growth and development of plants and animals.
Oligotrophic	Trophic state classification for lakes characterized by low productivity and nutrient inputs (particularly total phosphorus).
Open-water conditions	The period of time when the surface of a waterbody is completely free of ice.
pH	A measure of the acidity or alkalinity of water.
Photosynthesis	A chemical reaction that occurs in the chloroplasts of algae and plants and involves the conversion of water and carbon dioxide into organic carbon.
Phytoplankton	Small, usually microscopic, plants that live in the water column of lakes and make their food through primary production.
Plankton	Small, often microscopic, plants (phytoplankton) and animals (zooplankton) that live in the open water column of lakes. They are an important food source for many larger animals.
Quality Assurance	Management and technical practices designed so that the data generated are of consistent high quality. They include standardization and review by field and office personnel of procedures used in the collection, transport, and analyses of samples. Also referred to as QA.
Quality Control	Internal techniques used to measure and assess data quality, including samples that are used to detect and reduce systematic and random errors that may occur during field sampling and laboratory procedures. Also referred to as QC.
Relative abundance	The proportional representation of the abundance of each species in a sample or a community.
Relative biomass	The proportional representation of the biomass of each species in a sample or a community.
Richness	The number of different types of animals present in a sample or at a location.
Rotifera	A phylum of microscopic and near-microscopic pseudocoelomate animals; a component of zooplankton.
Secchi depth	A measure of water clarity, measured by lowering a 20 cm diameter disk (Secchi disk) with alternating black and white coloured quadrants. The shallowest depth at which the disk is no longer visible is the Secchi depth.
Specific conductivity	A measure of the capacity of water to conduct an electrical current. It is the reciprocal of resistance. This measurement provides an estimate of the total concentration of dissolved ions in the water (specific conductance is normalized to 25°C).
Stratification	The separation of lakes into three layers: well mixed top layer, middle layer (see Thermocline), and a bottom layer. In freshwater lakes, stratification usually occurs as a result of temperature effects that cause changes in water density. Stratification may also result in vertical variation in water quality.
Taxa	A group of organisms of any taxonomic rank (e.g., family, genus, species).
Taxon	A group of organisms at the same level of the standard biological classification system; the plural of taxon is taxa.
Taxonomic group	Biological organisms that have shared characteristics and are therefore grouped under a common name at a higher taxonomic level.
Total Kjeldahl nitrogen	The sum of organic nitrogen; ammonia (NH3) and ammonium (NH4+).
Total nitrogen	A measurement of the sum of all forms of particulate and dissolved nitrogen in water. Also referred to as TN.
Total phosphorus	A measurement of the sum of particulate and dissolved phosphorus and phosphate in water. Also referred to as TP.
Total richness	The total number of different taxa occupying a given area.
Trophic status	Eutrophication is the process by which lakes are enriched with nutrients, increasing the production of

Term	Description
	rooted aquatic plants and algae. The extent to which this process has occurred is reflected in a lake's trophic classification or status, which can be oligotrophic (nutrient poor), mesotrophic (moderately productive), or eutrophic (very productive).
Waterbody	A general term that refers to rivers, streams, and lakes.
Xanthophyceae	Xanthophytes; yellow-green algae; a component of phytoplankton.
Zooplankton	Small, sometimes microscopic, animals that live in the water column of lakes and mainly eat primary producers (phytoplankton).

APPENDIX A

2014 PLANKTON TAXONOMY DATA

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Abbreviations

Abbreviation	Definition
Dominion Diamond	Dominion Diamond Ekati Corporation
FF	Far-field
Golder	Golder Associates Ltd.
QC	quality control
RPD	relative percent difference
sp.	species
spp.	multiple species

Units of Measure

Unit	Definition
%	percent
cells/L	cells per litre
mg/m^3	milligrams per cubic metre
org/L	organisms per litre

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Table A-1 Quality Control Comparison of Phytoplankton Abundance Data in Duplicate Samples for Lakes in the Jay Project Area, July to September, 2014

Basin	Station	Sampling Period	Major Taxonomic Group	Total Abundance (cells/L)		RPD (%)	Bray Curtis Dissimilarity Index
				Replicate 1	Replicate 2		
Lac de Gras – Far-field 2	FF2-5	Late Spring	Bacillariophyceae	15,086	22,581	10	0.18
			Chlorophyceae	71,852	55,021	7	
			Chrysophyceae	568,336	814,842	9	
			Cryptophyceae	25,998	59,489	20	
			Cyanobacteria	97,528	82,018	4	
			Dinophyceae	15,771	6,824	20	
			Euglenophyceae	0	0	0	
			Xanthophyceae	396	1,034	22	
			Total	**794,966**	**1,041,809**	**7**	
Lac de Gras - Slipper Bay	S5	Late Spring	Bacillariophyceae	20,865	19,193	2	0.15
			Chlorophyceae	15,682	25,326	12	
			Chrysophyceae	612,537	461,872	7	
			Cryptophyceae	19,320	12,631	10	
			Cyanobacteria	2,816	10,800	29	
			Dinophyceae	968	3,831	30	
			Euglenophyceae	0	0	0	
			Xanthophyceae	0	594	50	
			Total	**672,188**	**534,247**	**6**	
Lac de Gras – Far-field 2	FF2-4	Summer	Bacillariophyceae	26,743	86,515	26	0.29
			Chlorophyceae	182,993	83,263	19	
			Chrysophyceae	57,647	485,314	39	
			Cryptophyceae	17,416	102,291	35	
			Cyanobacteria	819,828	747,780	2	
			Dinophyceae	220	2,409	42	
			Euglenophyceae	-	0	0	
			Xanthophyceae	-	0	0	
			Total	**1,104,847**	**1,507,572**	**8**	
Lac de Gras - Slipper Bay	S3	Summer	Bacillariophyceae	11,810	59,462	33	0.13
			Chlorophyceae	161,183	58,643	23	
			Chrysophyceae	734,807	644,239	3	
			Cryptophyceae	114,553	139,958	5	
			Cyanobacteria	735,880	579,866	6	
			Dinophyceae	2,955	18,717	36	
			Euglenophyceae	275	-	50	
			Xanthophyceae	275	0	50	
			Total	**1,761,738**	**1,500,885**	**4**	

Table A-1 Quality Control Comparison of Phytoplankton Abundance Data in Duplicate Samples for Lakes in the Jay Project Area, July to September, 2014

Basin	Station	Sampling Period	Major Taxonomic Group	Total Abundance (cells/L)		RPD (%)	Bray Curtis Dissimilarity Index
				Replicate 1	Replicate 2		
Lac du Sauvage	Ac-1	Fall	Bacillariophyceae	178,134	174,018	1	0.04
			Chlorophyceae	44,088	43,192	1	
			Chrysophyceae	530,442	567,188	2	
			Cryptophyceae	46,396	58,023	6	
			Cyanobacteria	57,071	67,732	4	
			Dinophyceae	17,690	22,935	6	
			Euglenophyceae	-	-	0	
			Xanthophyceae	-	-	0	
			Total	**873,821**	**933,088**	**2**	

Notes: RPD (%) and total abundance values are rounded to the nearest whole number.
cells/L = number of cells per litre; % = percent; RPD = relative percent difference; Late Spring = July; Summer = August; Fall = September; - = not applicable or zero abundance.

Table A-2 Quality Control Comparison of Zooplankton Abundance Data in Duplicate Samples for Lakes in the Jay Project Area, July to September, 2014

Basin	Station	Sampling Period	Major Taxonomic Group	Total Abundance (org/L)		RPD (%)	Bray Curtis Dissimilarity Index
				Replicate 1	Replicate 2		
Lac de Gras – Far-field 2	FF2-5	Late Spring	Cladocera	1	0	26	0.07
			Rotifera	21	19	2	
			Copepoda - nauplii	2	2	9	
			Calanoida	1	1	1	
			Cyclopoida	4	3	9	
			Total	**28**	**25**	2	
Lac de Gras - Slipper Bay	S5	Late Spring	Cladocera	0	0	21	0.07
			Rotifera	8	8	1	
			Copepoda - nauplii	1	2	7	
			Calanoida	2	2	9	
			Cyclopoida	1	2	3	
			Total	**12**	**14**	3	
Lac de Gras – Far-field 2	FF2-4	Summer	Cladocera	0	0	0	0.08
			Rotifera	46	53	4	
			Copepoda - nauplii	3	5	10	
			Calanoida	3	3	0	
			Cyclopoida	4	5	3	
			Total	**57**	**67**	4	
Lac de Gras - Slipper Bay	S3	Summer	Cladocera	0	0	2	0.01
			Rotifera	7	7	0	
			Copepoda - nauplii	2	2	1	
			Calanoida	1	1	2	
			Cyclopoida	1	1	1	
			Total	**12**	**12**	0	
Lac du Sauvage	Ac-1	Fall	Cladocera	3	3	1	0.03
			Rotifera	29	30	1	
			Copepoda - nauplii	14	13	1	
			Calanoida	0	0	6	
			Cyclopoida	7	6	4	
			Total	**53**	**52**	0	

Notes: RPD (%) and total abundance values are rounded to the nearest whole number.
org/L = number of organisms per litre; % = percent; RPD = relative percent difference; Late Spring = July; Summer = August; Fall = September; - = not applicable or zero abundance.

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Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
July	Ab-1	Bacillariophyceae	*Achnanthidium* sp.	6,731	1.11
			Cyclotella sp.	9,424	37.41
			Tabellaria fenestrata	74	0.17
			Tabellaria flocculosa	110	0.31
		Chlorophyceae	*Lagerheimia genevensis*	17,502	0.49
			Monoraphidium irregulare	1,417	0.10
			Monoraphidium tortile	1,012	0.12
			Mougeotia sp.	37	1.04
		Chrysophyceae	*Dinobryon bavaricum*	957	1.85
			Dinobryon bavaricum var. *vanhoeffenii*	129	0.40
			Dinobryon divergens	129	0.33
			Mallomonas sp.	202	0.95
			Ochromonas sp.	352,724	62.37
		Cryptophyceae	*Cryptomonas ovata*	1,822	15.34
			Cryptomonas sp.	4,048	9.14
			Komma caudata	13,463	1.94
		Cyanobacteria	*Anabaena* sp.	19,835	4.64
			Aphanocapsa delicatissima	12,144	0.02
			Chroococcus sp.	5,385	0.18
			Leptolyngbya sp.	37	0.00
		Dinophyceae	*Gyrodinium helveticum*	1,012	18.22
			Peridinium sp.	9,542	88.06
July	Ac-1	Bacillariophyceae	*Asterionella formosa*	2,846	10.15
			Cyclotella sp.	6,351	3.59
			Fragilaria sp.	205	0.19
			Nitzschia sp.	19	0.81
			Surirella sp.	205	0.59
			Tabellaria fenestrata	1,637	15.36
		Chlorophyceae	*Ankistrodesmus falcatus*	1,228	0.35
			Dictyosphaerium pulchellum	3,478	0.43
			Elakatothrix gelatinosa	2,455	0.30
			Lagerheimia genevensis	1,588	0.11
			Monoraphidium tortile	205	0.05
			Roya sp.	818	1.41
			Teilingia granulata	3,832	11.08
			Xanthidium johnsonii	1,588	1.97
		Chrysophyceae	*Chrysocapsa planktonica*	4,334	0.94
			Chrysococcus rufescens	1,588	2.81
			Dinobryon bavaricum	2,920	18.41
			Dinobryon bavaricum var. *vanhoeffenii*	800	2.15

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Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Dinobryon borgei	1,432	7.35
			Dinobryon divergens	1,693	10.95
			Mallomonas sp.	1,432	5.02
			Ochromonas sp.	439,800	50.70
			Synuropsis janei	1,637	3.48
		Cryptophyceae	*Cryptomonas erosa*	5,115	23.22
			Cryptomonas marssonii	1,588	1.50
			Cryptomonas sp.	3,175	1.81
			Komma caudata	7,939	1.13
		Cyanobacteria	*Anabaena* sp.	21,176	12.81
			Chroococcus sp.	4,763	0.16
		Dinophyceae	*Amphidinium* sp.	7,939	5.40
			Gyrodinium helveticum	614	10.03
			Peridinium inconspicuum	1,588	3.18
			Peridinium sp.	2,455	17.50
			Peridinium umbonatum	818	5.75
			Peridinium willei	614	17.40
July	Ac-4	Bacillariophyceae	*Amphora* sp.	220	0.31
			Asterionella formosa	3,300	2.83
			Cyclotella sp.	440	2.71
			Fragilaria sp.	440	0.62
			Navicula sp.	440	0.61
			Nitzschia sp.	220	0.23
			Stauroneis sp.	20	0.86
			Tabellaria fenestrata	1,060	3.57
			Tabellaria flocculosa	520	1.74
		Chlorophyceae	*Botryococcus braunii*	6,160	0.52
			Dictyosphaerium pulchellum	5,280	0.43
			Elakatothrix gelatinosa	880	0.05
			Gonatozygon brebissonii	660	2.55
			Lagerheimia genevensis	11,175	1.10
			Monoraphidium arcuatum	220	0.05
			Monoraphidium komarkovae	3,300	0.70
			Mougeotia sp.	160	2.54
			Roya sp.	1,320	1.05
			Staurodesmus triangularis	220	5.24
			Teilingia granulata	2,040	5.80
		Chrysophyceae	*Chrysocapsa planktonica*	16,762	2.21
			Dinobryon bavaricum	8,773	17.30
			Dinobryon bavaricum var. *vanhoeffenii*	860	1.39

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Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Dinobryon divergens	3,640	13.54
			Mallomonas sp.	1,320	8.78
			Ochromonas sp.	365,968	38.97
			Synuropsis janei	440	0.81
			Uroglenopsis americana	1,200	0.11
		Cryptophyceae	*Cryptomonas erosa*	220	0.60
			Cryptomonas ovata	1,540	13.28
			Cryptomonas sp.	1,397	2.22
			Komma caudata	22,349	3.15
		Cyanobacteria	*Anabaena* sp.	128,553	89.10
			Aphanocapsa delicatissima	39,600	0.13
		Dinophyceae	*Amphidinium* sp.	1,397	1.98
			Peridinium sp.	5,500	25.98
			Peridinium willei	440	28.53
July	Ac-7	Bacillariophyceae	*Asterionella formosa*	2,260	5.97
			Cyclotella sp.	3,841	0.98
			Fragilaria sp.	880	1.01
			Nitzschia sp.	440	0.48
			Tabellaria fenestrata	980	5.62
			Tabellaria flocculosa	220	0.36
		Chlorophyceae	*Euastrum elegans*	440	3.28
			Lagerheimia genevensis	17,286	0.32
			Monoraphidium tortile	4,400	0.44
			Roya sp.	2,200	1.28
			Staurastrum sp.	220	1.44
			Staurastrum spp.	220	9.63
		Chrysophyceae	*Dinobryon bavaricum*	1,500	3.98
			Dinobryon bavaricum var. *vanhoeffenii*	1,800	8.50
			Dinobryon divergens	6,300	16.63
			Ochromonas sp.	522,413	85.32
			Synuropsis janei	8,402	30.98
		Cryptophyceae	*Cryptomonas ovata*	3,300	19.90
			Cryptomonas sp.	19,706	52.53
			Komma caudata	5,762	1.15
		Cyanobacteria	*Anabaena* sp.	73,040	17.69
			Aphanocapsa delicatissima	26,400	0.07
			Chroococcus sp.	11,524	0.39
		Dinophyceae	*Gyrodinium helveticum*	2,640	78.72
			Peridinium sp.	3,080	21.56
			Peridinium willei	1,760	113.89

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
		Xanthophyceae	*Ophiocytium parvulum*	220	1.21
July	Ad-1	Bacillariophyceae	*Cyclotella* sp.	7,529	13.41
			Navicula sp.	2,510	1.51
			Tabellaria fenestrata	255	0.97
		Chlorophyceae	*Euastrum elegans*	647	2.56
			Lagerheimia genevensis	35,135	1.38
			Monoraphidium komarkovae	647	0.20
			Mougeotia sp.	78	0.34
			Roya sp.	1,725	1.80
			Staurastrum sp.	216	2.28
		Chrysophyceae	*Chrysocapsa planktonica*	5,174	1.13
			Chrysocapsella planctonica	5,019	2.35
			Dinobryon bavaricum	1,098	2.72
			Dinobryon bavaricum var. *vanhoeffenii*	314	1.32
			Dinobryon divergens	39	0.15
			Ochromonas sp.	680,110	114.78
			Synuropsis janei	3,156	8.50
		Cryptophyceae	*Cryptomonas ovata*	4,096	27.45
			Komma caudata	7,529	1.21
		Cyanobacteria	*Anabaena circinalis*	1,960	0.38
			Anabaena sp.	19,404	10.58
			Chroococcus sp.	10,039	0.14
		Dinophyceae	*Amphidinium* sp.	2,510	2.54
July	Ae-1	Bacillariophyceae	*Achnanthidium* sp.	18,773	2.12
			Asterionella formosa	1,152	1.76
			Cyclotella sp.	8,046	7.11
			Eunotia sp.	211	3.20
			Fragilaria sp.	1,056	0.76
			Nitzschia sp.	230	13.98
			Tabellaria fenestrata	845	6.81
			Tabellaria flocculosa	19	0.05
		Chlorophyceae	*Euastrum elegans*	211	1.33
			Gloeocystis sp.	2,682	6.90
			Gonatozygon monotaenium	19	0.97
			Lagerheimia genevensis	13,410	0.53
			Monoraphidium komarkovae	1,267	0.41
			Roya sp.	1,056	1.04
			Staurastrum sp.	211	0.29
			Staurastrum spp.	211	1.94
		Chrysophyceae	*Dinobryon bavaricum*	154	0.30

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Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Dinobryon bavaricum var. *vanhoeffenii*	58	0.13
			Dinobryon sp.	8,046	2.68
			Mallomonas sp.	422	0.89
			Ochromonas sp.	737,524	71.81
			Uroglenopsis americana	8,640	0.87
		Cryptophyceae	*Cryptomonas erosa*	1,901	20.74
			Cryptomonas ovata	2,746	25.12
			Cryptomonas sp.	1,056	1.90
			Komma caudata	10,728	1.82
		Cyanobacteria	*Anabaena* sp.	125,523	84.19
		Dinophyceae	*Amphidinium* sp.	5,364	4.42
			Gyrodinium helveticum	211	6.50
			Peridinium sp.	3,802	22.76
		Xanthophyceae	*Ophiocytium parvulum*	211	1.87
August	Aa-1	Bacillariophyceae	*Achnanthidium* sp.	3,361	0.24
			Asterionella formosa	8,104	15.77
			Cocconeis sp.	193	2.99
			Cyclotella sp.	10,083	5.05
			Navicula sp.	385	0.50
			Navicymbula sp.	193	3.43
			Synedra sp.	18	0.05
			Tabellaria fenestrata	3,010	14.15
		Chlorophyceae	*Botryococcus braunii*	11,550	0.60
			Closteriopsis acicularis	3,658	0.50
			Crucigenia tetrapedia	10,083	6.53
			Crucigeniella irregularis	5,390	3.93
			Crucigeniella rectangularis	3,080	2.25
			Dictyosphaerium pulchellum	20,983	2.24
			Elakatothrix sp.	11,238	0.25
			Gloeocystis sp.	3,361	1.92
			Quadrigula closterioides	4,620	0.19
			Scenedesmus sp.	6,722	0.56
			Spondylosium sp.	1,925	6.48
		Chrysophyceae	*Chrysocapsa planktonica*	26,889	7.21
			Chrysocapsella planctonica	46,197	35.46
			Dinobryon bavaricum	473	1.04
			Dinobryon divergens	35,230	130.93
			Ochromonas spp.	648,694	177.55
			Synuropsis janei	7,019	8.57
			Uroglenopsis americana	206,027	16.09

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m³)
		Cryptophyceae	*Chroomonas* sp.	3,746	6.24
			Cryptomonas ovata	11,816	41.45
			Komma caudata	275,611	22.02
		Cyanobacteria	*Anabaena affinis*	525	0.09
			Anabaena circinalis	29,663	9.17
			Anabaena sp.	5,075	1.24
			Anabaena spp.	7,508	1.40
			Chroococcus limneticus	3,080	0.55
			Leptolyngbya sp.	893	0.00
			Merismopedia sp.	121,000	0.29
			Woronichinia naegeliana	14,438	0.06
		Euglenophyceae	*Trachelomonas* sp.	13,444	17.90
August	Ab-1	Bacillariophyceae	*Asterionella formosa*	6,110	15.04
			Cyclotella sp.	2,881	1.01
			Synedra sp.	431	1.49
			Tabellaria fenestrata	3,919	17.58
			Tabellaria flocculosa	263	0.95
		Chlorophyceae	*Closteriopsis acicularis*	206	0.02
			Elakatothrix gelatinosa	975	0.38
			Elakatothrix sp.	17,698	0.40
			Microspora sp.	656	0.62
			Monoraphidium komarkovae	21,640	0.82
			Monoraphidium minutum	2,881	0.01
			Oocystis sp.	2,881	0.54
			Quadrigula closterioides	3,300	0.13
			Roya sp.	7,396	20.70
			Schroederia sp.	1,444	0.42
			Spondylosium sp.	581	2.25
			Staurastrum sp.	206	3.82
			Tetraselmis sp.	2,881	0.45
		Chrysophyceae	*Bitrichia chodatii*	206	0.05
			Chrysocapsella planctonica	63,381	15.02
			Chrysococcus rufescens	17,286	2.66
			Dinobryon bavaricum	1,519	4.08
			Dinobryon divergens	5,644	11.24
			Mallomonas insignis	413	0.27
			Mallomonas sp.	1,650	2.73
			Ochromonas spp.	645,333	132.83
			Uroglenopsis americana	58,875	5.33
		Cryptophyceae	*Cryptomonas ovata*	6,587	14.31

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Komma caudata	115,238	9.59
		Cyanobacteria	*Anabaena* sp.	12,638	3.87
			Aphanocapsa sp.	158,452	0.23
			Leptolyngbya sp.	8,081	0.06
			Merismopedia sp.	34,571	0.14
			Pseudanabaena catenata	750	0.02
		Euglenophyceae	*Trachelomonas* sp.	2,881	2.01
August	Ac-1	Bacillariophyceae	*Achnanthidium* sp.	5,762	0.93
			Asterionella formosa	12,921	31.82
			Cocconeis sp.	1,921	4.98
			Cyclotella sp.	3,841	0.87
			Cymbella sp.	1,921	1.01
			Navicula sp.	3,841	2.06
			Synedra sp.	240	0.33
			Tabellaria fenestrata	9,618	62.25
			Tabellaria flocculosa	160	1.84
		Chlorophyceae	*Botryococcus braunii*	36,080	0.51
			Chlamydomonas sp.	5,762	3.07
			Chlorella ellipsoidea	13,444	4.28
			Crucigenia tetrapedia	3,841	3.73
			Dictyosphaerium pulchellum	9,020	1.36
			Elakatothrix sp.	21,846	1.03
			Gloeocystis sp.	1,921	0.73
			Kirchneriella obesa	600	0.01
			Monoraphidium arcuatum	220	0.02
			Monoraphidium komarkovae	3,300	0.23
			Mougeotia sp.	160	0.40
			Oocystis sp.	880	1.79
			Quadrigula closterioides	3,520	0.18
			Roya sp.	9,561	8.99
			Schroederia sp.	440	0.02
			Sphaerocystis sp.	12,320	0.62
			Spondylosium sp.	2,101	9.92
			Staurodesmus triangularis var. *inflatus*	440	7.71
			Teilingia excavata	440	0.13
			Tetraedron triangulare	1,921	1.38
			Tetrastrum triangulare	7,683	0.26
		Chrysophyceae	*Chrysocapsella planctonica*	59,379	24.76
			Chrysococcus rufescens	21,127	4.15
			Dinobryon bavaricum	2,240	5.91

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m³)
			Dinobryon divergens	2,980	6.66
			Mallomonas insignis	3,241	3.53
			Mallomonas sp.	13,664	39.59
			Ochromonas spp.	205,508	50.25
			Uroglenopsis americana	23,800	2.75
		Cryptophyceae	*Chroomonas* sp.	3,841	4.07
			Cryptomonas ovata	10,162	24.05
			Komma caudata	197,825	13.45
			Rhodomonas sp.	1,921	3.62
		Cyanobacteria	*Anabaena* sp.	9,620	2.11
			Aphanocapsa delicatissima	12,540	0.04
			Leptolyngbya sp.	28,786	0.38
		Dinophyceae	*Amphidinium* sp.	7,683	7.55
			Gymnodinium sp.	2,361	53.62
			Gyrodinium helveticum	220	4.05
			Peridinium inconspicuum	1,921	1.06
			Peridinium umbonatum	5,762	5.15
		Euglenophyceae	*Euglena* sp.	1,100	38.74
			Trachelomonas sp.	1,921	2.38
		Xanthophyceae	*Ophiocytium parvulum*	1,921	0.68
August	Ac-4	Bacillariophyceae	*Achnanthidium* sp.	1,646	0.21
			Asterionella formosa	9,850	18.94
			Pleurosigma sp.	23	14.24
			Synedra sp.	293	0.65
			Tabellaria fenestrata	16,286	74.23
			Tabellaria flocculosa	180	1.15
		Chlorophyceae	*Botryococcus braunii*	4,950	0.03
			Chlorella ellipsoidea	23,048	1.31
			Cosmarium sp.	1,894	4.50
			Dictyosphaerium pulchellum	4,208	0.59
			Elakatothrix sp.	8,070	0.33
			Monoraphidium komarkovae	8,168	0.38
			Oocystis submarina	495	0.08
			Quadrigula closterioides	2,475	0.48
			Roya sp.	5,220	19.42
			Schroederia sp.	1,238	0.26
			Sphaerocystis sp.	13,170	0.19
			Staurastrum sp.	248	4.80
		Chrysophyceae	*Bitrichia chodatii*	495	0.11
			Chrysocapsa planktonica	8,415	0.12

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Chrysocapsella planctonica	69,143	12.58
			Dinobryon bavaricum	3,150	11.89
			Dinobryon divergens	5,400	10.83
			Mallomonas insignis	990	0.78
			Mallomonas sp.	14,816	7.95
			Ochromonas spp.	304,558	43.89
			Uroglenopsis americana	50,400	9.36
		Cryptophyceae	*Komma caudata*	83,959	4.83
		Cyanobacteria	*Anabaena circinalis*	13,500	2.42
			Anabaena sp.	12,353	3.40
			Aphanocapsa delicatissima	12,375	0.05
			Aphanocapsa sp.	24,750	0.10
			Leptolyngbya sp.	2,363	0.00
		Dinophyceae	*Amphidinium* sp.	3,293	4.32
			Gymnodinium sp.	495	5.51
			Peridinium umbonatum	13,170	21.89
		Euglenophyceae	*Trachelomonas* sp.	1,646	0.95
August	Ac-7	Bacillariophyceae	*Asterionella formosa*	24,090	56.13
			Cyclotella sp.	10,109	9.49
			Cymbella sp.	25	0.20
			Eunotia sp.	300	9.69
			Fragilaria sp.	275	0.17
			Navicula sp.	275	1.08
			Synedra sp.	25	0.03
			Tabellaria fenestrata	5,325	38.82
		Chlorophyceae	*Chlamydomonas* sp.	18,195	23.92
			Chlorella ellipsoidea	24,261	4.66
			Elakatothrix gelatinosa	3,300	0.05
			Elakatothrix sp.	16,174	0.43
			Lagerheimia genevensis	4,043	0.03
			Monoraphidium komarkovae	5,500	0.27
			Mougeotia sp.	75	0.39
			Quadrigula closterioides	5,597	1.03
			Roya sp.	11,092	8.27
			Schroederia sp.	275	0.06
			Sphaerocystis sp.	62,271	3.23
			Spondylosium sp.	5,222	41.94
			Teilingia excavata	525	1.00
		Chrysophyceae	*Chrysocapsa planktonica*	6,793	1.79
		Cryptophyceae	*Chroomonas* sp.	2,022	1.37

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Cryptomonas ovata	8,540	25.47
			Komma caudata	157,694	11.23
		Cyanobacteria	*Anabaena affinis*	1,975	0.07
			Anabaena sp.	20,025	3.17
			Aphanocapsa delicatissima	25,625	0.09
			Leptolyngbya sp.	475	0.02
			Phormidium sp.	2,375	0.27
		Dinophyceae	*Amphidinium* sp.	4,043	5.81
			Gyrodinium helveticum	275	4.93
			Peridinium umbonatum	22,239	55.58
			Peridinium willei	275	7.41
		Euglenophyceae	*Trachelomonas* sp.	2,022	1.08
August	Ad-1	Bacillariophyceae	*Asterionella formosa*	7,155	14.71
			Aulacoseira sp.	1,841	1.60
			Cyclotella sp.	1,819	10.43
			Cymbella sp.	248	0.10
			Tabellaria fenestrata	4,725	24.25
		Chlorophyceae	*Chlamydomonas* sp.	15,714	4.29
			Chlorella ellipsoidea	25,143	4.28
			Cosmarium sp.	1,571	0.07
			Dictyosphaerium pulchellum	5,123	1.42
			Elakatothrix gelatinosa	1,868	0.23
			Roya sp.	11,298	44.90
			Sphaerocystis sp.	11,656	2.84
			Spondylosium sp.	1,980	17.36
		Chrysophyceae	*Bitrichia chodatii*	495	0.12
			Chrysocapsa planktonica	9,429	0.39
			Chrysocapsella planctonica	53,837	25.87
			Dinobryon bavaricum	5,869	71.43
			Dinobryon divergens	4,253	19.70
			Mallomonas insignis	4,628	10.71
			Mallomonas multiunca	248	0.26
			Mallomonas sp.	28,533	77.55
			Ochromonas spp.	234,143	71.87
			Uroglenopsis americana	3,600	0.39
		Cryptophyceae	*Cryptomonas ovata*	743	2.04
			Cryptomonas sp.	1,571	0.44
			Komma caudata	91,143	7.37
		Cyanobacteria	*Anabaena* sp.	19,103	1.21
			Aphanocapsa delicatissima	9,900	0.08

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Leptolyngbya sp.	25,245	0.09
			Merismopedia sp.	18,857	0.08
			Woronichinia naegeliana	29,700	0.17
		Dinophyceae	*Gymnodinium* sp.	2,066	28.17
			Peridinium umbonatum	9,429	12.36
		Euglenophyceae	*Trachelomonas* sp.	3,143	1.41
August	Ae-1	Bacillariophyceae	*Asterionella formosa*	8,255	6.48
			Cyclotella sp.	7,683	6.64
			Eunotia sp.	20	0.47
			Synedra sp.	300	0.33
			Tabellaria fenestrata	8,551	40.48
		Chlorophyceae	*Botryococcus braunii*	21,800	1.11
			Botryococcus protuberans	17,600	0.61
			Chlamydomonas sp.	30,730	11.82
			Chlorella ellipsoidea	23,048	4.08
			Cosmarium margaritatum	220	0.54
			Cosmarium sp.	880	1.00
			Dictyosphaerium pulchellum	20,020	4.50
			Elakatothrix gelatinosa	760	0.13
			Elakatothrix sp.	15,383	0.49
			Gloeocystis sp.	2,640	3.26
			Lagerheimia genevensis	3,841	0.15
			Monoraphidium irregulare	4,061	0.05
			Monoraphidium komarkovae	5,280	0.28
			Quadrigula closterioides	3,040	0.66
			Quadrigula sp.	1,840	0.72
			Roya sp.	6,160	4.86
			Sphaerocystis sp.	49,193	1.39
			Spondylosium sp.	880	2.41
			Staurastrum sp.	220	5.38
			Staurodesmus triangularis	220	0.82
			Staurodesmus triangularis var. *inflatus*	660	8.43
			Teilingia excavata	800	0.62
		Chrysophyceae	*Chrysocapsella planctonica*	80,024	35.67
			Dinobryon bavaricum	5,395	12.88
			Dinobryon divergens	5,020	17.71
			Mallomonas insignis	5,381	8.21
			Mallomonas multiunca	3,841	2.44
			Mallomonas sp.	4,281	6.86
			Ochromonas spp.	902,698	180.55

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Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Uroglenopsis americana	100,806	11.68
		Cryptophyceae	*Cryptomonas ovata*	5,601	15.28
			Komma caudata	103,714	7.75
		Cyanobacteria	*Anabaena circinalis*	18,400	3.29
			Anabaena sp.	35,812	9.29
			Aphanocapsa delicatissima	44,000	0.10
			Aphanocapsa elachista	2,000	0.01
			Aphanocapsa sp.	88,349	0.08
		Dinophyceae	*Gymnodinium* sp.	220	2.52
			Peridinium umbonatum	4,281	25.15
September	Aa-1	Bacillariophyceae	*Asterionella formosa*	91,637	232.32
			Cyclotella sp.	2,235	0.57
			Nitzschia sp.	32	0.28
			Tabellaria fenestrata	41,947	182.70
		Chlorophyceae	*Dictyosphaerium pulchellum*	25,344	4.10
			Gonium pectorale	768	0.34
			Monoraphidium tortile	1,232	0.15
			Roya sp.	5,808	12.14
			Spondylosium planum	2,656	2.76
		Chrysophyceae	*Dinobryon divergens*	400	1.48
			Mallomonas sp.	25,816	254.68
			Ochromonas sp.	587,784	242.59
		Cryptophyceae	*Cryptomonas ovata*	11,616	84.82
			Komma caudata	31,289	6.23
		Cyanobacteria	*Anabaena* sp.	288	0.06
			Chroococcus sp.	40,229	0.57
		Dinophyceae	*Amphidinium* sp.	4,470	3.28
			Peridinium sp.	23,232	485.69
September	Ab-1	Bacillariophyceae	*Asterionella formosa*	57,987	159.41
			Eunotia sp.	16	0.99
			Nitzschia sp.	16	0.13
			Tabellaria fenestrata	23,936	186.63
			Tabellaria flocculosa	128	0.27
		Chlorophyceae	*Botryococcus braunii*	9,152	0.93
			Dictyosphaerium pulchellum	39,424	5.89
			Elakatothrix gelatinosa	2,112	0.13
			Monoraphidium tortile	1,232	0.16
			Oocystis sp.	11,175	3.73
			Roya sp.	880	0.75
			Spondylosium planum	832	0.73

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Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Staurodesmus triangularis	528	37.13
		Chrysophyceae	*Chrysocapsella planctonica*	4,470	0.76
			Dinobryon bavaricum	720	1.76
			Dinobryon divergens	80	0.34
			Mallomonas sp.	1,117	0.94
			Ochromonas sp.	271,543	106.54
			Uroglenopsis americana	9,600	1.45
		Cryptophyceae	*Cryptomonas ovata*	528	3.79
			Komma caudata	50,286	8.36
			Rhodomonas sp.	1,117	2.50
		Cyanobacteria	*Anabaena* sp.	2,320	0.78
		Dinophyceae	*Amphidinium* sp.	2,235	1.87
			Peridinium sp.	11,063	177.64
September	Ac-1[(a)]	Bacillariophyceae	*Asterionella formosa*	52,125	142.72
			Cyclotella sp.	13,829	36.19
			Fragilaria sp.	990	1.14
			Tabellaria fenestrata	115,306	214.01
		Chlorophyceae	*Crucigeniella crucifera*	6,914	28.32
			Dictyosphaerium pulchellum	35,640	4.43
			Mougeotia sp.	198	5.04
			Roya sp.	1,386	1.38
			Spondylosium planum	648	0.51
			Staurastrum sp.	198	3.49
		Chrysophyceae	*Dinobryon bavaricum*	342	0.72
			Dinobryon divergens	8,640	8.68
			Mallomonas sp.	14,027	298.24
			Ochromonas sp.	444,243	123.80
			Uroglenopsis americana	16,200	1.83
		Cryptophyceae	*Cryptomonas* sp.	1,927	16.88
			Komma caudata	32,843	5.07
		Cyanobacteria	*Anabaena circinalis*	5,220	1.76
			Anabaena sp.	15,228	9.79
			Chroococcus sp.	20,743	0.47
		Dinophyceae	*Amphidinium* sp.	5,186	6.26
			Peridinium sp.	7,260	187.63
September	Ac-1[(b)]	Bacillariophyceae	*Achnanthidium* sp.	10,243	1.16
			Asterionella formosa	59,180	198.89
			Cyclotella sp.	10,243	3.22
			Fragilaria sp.	220	0.45
			Nitzschia sp.	20	0.07

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Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Tabellaria fenestrata	94,111	319.70
		Chlorophyceae	*Cosmarium* sp.	2,049	2.08
			Dictyosphaerium pulchellum	29,480	3.36
			Lagerheimia genevensis	6,146	0.13
			Mougeotia sp.	100	0.41
			Oocystis sp.	4,317	16.13
			Roya sp.	1,100	1.57
		Chrysophyceae	*Chrysocapsella planctonica*	10,243	1.93
			Dinobryon bavaricum	23,100	39.36
			Dinobryon divergens	25,474	30.77
			Mallomonas sp.	4,689	85.67
			Ochromonas sp.	491,683	130.31
			Uroglenopsis americana	12,000	3.86
		Cryptophyceae	*Cryptomonas* sp.	660	1.29
			Komma caudata	51,217	8.09
			Rhodomonas sp.	6,146	11.35
		Cyanobacteria	*Anabaena* sp.	55,440	32.38
			Chroococcus sp.	12,292	0.17
		Dinophyceae	*Gyrodinium helveticum*	220	4.61
			Peridinium sp.	14,520	118.67
			Peridinium umbonatum	8,195	16.41
September	Ac-4	Bacillariophyceae	*Achnanthidium* sp.	6,470	0.85
			Asterionella formosa	10,531	25.49
			Cyclotella sp.	4,852	3.22
			Tabellaria fenestrata	12,270	36.21
		Chlorophyceae	*Gonatozygon brebissonii*	20	0.29
			Lagerheimia genevensis	1,617	0.05
			Monoraphidium tortile	3,235	0.26
			Oocystis sp.	3,235	0.85
			Roya sp.	1,100	1.08
			Staurastrum arachne	20	0.31
			Teilingia granulata	1,020	1.62
			Tetraedron incus	3,235	0.16
			Tetrastrum triangulare	6,470	0.42
		Chrysophyceae	*Dinobryon divergens*	40,333	84.51
			Mallomonas sp.	8,087	5.14
			Ochromonas sp.	380,084	55.21
			Uroglenopsis americana	8,000	1.54
		Cryptophyceae	*Cryptomonas ovata*	3,300	33.67
			Cryptomonas sp.	1,617	0.66

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Komma caudata	71,165	10.93
		Cyanobacteria	*Anabaena* sp.	6,520	3.79
			Leptolyngbya sp.	39,600	0.58
		Dinophyceae	*Peridinium* sp.	4,400	37.85
			Peridinium umbonatum	1,617	3.43
September	Ac-7	Bacillariophyceae	*Achnanthidium* sp.	1,383	0.24
			Asterionella formosa	2,970	2.80
			Cyclotella sp.	8,102	39.70
			Nitzschia sp.	18	0.99
		Chlorophyceae	*Cosmarium* sp.	198	1.37
			Dictyosphaerium pulchellum	23,958	1.84
			Monoraphidium komarkovae	198	0.04
			Monoraphidium tortile	1,782	0.24
			Roya sp.	3,564	3.94
		Chrysophyceae	*Dinobryon bavaricum*	18,036	18.15
			Dinobryon divergens	24,750	30.47
			Mallomonas sp.	3,759	44.35
			Ochromonas sp.	356,777	71.22
			Uroglenopsis americana	10,800	2.68
		Cryptophyceae	*Cryptomonas* sp.	2,769	8.68
			Komma caudata	35,954	4.93
		Cyanobacteria	*Anabaena* sp.	30,576	21.08
			Chroococcus sp.	16,594	0.37
		Dinophyceae	*Amphidinium* sp.	1,383	2.27
			Peridinium sp.	4,950	37.14
		Euglenophyceae	*Trachelomonas* sp.	1,383	1.77
September	Ad-1	Bacillariophyceae	*Asterionella formosa*	27,874	78.89
			Cyclotella sp.	4,780	2.27
			Tabellaria fenestrata	6,300	26.05
			Tabellaria flocculosa	140	0.26
		Chlorophyceae	*Monoraphidium komarkovae*	1,848	0.46
			Monoraphidium tortile	770	0.10
			Mougeotia sp.	350	0.59
			Roya sp.	462	0.31
			Spondylosium planum	910	0.78
			Teilingia excavata	910	0.27
		Chrysophyceae	*Dinobryon bavaricum*	294	0.78
			Dinobryon divergens	52,360	55.88
			Mallomonas sp.	3,585	8.65
			Ochromonas sp.	310,716	66.43

Table A-3 Phytoplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Uroglenopsis americana	44,800	5.21
		Cryptophyceae	*Komma caudata*	38,242	5.63
			Rhodomonas sp.	1,195	1.84
		Cyanobacteria	*Anabaena circinalis*	5,600	1.98
			Anabaena sp.	7,868	5.07
			Leptolyngbya sp.	1,260	0.02
			Oscillatoria sp.	644	0.15
		Dinophyceae	*Peridinium* sp.	1,694	11.91
			Peridinium willei	154	10.28
September	Ae-1	Bacillariophyceae	*Asterionella formosa*	28,512	75.18
			Cyclotella sp.	11,645	7.73
			Fragilaria sp.	198	0.24
			Tabellaria fenestrata	14,520	45.98
			Tabellaria flocculosa	162	0.19
		Chlorophyceae	*Dictyosphaerium pulchellum*	21,384	1.76
			Monoraphidium tortile	1,456	0.12
			Roya sp.	990	1.57
			Spondylosium planum	198	0.17
			Staurastrum sp.	396	5.45
			Tetraedron triangulare	2,911	4.45
			Zygnema sp.	108	0.57
		Chrysophyceae	*Dinobryon bavaricum*	1,296	2.61
			Dinobryon divergens	105,461	155.95
			Mallomonas sp.	792	8.84
			Ochromonas sp.	391,567	80.36
			Uroglenopsis americana	32,400	3.38
		Cryptophyceae	*Cryptomonas ovata*	2,970	27.12
			Cryptomonas sp.	9,060	27.51
			Komma caudata	20,379	2.13
			Rhodomonas sp.	1,456	3.95
		Cyanobacteria	*Anabaena circinalis*	18,612	5.81
			Anabaena sp.	3,600	0.99
		Dinophyceae	*Peridinium* sp.	21,780	241.87
			Peridinium willei	594	42.01
		Euglenophyceae	*Euglena* sp.	198	1.11

Notes: Samples were analyzed by EcoAnalysts, Inc.
cells/L = number of cells per litre; mg/m^3 = milligrams per cubic metre; Late Spring = July; Summer = August; Fall = September; sp. = a single species; spp. = multiple species.
a) Replicate 1.
b) Replicate 2.

Table A-4 Phytoplankton Abundance and Biomass in Duchess Lake, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
August	Af-1	Bacillariophyceae	*Achnanthidium* sp.	6,914	2.0
			Asterionella formosa	19,048	23.0
			Cyclotella sp.	13,829	23.7
			Tabellaria fenestrata	4,410	24.4
		Chlorophyceae	*Botryococcus braunii*	52,470	2.8
			Chlorella ellipsoidea	27,657	10.2
			Coelastrum sp.	55,314	3.6
			Cosmarium sp.	743	2.0
			Crucigenia tetrapedia	13,829	10.5
			Crucigeniella irregularis	990	4.9
			Dictyosphaerium ehrenbergianum	4,703	0.8
			Dictyosphaerium pulchellum	9,158	0.6
			Elakatothrix gelatinosa	3,353	0.4
			Monoraphidium arcuatum	248	0.0
			Mougeotia sp.	68	0.8
			Quadrigula closterioides	3,960	0.2
			Roya sp.	743	0.5
			Sphaerocystis sp.	15,593	0.8
			Spondylosium sp.	990	0.9
			Staurastrum sp.	248	3.3
			Xanthidium sp.	6,914	0.2
		Chrysophyceae	*Dinobryon bavaricum*	2,520	7.1
			Dinobryon divergens	163,350	372.9
			Mallomonas insignis	990	0.7
			Ochromonas spp.	1,770,057	544.2
			Synuropsis janei	1,238	1.4
			Uroglenopsis americana	637,843	53.3
		Cryptophyceae	*Chroomonas* sp.	6,914	1.8
			Cryptomonas erosa	743	0.3
			Cryptomonas ovata	5,445	28.3
			Komma caudata	255,829	22.0
		Cyanobacteria	*Anabaena circinalis*	51,705	15.6
			Anabaena sp.	21,668	3.9
			Merismopedia sp.	82,971	0.2
			Woronichinia naegeliana	19,800	0.1
		Dinophyceae	*Gymnodinium* sp.	495	5.7
			Peridinium sp.	4,253	33.1
			Peridinium umbonatum	20,264	119.4
		Euglenophyceae	*Euglena* sp.	248	1.7

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Table A-4 Phytoplankton Abundance and Biomass in Duchess Lake, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
September	Af-1	Bacillariophyceae	*Asterionella formosa*	8,604	13.1
			Cyclotella sp.	27,043	28.7
			Tabellaria fenestrata	128	0.5
		Chlorophyceae	*Cosmarium* sp.	176	2.7
			Dictyosphaerium pulchellum	12,672	1.4
			Micrasterias fimbriata	16	51.3
			Oocystis sp.	31,959	15.0
			Roya sp.	12,227	11.3
		Chrysophyceae	*Dinobryon bavaricum*	11,616	20.6
			Dinobryon divergens	119,680	211.1
			Mallomonas sp.	4,917	9.6
			Ochromonas sp.	543,309	89.5
			Uroglenopsis americana	160	0.0
		Cryptophyceae	*Cryptomonas ovata*	1,232	11.3
			Cryptomonas sp.	2,288	5.7
			Komma caudata	135,213	19.9
		Cyanobacteria	*Chroococcus* sp.	39,335	0.6
		Dinophyceae	*Peridinium* sp.	1,936	14.3
			Peridinium umbonatum	2,458	5.5

Notes: Samples were analyzed by EcoAnalysts, Inc.
cells/L = number of cells per litre; mg/m^3 = milligrams per cubic metre; Late Spring = July; Summer = August; Fall = September; sp. = a single species; spp. = multiple species.

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
July	S2	Bacillariophyceae	*Asterionella formosa*	6,434	19.3
July	S2	Bacillariophyceae	*Fragilaria* sp.	197	1.1
July	S2	Bacillariophyceae	*Tabellaria fenestrata*	98	0.3
July	S2	Bacillariophyceae	*Tabellaria flocculosa*	328	0.6
July	S2	Chlorophyceae	*Ankistrodesmus falcatus*	2,165	0.5
July	S2	Chlorophyceae	*Elakatothrix gelatinosa*	361	0.0
July	S2	Chlorophyceae	*Lagerheimia genevensis*	5,040	0.1
July	S2	Chlorophyceae	*Monoraphidium irregulare*	722	0.1
July	S2	Chlorophyceae	*Monoraphidium komarkovae*	18,318	3.0
July	S2	Chlorophyceae	*Roya* sp.	1,984	2.6
July	S2	Chrysophyceae	*Dinobryon bavaricum*	2,624	4.6
July	S2	Chrysophyceae	*Dinobryon divergens*	2,460	7.2
July	S2	Chrysophyceae	*Ochromonas* sp.	690,445	110.1
July	S2	Cryptophyceae	*Cryptomonas ovata*	5,051	50.9
July	S2	Cryptophyceae	*Cryptomonas* sp.	19,629	70.4
July	S2	Cryptophyceae	*Komma caudata*	35,278	5.7
July	S2	Cryptophyceae	*Rhodomonas* sp.	2,520	6.4
July	S2	Cyanobacteria	*Anabaena* sp.	459	0.2
July	S2	Cyanobacteria	*Leptolyngbya* sp.	3,969	0.1
July	S2	Dinophyceae	*Amphidinium* sp.	7,560	5.5
July	S2	Dinophyceae	*Peridinium* sp.	2,886	24.5
July	S3	Bacillariophyceae	*Achnanthidium* sp.	5,106	1.0
July	S3	Bacillariophyceae	*Asterionella formosa*	792	1.1
July	S3	Bacillariophyceae	*Cyclotella* sp.	2,177	9.1
July	S3	Bacillariophyceae	*Fragilaria* sp.	29	0.1
July	S3	Chlorophyceae	*Ankistrodesmus falcatus*	5,702	1.6
July	S3	Chlorophyceae	*Cosmarium* sp.	5,106	1.2
July	S3	Chlorophyceae	*Monoraphidium komarkovae*	10,454	3.4
July	S3	Chlorophyceae	*Spirogyra* sp.	43	0.3
July	S3	Chlorophyceae	*Tetraedron incus*	6,808	0.4
July	S3	Chrysophyceae	*Dinobryon bavaricum*	3,312	8.5
July	S3	Chrysophyceae	*Dinobryon divergens*	52,272	275.3
July	S3	Chrysophyceae	*Ochromonas* sp.	459,534	83.7
July	S3	Cryptophyceae	*Cryptomonas* sp.	1,109	3.4
July	S3	Cryptophyceae	*Komma caudata*	32,338	5.3
July	S3	Dinophyceae	*Peridinium* sp.	792	11.3
July	S5[(a)]	Bacillariophyceae	*Achnanthidium* sp.	13,521	2.5
July	S5[(a)]	Bacillariophyceae	*Cyclotella* sp.	6,763	21.3
July	S5[(a)]	Bacillariophyceae	*Nitzschia* sp.	581	0.6

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m³)
		Chlorophyceae	*Ankistrodesmus falcatus*	1,162	0.2
			Monoraphidium arcuatum	194	0.0
			Monoraphidium komarkovae	12,778	2.7
			Monoraphidium tortile	581	0.1
			Roya sp.	194	0.6
			Staurodesmus sp.	774	32.7
		Chrysophyceae	*Chrysocapsella planctonica*	11,590	1.7
			Dinobryon bavaricum	2,640	8.4
			Dinobryon divergens	67,115	400.1
			Ochromonas sp.	531,193	113.7
		Cryptophyceae	*Cryptomonas ovata*	968	7.8
			Cryptomonas sp.	968	2.8
			Komma caudata	17,384	3.3
		Cyanobacteria	*Leptolyngbya* sp.	2,816	0.1
		Dinophyceae	*Peridinium* sp.	968	9.6
July	S5[b]	Bacillariophyceae	*Achnanthidium* sp.	10,057	1.1
			Asterionella formosa	1,386	1.4
			Cyclotella sp.	6,939	39.3
			Fragilaria sp.	792	1.1
			Nitzschia sp.	18	0.1
		Chlorophyceae	*Ankistrodesmus falcatus*	1,584	0.5
			Monoraphidium irregulare	990	0.1
			Monoraphidium komarkovae	21,780	4.9
			Monoraphidium tortile	792	0.1
			Mougeotia sp.	126	2.4
			Spirogyra sp.	54	13.3
		Chrysophyceae	*Dinobryon bavaricum*	576	1.2
			Dinobryon divergens	108,900	375.7
			Mallomonas sp.	396	2.8
			Ochromonas sp.	352,000	83.1
		Cryptophyceae	*Cryptomonas erosa*	2,574	18.8
			Cryptomonas sp.	3,771	4.3
			Komma caudata	6,286	1.2
		Cyanobacteria	*Leptolyngbya* sp.	10,800	0.2
		Dinophyceae	*Amphidinium* sp.	1,257	0.6
			Peridinium sp.	2,574	19.2
		Xanthophyceae	*Ophiocytium cochleare*	594	4.3

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m³)
July	S6	Bacillariophyceae	*Asterionella formosa*	189	0.2
			Cyclotella sp.	2,370	13.0
		Chlorophyceae	*Monoraphidium komarkovae*	5,108	1.2
			Monoraphidium tortile	568	0.1
			Staurodesmus sp.	189	6.8
		Chrysophyceae	*Chrysocapsella planctonica*	4,204	1.8
			Dinobryon bavaricum	52	0.2
			Dinobryon borgei	189	0.4
			Dinobryon divergens	21,001	218.8
			Ochromonas sp.	164,574	29.5
		Cryptophyceae	*Cryptomonas ovata*	378	3.3
			Cryptomonas sp.	1,357	5.8
			Komma caudata	8,409	1.6
		Dinophyceae	*Amphidinium* sp.	601	0.6
			Gyrodinium helveticum	189	13.8
		Xanthophyceae	*Ophiocytium cochleare*	189	0.6
August	S2	Bacillariophyceae	*Achnanthidium* sp.	2,469	0.2
			Asterionella formosa	7,202	7.6
			Cyclotella sp.	42,970	428.5
			Fragilaria sp.	124	0.1
			Tabellaria flocculosa	608	8.2
		Chlorophyceae	*Ankistrodesmus falcatus*	5,693	0.8
			Chlorella ellipsoidea	2,469	0.4
			Cladophora sp.	225	1.5
			Coelastrum sp.	22,224	0.7
			Crucigenia quadrata	7,408	2.5
			Elakatothrix gelatinosa	1,733	0.0
			Elakatothrix sp.	12,347	0.1
			Monoraphidium irregulare	2,469	0.1
			Monoraphidium komarkovae	4,331	0.3
			Monoraphidium minutum	2,469	0.0
			Mougeotia sp.	225	0.9
			Oocystis submarina	9,878	0.7
			Quadrigula sp.	5,310	1.2
			Roya sp.	1,114	1.2
			Scenedesmus sp.	9,878	0.5
			Sphaerocystis sp.	36,608	39.4
			Spondylosium sp.	371	0.7
			Tetraedron incus	2,469	0.1

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Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
		Chrysophyceae	*Chrysocapsella planctonica*	16,425	7.0
			Dinobryon bavaricum	12,925	32.7
			Dinobryon divergens	4,208	18.1
			Mallomonas insignis	619	0.5
			Mallomonas sp.	2,469	2.1
			Ochromonas spp.	543,265	290.7
		Cryptophyceae	*Cryptomonas ovata*	3,336	6.1
			Cryptomonas sp.	6,795	15.3
			Komma caudata	113,592	7.0
		Cyanobacteria	*Aphanocapsa delicatissima*	31,725	0.1
			Aphanocapsa holsatica	13,725	0.1
			Aphanocapsa sp.	84,263	0.4
			Aphanothece clathrata	59,175	0.3
			Leptolyngbya sp.	214,376	3.2
			Woronichinia naegeliana	3,094	0.0
		Dinophyceae	*Gymnodinium* sp.	4,939	6.9
			Gyrodinium helveticum	248	5.6
			Peridinium umbonatum	2,469	6.3
August	S3[a]	Bacillariophyceae	*Asterionella formosa*	2,325	2.2
			Cyclotella sp.	7,560	77.1
			Synedra sp.	1,375	1.3
			Tabellaria flocculosa	550	4.4
		Chlorophyceae	*Ankistrodesmus falcatus*	10,175	0.9
			Botryococcus protuberans	17,200	1.4
			Chlamydomonas sp.	2,955	0.8
			Cosmarium margaritatum	275	0.6
			Crucigenia quadrata	17,729	2.0
			Dictyosphaerium pulchellum	5,910	0.4
			Elakatothrix gelatinosa	550	0.0
			Elakatothrix sp.	11,819	0.1
			Gloeocystis sp.	2,955	2.7
			Gonium sp.	4,400	0.2
			Monoraphidium arcuatum	2,955	0.1
			Monoraphidium irregulare	3,230	0.5
			Monoraphidium komarkovae	14,300	0.9
			Oocystis solitaria	2,955	1.9
			Oocystis sp.	17,729	7.8
			Quadrigula sp.	5,910	0.9
			Roya sp.	1,100	0.6

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Sphaerocystis sp.	32,503	0.8
			Spondylosium sp.	625	1.0
			Tetraedron incus	5,910	0.2
		Chrysophyceae	*Bitrichia chodatii*	550	0.3
			Dinobryon bavaricum	4,625	19.7
			Dinobryon divergens	3,500	12.8
			Mallomonas insignis	2,200	1.5
			Ochromonas spp.	718,022	441.3
			Pseudokephyrion sp.	2,955	0.8
			Synuropsis janei	2,955	2.6
		Cryptophyceae	*Cryptomonas ovata*	1,375	2.2
			Cryptomonas sp.	9,760	19.0
			Komma caudata	103,419	6.6
		Cyanobacteria	*Aphanocapsa delicatissima*	101,750	0.2
			Aphanocapsa holsatica	18,750	0.1
			Aphanocapsa sp.	428,127	2.0
			Aphanothece clathrata	33,000	0.1
			Leptolyngbya sp.	119,053	1.3
			Merismopedia warmingiana	35,200	0.0
		Dinophyceae	*Gymnodinium* sp.	2,955	5.8
		Euglenophyceae	*Trachelomonas* sp.	275	0.6
		Xanthophyceae	*Ophiocytium cochleare*	275	0.5
August	S3[b]	Bacillariophyceae	*Asterionella formosa*	2,283	1.2
			Cyclotella sp.	55,639	527.4
			Fragilaria sp.	303	0.1
			Nitzschia sp.	908	1.3
			Synedra sp.	330	0.6
		Chlorophyceae	*Ankistrodesmus falcatus*	17,545	1.1
			Chlamydomonas sp.	2,817	1.5
			Elakatothrix gelatinosa	5,237	0.9
			Elakatothrix sp.	303	0.0
			Gloeocystis sp.	3,229	4.5
			Monoraphidium irregulare	908	0.0
			Monoraphidium komarkovae	8,773	0.5
			Mougeotia sp.	605	2.6
			Oocystis submarina	11,268	0.7
			Quadrigula closterioides	2,420	1.0
			Roya sp.	1,815	1.1
			Schroederia sp.	303	0.9

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Staurodesmus sp.	605	2.9
			Tetraedron incus	2,817	0.3
		Chrysophyceae	*Chrysocapsella planctonica*	16,127	6.8
			Chrysococcus rufescens	19,719	2.7
			Dinobryon bavaricum	2,255	4.2
			Dinobryon divergens	2,805	9.3
			Mallomonas insignis	3,025	2.1
			Ochromonas spp.	600,006	221.0
			Synuropsis janei	303	0.3
		Cryptophyceae	*Chroomonas* sp.	5,634	0.9
			Cryptomonas ovata	7,563	8.3
			Cryptomonas sp.	0	0.0
			Komma caudata	126,762	11.2
		Cyanobacteria	*Aphanocapsa delicatissima*	79,750	0.4
			Aphanocapsa sp.	98,689	0.4
			Aphanothece clathrata	59,675	0.2
			Aphanothece sp.	126,858	0.6
			Leptolyngbya sp.	122,029	0.8
			Merismopedia sp.	47,491	0.2
			Woronichinia naegeliana	45,375	0.1
		Dinophyceae	*Amphidinium* sp.	14,085	5.3
			Gyrodinium helveticum	1,210	24.2
			Peridinium umbonatum	3,119	20.2
			Peridinium willei	303	3.2
August	S5	Bacillariophyceae	*Asterionella formosa*	225	0.1
			Aulacoseira sp.	3,875	4.9
			Cyclotella sp.	9,883	60.6
			Fragilaria sp.	275	0.2
			Pinnularia sp.	300	11.3
		Chlorophyceae	*Ankistrodesmus falcatus*	3,575	0.4
			Dictyosphaerium pulchellum	1,375	0.3
			Elakatothrix gelatinosa	1,650	0.1
			Elakatothrix sp.	7,683	0.1
			Gloeocystis sp.	1,650	0.5
			Monoraphidium komarkovae	6,325	0.3
			Mougeotia sp.	550	0.8
			Roya sp.	550	0.4
			Scenedesmus sp.	10,243	0.2
			Spondylosium sp.	550	1.6

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Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Staurodesmus sp.	275	1.0
			Staurodesmus triangularis var. *inflatus*	275	1.1
			Tetraedron incus	2,561	0.1
			Xanthidium sp.	2,561	0.4
		Chrysophyceae	*Chrysocapsella planctonica*	14,643	4.7
			Chrysococcus rufescens	2,561	0.4
			Dinobryon bavaricum	125	0.3
			Dinobryon divergens	1,950	5.7
			Mallomonas insignis	1,650	0.7
			Mallomonas sp.	2,561	1.4
			Ochromonas spp.	647,894	183.3
		Cryptophyceae	*Cryptomonas ovata*	3,300	7.2
			Komma caudata	87,069	11.7
		Cyanobacteria	*Anabaena* sp.	1,600	0.3
			Aphanocapsa delicatissima	60,500	0.2
			Aphanocapsa holsatica	22,000	0.1
			Aphanothece sp.	16,500	0.0
			Gloeothece linearis	1,925	0.0
			Leptolyngbya sp.	22,650	0.1
			Merismopedia sp.	40,974	0.1
			Woronichinia naegeliana	49,500	0.2
		Dinophyceae	*Gymnodinium* sp.	275	3.1
			Gyrodinium helveticum	550	17.9
August	S6	Bacillariophyceae	*Asterionella formosa*	90	0.1
			Cyclotella sp.	2,281	21.1
			Synedra sp.	495	0.4
		Chlorophyceae	*Ankistrodesmus falcatus*	2,228	0.3
			Cosmarium sp.	2,034	1.3
			Elakatothrix gelatinosa	4,455	0.5
			Gloeocystis sp.	4,509	2.4
			Monoraphidium komarkovae	6,683	0.5
			Oedogonium sp.	270	1.4
			Oocystis sp.	8,629	19.6
			Quadrigula closterioides	7,155	2.8
			Schroederia sp.	495	0.0
			Sphaerocystis sp.	1,733	1.2
			Spondylosium sp.	1,485	5.9
			Staurodesmus sp.	495	1.7
			Staurodesmus triangularis var. *inflatus*	248	2.9

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Tetraedron sp.	2,034	2.2
		Chrysophyceae	*Bitrichia chodatii*	495	0.2
			Chrysocapsella planctonica	36,605	1.1
			Dinobryon bavaricum	1,688	3.4
			Dinobryon divergens	3,105	17.3
			Mallomonas insignis	2,529	2.7
			Ochromonas spp.	504,336	183.4
		Cryptophyceae	*Chroomonas* sp.	4,067	0.2
			Cryptomonas erosa	2,281	6.2
			Cryptomonas ovata	2,529	3.1
			Cryptomonas sp.	2,776	9.2
			Komma caudata	77,277	10.2
			Rhodomonas sp.	2,034	1.4
		Cyanobacteria	*Aphanocapsa delicatissima*	64,350	0.2
			Aphanocapsa holsatica	23,400	0.1
			Aphanocapsa spp.	34,650	0.1
			Aphanothece clathrata	28,800	0.1
			Aphanothece sp.	23,513	0.1
			Leptolyngbya sp.	47,115	0.2
			Merismopedia tenuissima	35,640	0.0
		Dinophyceae	*Amphidinium* sp.	4,067	1.8
			Gymnodinium sp.	2,034	4.9
September	S2	Bacillariophyceae	*Asterionella formosa*	6,555	20.1
			Cyclotella sp.	6,553	13.3
		Chlorophyceae	*Ankistrodesmus falcatus*	5,632	1.2
			Botryococcus braunii	9,680	0.7
			Crucigenia tetrapedia	15,129	7.7
			Elakatothrix gelatinosa	3,872	0.2
			Hyalotheca dissiliens	640	3.2
			Monoraphidium komarkovae	15,488	3.3
			Monoraphidium tortile	1,408	0.2
			Mougeotia sp.	192	1.2
			Oocystis sp.	11,347	2.6
			Spondylosium planum	352	0.3
			Zygnema sp.	144	2.6
		Chrysophyceae	*Chrysocapsa planktonica*	81,317	13.3
			Chrysocapsella planctonica	11,968	3.5
			Dinobryon bavaricum	45,760	72.4
			Dinobryon divergens	193,600	299.7

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (cells/L)	Biomass (mg/m^3)
			Mallomonas sp.	1,760	15.7
			Ochromonas sp.	368,762	61.3
			Synuropsis janei	7,564	24.3
			Uroglenopsis americana	51,200	8.7
		Cryptophyceae	*Cryptomonas ovata*	2,112	17.4
			Komma caudata	86,990	12.2
		Cyanobacteria	*Anabaena* sp.	1,408	0.4
			Aphanocapsa sp.	453,861	3.7
			Leptolyngbya sp.	212,960	3.4
			Merismopedia sp.	30,257	0.8
September	S3	Bacillariophyceae	*Asterionella formosa*	2,544	7.6
			Cyclotella sp.	7,904	39.3
			Fragilaria sp.	1,584	2.1
		Chlorophyceae	*Ankistrodesmus falcatus*	12,320	3.1
			Botryococcus braunii	16,320	3.0
			Monoraphidium komarkovae	38,720	7.5
			Monoraphidium tortile	3,512	0.5
			Mougeotia sp.	80	1.1
			Spondylosium planum	432	0.5
		Chrysophyceae	*Chrysocapsella planctonica*	50,924	14.4
			Dinobryon divergens	66,880	200.8
			Mallomonas insignis	3,512	2.1
			Ochromonas sp.	359,982	75.8
			Uroglenopsis americana	80	0.0
		Cryptophyceae	*Cryptomonas ovata*	4,048	31.1
			Komma caudata	140,481	24.9
		Cyanobacteria	*Leptolyngbya* sp.	88,880	2.7
September	S5	Bacillariophyceae	*Achnanthidium* sp.	747	0.2
		Chlorophyceae	*Monoraphidium komarkovae*	7,920	1.8
			Monoraphidium tortile	2,990	0.3
			Oocystis sp.	2,990	0.4
			Roya sp.	594	0.5
			Tetraedron incus	2,990	0.2
		Chrysophyceae	*Chrysocapsella planctonica*	5,980	0.5
			Mallomonas insignis	3,737	3.0
			Ochromonas sp.	142,771	39.1
		Cryptophyceae	*Komma caudata*	64,284	10.9
		Cyanobacteria	*Aphanocapsa* sp.	7,200	0.1
			Chroococcus sp.	7,475	0.1

Table A-5 Phytoplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	***Taxonomic Name***	Abundance (cells/L)	Biomass (mg/m^3)
			Leptolyngbya sp.	15,480	0.3
			Merismopedia sp.	41,184	1.4

Notes: Samples were analyzed by EcoAnalysts, Inc.
cells/L = number of cells per litre; mg/m^3 = milligrams per cubic metre; Late Spring = July; Summer = August; Fall = September; sp. = a single species; spp. = multiple species.
a) Replicate 1.
b) Replicate 2.

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
July	FF2-1	Bacillariophyceae	*Asterionella formosa*	3,564	5.0
			Cyclotella sp.	21,275	22.6
			Fragilaria sp.	3,168	3.9
			Tabellaria fenestrata	1,062	7.0
			Tabellaria flocculosa	360	1.8
		Chlorophyceae	*Ankistrodesmus fusiformis*	792	0.3
			Botryococcus braunii	1,188	0.1
			Dictyosphaerium pulchellum	4,752	0.7
			Lagerheimia genevensis	6,382	0.2
			Monoraphidium arcuatum	396	0.1
			Monoraphidium irregulare	14,520	1.0
			Monoraphidium komarkovae	16,335	3.2
			Monoraphidium tortile	13,756	1.1
			Roya sp.	594	1.0
			Tetraedron incus	12,765	1.0
		Chrysophyceae	*Chrysocapsella planctonica*	12,765	3.3
			Dinobryon bavaricum	35,937	109.2
			Dinobryon divergens	116,679	355.4
			Ochromonas sp.	548,888	91.1
		Cryptophyceae	*Cryptomonas* sp.	10,052	37.2
			Komma caudata	25,530	4.3
		Cyanobacteria	*Anabaena* sp.	540	0.2
			Chroococcus sp.	42,549	0.3
			Leptolyngbya sp.	261,360	3.5
		Dinophyceae	*Gyrodinium helveticum*	792	26.6
			Peridinium sp.	10,454	131.2
		Euglenophyceae	*Trachelomonas* sp.	2,127	1.7
		Xanthophyceae	*Ophiocytium parvulum*	198	1.5
July	FF2-2	Bacillariophyceae	*Asterionella formosa*	8,272	12.5
			Cyclotella sp.	6,666	8.0
			Fragilaria sp.	2,688	4.5
			Tabellaria fenestrata	1,636	12.4
			Tabellaria flocculosa	132	0.3
		Chlorophyceae	*Ankistrodesmus falcatus*	827	11.7
			Elakatothrix gelatinosa	414	0.1
			Lagerheimia genevensis	8,888	0.2
			Monoraphidium arcuatum	207	0.0
			Monoraphidium irregulare	3,102	0.2
			Monoraphidium komarkovae	12,408	4.8

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Monoraphidium tortile	1,034	0.1
			Roya sp.	620	1.0
			Staurastrum sp.	414	2.9
			Staurodesmus sp.	207	15.6
		Chrysophyceae	*Dinobryon bavaricum*	282	0.9
			Dinobryon divergens	339,152	1444.5
			Mallomonas sp.	2,429	38.2
			Ochromonas sp.	611,057	91.0
			Synuropsis janei	7,700	40.3
		Cryptophyceae	*Cryptomonas erosa*	3,102	17.6
			Cryptomonas ovata	2,482	29.1
			Cryptomonas sp.	17,935	69.8
			Komma caudata	19,998	3.0
		Cyanobacteria	*Anabaena circinalis*	902	0.3
			Anabaena sp.	1,015	0.3
			Leptolyngbya sp.	1,241	0.0
			Microcystis sp.	1,316	0.1
		Dinophyceae	*Gyrodinium helveticum*	620	20.6
			Peridinium sp.	7,378	91.8
			Peridinium willei	1,034	70.6
		Xanthophyceae	*Ophiocytium cochleare*	19	0.2
July	FF2-3	Bacillariophyceae	*Asterionella formosa*	11,858	18.2
			Cyclotella sp.	15,397	119.7
			Fragilaria sp.	4,312	6.2
			Tabellaria fenestrata	1,052	6.8
		Chlorophyceae	*Monoraphidium arcuatum*	1,294	0.2
			Monoraphidium irregulare	5,390	0.5
			Monoraphidium komarkovae	23,716	5.9
			Monoraphidium tortile	2,372	0.6
			Staurastrum sp.	216	2.6
			Staurodesmus sp.	1,078	38.8
		Chrysophyceae	*Dinobryon bavaricum*	211	0.6
			Dinobryon borgei	216	2.6
			Dinobryon divergens	120,677	491.7
			Mallomonas sp.	3,234	27.5
			Ochromonas sp.	629,354	101.8
			Synuropsis janei	6,642	30.7
		Cryptophyceae	*Cryptomonas erosa*	862	5.0
			Cryptomonas ovata	6,468	63.5

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Cryptomonas sp.	2,587	5.2
			Komma caudata	86,044	12.7
		Cyanobacteria	*Anabaena* sp.	1,725	0.5
			Leptolyngbya sp.	91,908	3.0
		Dinophyceae	*Amphidinium* sp.	2,458	2.6
			Peridinium sp.	14,230	279.1
July	FF2-4	Bacillariophyceae	*Achnanthidium* sp.	23,560	3.9
			Asterionella formosa	4,858	5.3
			Cyclotella sp.	23,560	6.0
			Tabellaria fenestrata	1,104	3.7
		Chlorophyceae	*Ankistrodesmus falcatus*	810	0.5
			Ankistrodesmus fusiformis	405	0.2
			Cosmarium sp.	202	0.6
			Gloeocystis sp.	9,424	1.1
			Lagerheimia genevensis	4,712	0.2
			Monoraphidium irregulare	19,083	2.0
			Monoraphidium komarkovae	33,396	6.1
			Monoraphidium tortile	1,012	0.2
			Roya sp.	1,214	1.5
			Staurodesmus sp.	2,226	56.0
			Tetraedron incus	2,356	0.1
		Chrysophyceae	*Chrysococcus rufescens*	16,492	11.5
			Dinobryon bavaricum	239	0.5
			Dinobryon bavaricum var. *vanhoeffenii*	129	0.3
			Dinobryon divergens	186,208	414.4
			Mallomonas sp.	1,012	10.2
			Ochromonas sp.	508,891	126.2
		Cryptophyceae	*Cryptomonas erosa*	1,417	15.3
			Cryptomonas ovata	14,061	103.3
			Cryptomonas sp.	11,780	11.7
			Komma caudata	91,883	14.9
			Rhodomonas sp.	2,356	5.3
		Cyanobacteria	*Anabaena* sp.	2,576	0.7
			Leptolyngbya sp.	108,944	1.9
		Dinophyceae	*Amphidinium* sp.	11,780	17.7
			Gyrodinium helveticum	2,024	89.1
			Peridinium sp.	8,618	82.0
			Peridinium willei	202	13.0
		Xanthophyceae	*Ophiocytium parvulum*	405	1.1

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
July	FF2-5[(a)]	Bacillariophyceae	*Asterionella formosa*	4,356	5.1
			Cyclotella sp.	8,894	52.3
			Stauroneis sp.	18	0.4
			Tabellaria fenestrata	1,620	9.2
			Tabellaria flocculosa	198	0.4
		Chlorophyceae	*Ankistrodesmus falcatus*	990	0.3
			Ankistrodesmus fusiformis	396	0.1
			Elakatothrix gelatinosa	1,188	0.1
			Gloeocystis sp.	3,457	0.9
			Monoraphidium irregulare	14,520	1.0
			Monoraphidium komarkovae	43,560	8.4
			Monoraphidium tortile	1,188	0.1
			Mougeotia sp.	54	1.8
			Spondylosium planum	594	0.4
			Staurastrum sp.	198	1.8
			Staurodesmus triangularis	792	7.6
			Teilingia granulata	3,186	9.8
			Xanthidium johnsonii	1,729	2.1
		Chrysophyceae	*Dinobryon bavaricum*	1,890	4.5
			Dinobryon divergens	94,295	167.4
			Mallomonas sp.	11,163	55.2
			Ochromonas sp.	449,429	70.5
			Synuropsis janei	11,559	33.8
		Cryptophyceae	*Cryptomonas ovata*	8,712	64.4
			Komma caudata	17,286	2.8
		Cyanobacteria	*Anabaena* sp.	5,922	3.8
			Chroococcus sp.	13,829	0.5
			Leptolyngbya sp.	19,440	0.2
			Merismopedia sp.	41,486	5.2
			Microcystis sp.	6,480	0.8
			Pseudanabaena sp.	10,371	0.2
		Dinophyceae	*Amphidinium* sp.	8,643	20.9
			Gyrodinium helveticum	0	0.0
			Peridinium sp.	6,534	56.3
		Xanthophyceae	*Ophiocytium parvulum*	396	2.4
July	FF2-5[(b)]	Bacillariophyceae	*Cyclotella* sp.	16,583	147.7
			Fragilaria sp.	4,963	5.9
			Tabellaria fenestrata	1,034	6.0
		Chlorophyceae	*Chlorotetraedron incus*	2,626	0.3

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Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Euastrum elegans	207	4.9
			Lagerheimia genevensis	21,008	1.1
			Monoraphidium irregulare	13,649	1.0
			Monoraphidium komarkovae	17,061	5.8
			Spondylosium planum	432	0.4
			Zygnema sp.	38	1.5
		Chrysophyceae	*Dinobryon bavaricum*	4,512	10.5
			Dinobryon bavaricum var. *vanhoeffenii*	545	1.7
			Dinobryon borgei	1,448	3.4
			Dinobryon divergens	119,841	637.1
			Mallomonas sp.	1,241	6.5
			Ochromonas sp.	685,394	144.5
			Synuropsis janei	1,861	8.0
		Cryptophyceae	*Cryptomonas ovata*	2,482	30.3
			Cryptomonas sp.	9,739	37.1
			Komma caudata	47,269	7.9
		Cyanobacteria	*Anabaena* sp.	978	0.4
			Chroococcus sp.	7,878	0.1
			Leptolyngbya sp.	73,162	1.3
		Dinophyceae	*Gyrodinium helveticum*	1,654	64.0
			Peridinium sp.	620	12.6
			Peridinium willei	4,550	404.7
		Xanthophyceae	*Ophiocytium parvulum*	1,034	2.5
August	FF2-1	Bacillariophyceae	*Asterionella formosa*	2,633	3.1
			Cyclotella sp.	31,857	166.4
			Fragilaria sp.	495	0.6
			Synedra sp.	315	0.7
			Tabellaria fenestrata	4,523	39.1
			Tabellaria flocculosa	1,193	2.3
		Chlorophyceae	*Ankistrodesmus falcatus*	5,198	0.3
			Chlamydomonas sp.	6,914	2.6
			Chlorella ellipsoidea	12,100	1.4
			Closteriopsis acicularis	743	0.2
			Crucigenia quadrata	990	0.1
			Crucigeniella rectangularis	6,914	1.3
			Dictyosphaerium pulchellum	4,703	0.3
			Elakatothrix gelatinosa	8,174	5.0
			Elakatothrix sp.	180	0.0
			Gloeocystis sp.	2,471	3.8

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Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m³)
			Monoraphidium irregulare	24,235	0.7
			Monoraphidium komarkovae	20,499	1.0
			Nephrocytium agardhiunum	2,475	0.5
			Oocystis sp.	2,719	19.6
			Quadrigula closterioides	1,238	0.1
			Roya sp.	5,689	5.4
			Sphaerocystis sp.	53,837	13.1
			Spirogyra sp.	90	1.9
			Spondylosium sp.	2,089	5.0
			Staurodesmus incus	1,238	6.1
			Tetraedron incus	31,114	2.5
		Chrysophyceae	*Chrysocapsella planctonica*	8,643	1.0
			Dinobryon bavaricum	13,241	20.1
			Dinobryon divergens	6,395	30.5
			Mallomonas insignis	1,980	2.1
			Ochromonas spp.	326,700	137.9
			Uroglenopsis americana	1,350	0.1
		Cryptophyceae	*Cryptomonas ovata*	9,900	14.8
			Komma caudata	95,071	4.0
			Rhodomonas sp.	1,729	1.9
		Cyanobacteria	*Anabaena* sp.	1,418	0.0
			Aphanocapsa delicatissima	168,188	1.3
			Aphanocapsa elachista	80,438	0.3
			Aphanocapsa sp.	152,350	0.4
			Aphanothece clathrata	298,350	1.5
			Leptolyngbya sp.	294,340	3.1
			Merismopedia punctata	17,820	0.0
			Merismopedia sp.	41,486	0.1
			Woronichinia naegeliana	9,900	0.1
		Dinophyceae	*Gyrodinium helveticum*	743	8.9
August	FF2-2	Bacillariophyceae	*Achnanthidium* sp.	1,729	1.0
			Asterionella formosa	2,318	3.0
			Cyclotella sp.	34,819	356.7
			Synedra sp.	158	0.1
			Tabellaria fenestrata	3,128	11.9
			Tabellaria flocculosa	833	5.0
		Chlorophyceae	*Ankistrodesmus falcatus*	5,198	0.5
			Botryococcus protuberans	14,850	0.7
			Chlamydomonas sp.	1,729	0.2

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Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m³)
			Chlorella ellipsoidea	8,643	1.5
			Closteriopsis acicularis	270	0.3
			Cosmarium sp.	248	0.4
			Dictyosphaerium pulchellum	3,214	1.0
			Elakatothrix gelatinosa	495	0.0
			Elakatothrix sp.	8,643	0.1
			Gloeocystis sp.	1,729	0.5
			Lagerheimia genevensis	1,729	0.2
			Monoraphidium arcuatum	2,471	0.4
			Monoraphidium irregulare	7,779	0.3
			Monoraphidium komarkovae	8,765	0.7
			Oocystis sp.	10,371	0.9
			Roya sp.	743	0.6
			Sphaerocystis sp.	9,900	1.8
			Spondylosium sp.	1,665	5.1
			Staurodesmus triangularis var. *inflatus*	248	0.3
			Tetraedron incus	25,929	3.1
		Chrysophyceae	*Chrysocapsella planctonica*	9,389	3.2
			Dinobryon bavaricum	4,915	13.8
			Dinobryon divergens	4,523	22.6
			Mallomonas insignis	3,461	5.7
			Mallomonas multiunca	248	0.4
			Ochromonas spp.	278,300	70.8
			Synuropsis janei	5,433	9.8
			Uroglenopsis americana	3,600	0.5
		Cryptophyceae	*Chroomonas* sp.	3,457	1.6
			Cryptomonas ovata	9,397	27.8
			Komma caudata	117,543	9.1
		Cyanobacteria	*Aphanocapsa delicatissima*	112,613	0.2
			Aphanocapsa holsatica	66,623	0.3
			Aphanocapsa sp.	255,416	1.0
			Aphanothece clathrata	76,950	0.5
			Aphanothece sp.	40,543	0.2
			Leptolyngbya sp.	164,462	1.8
		Dinophyceae	*Gymnodinium* sp.	5,186	1.4
		Euglenophyceae	*Monomorphina* sp.	248	0.4
August	FF2-3	Bacillariophyceae	*Asterionella formosa*	13,002	19.0
			Cyclotella sp.	54,467	403.7
			Synedra sp.	825	1.6

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Tabellaria fenestrata	3,100	23.7
			Tabellaria flocculosa	400	3.7
		Chlorophyceae	*Ankistrodesmus falcatus*	4,950	0.7
			Botryococcus braunii	11,000	0.9
			Botryococcus protuberans	16,500	1.6
			Chlamydomonas sp.	9,603	3.8
			Chlorella ellipsoidea	9,603	1.7
			Cosmarium margaritatum	275	1.0
			Elakatothrix gelatinosa	300	0.0
			Elakatothrix sp.	7,202	0.1
			Gloeocystis sp.	4,802	1.1
			Monoraphidium arcuatum	2,676	0.1
			Monoraphidium irregulare	7,975	0.4
			Monoraphidium komarkovae	9,900	0.4
			Monoraphidium minutum	2,401	0.1
			Quadrigula closterioides	1,100	0.3
			Roya sp.	5,976	5.1
			Schroederia sp.	550	0.2
			Sphaerocystis sp.	20,603	2.5
			Spondylosium sp.	1,300	5.1
			Staurodesmus incus	275	0.8
			Staurodesmus incus var. *indentatus*	1,100	4.2
			Staurodesmus triangularis	275	2.3
			Tetraedron incus	19,206	1.4
		Chrysophyceae	*Bitrichia chodatii*	550	0.2
			Chrysocapsella planctonica	30,259	13.0
			Dinobryon bavaricum	11,399	48.6
			Dinobryon divergens	8,250	37.0
			Mallomonas insignis	6,050	5.1
			Ochromonas spp.	516,171	123.8
			Uroglenopsis americana	11,900	4.3
		Cryptophyceae	*Cryptomonas ovata*	7,975	11.3
			Komma caudata	84,028	5.5
		Cyanobacteria	*Anabaena* sp.	500	0.1
			Aphanocapsa delicatissima	30,000	0.1
			Aphanocapsa elachista	49,500	0.1
			Aphanocapsa holsatica	20,750	0.0
			Aphanocapsa sp.	132,917	0.8
			Aphanothece clathrata	57,000	0.2

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Aphanothece sp.	5,500	0.0
			Leptolyngbya sp.	176,943	2.1
			Pseudanabaena sp.	12,375	0.2
			Woronichinia naegeliana	16,500	0.0
		Dinophyceae	*Gyrodinium helveticum*	275	8.0
			Peridinium sp.	275	1.8
		Euglenophyceae	*Trachelomonas* sp.	2,676	20.4
August	FF2-4[(a)]	Bacillariophyceae	*Achnanthidium* sp.	4,852	0.9
			Asterionella formosa	6,747	6.4
			Cyclotella sp.	10,584	139.1
			Fragilaria sp.	1,320	0.9
			Tabellaria fenestrata	2,800	46.4
			Tabellaria flocculosa	440	5.0
		Chlorophyceae	*Ankistrodesmus falcatus*	7,920	1.3
			Botryococcus braunii	2,200	0.7
			Chlamydomonas sp.	1,617	0.6
			Chlorella ellipsoidea	8,087	1.1
			Crucigenia quadrata	8,087	1.4
			Dictyosphaerium pulchellum	2,200	0.1
			Elakatothrix gelatinosa	1,980	0.1
			Elakatothrix sp.	4,852	0.1
			Gloeocystis sp.	1,617	0.4
			Lagerheimia genevensis	1,617	0.1
			Monoraphidium arcuatum	3,675	0.2
			Monoraphidium irregulare	6,820	0.3
			Monoraphidium komarkovae	15,400	0.9
			Nephrocytium sp.	880	0.1
			Oocystis sp.	6,470	0.5
			Quadrigula closterioides	4,180	1.7
			Roya sp.	8,295	9.9
			Sphaerocystis sp.	87,029	7.8
			Staurodesmus incus	880	5.8
			Staurodesmus incus var. *indentatus*	440	2.8
			Staurodesmus triangularis	660	4.3
			Tetraedron incus	8,087	0.4
		Chrysophyceae	*Bitrichia chodatii*	440	0.4
			Chrysocapsella planctonica	16,019	2.0
			Dinobryon bavaricum	13,501	22.8
			Dinobryon divergens	8,800	51.4

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Mallomonas insignis	3,597	5.5
			Mallomonas sp.	4,852	3.6
			Ochromonas spp.	1,617	0.7
			Synuropsis janei	220	0.3
			Uroglenopsis americana	8,600	1.0
		Cryptophyceae	*Cryptomonas ovata*	3,597	8.7
			Cryptomonas sp.	880	1.5
			Komma caudata	12,939	1.3
		Cyanobacteria	*Anabaena* sp.	3,480	0.2
			Aphanocapsa delicatissima	138,900	0.5
			Aphanocapsa holsatica	121,300	0.3
			Aphanocapsa sp.	65,843	0.2
			Aphanothece clathrata	63,820	0.2
			Aphanothece sp.	69,300	0.3
			Gloeothece linearis	6,470	0.0
			Leptolyngbya sp.	292,490	2.1
			Merismopedia sp.	58,226	1.2
		Dinophyceae	*Gyrodinium helveticum*	220	4.6
August	FF2-4[(b)]	Bacillariophyceae	*Achnanthidium* sp.	2,134	0.5
			Asterionella formosa	7,025	6.8
			Cyclotella sp.	60,578	558.9
			Synedra sp.	1,375	1.2
			Tabellaria fenestrata	12,928	97.8
			Tabellaria flocculosa	2,475	26.1
		Chlorophyceae	*Ankistrodesmus falcatus*	9,625	1.3
			Chlamydomonas sp.	2,134	1.1
			Crucigenia quadrata	2,134	0.6
			Dictyosphaerium pulchellum	3,025	0.4
			Elakatothrix gelatinosa	1,650	0.0
			Elakatothrix sp.	4,268	0.1
			Lagerheimia genevensis	2,134	0.0
			Monoraphidium arcuatum	7,227	0.3
			Monoraphidium irregulare	5,225	0.2
			Monoraphidium komarkovae	12,467	0.6
			Mougeotia sp.	275	1.0
			Nephrocytium sp.	2,200	0.2
			Oocystis sp.	550	0.1
			Oocystis submarina	6,402	0.2
			Quadrigula closterioides	450	0.1

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m³)
			Quadrigula sp.	925	1.0
			Roya sp.	2,475	1.7
			Spondylosium sp.	4,059	11.7
			Staurastrum sp.	275	1.3
			Staurodesmus triangularis	825	5.1
			Tetraedron incus	14,938	0.9
		Chrysophyceae	*Chrysocapsella planctonica*	19,206	2.0
			Dinobryon bavaricum	9,412	84.7
			Dinobryon divergens	4,725	18.8
			Mallomonas insignis	5,643	9.0
			Mallomonas multiunca	825	1.7
			Mallomonas sp.	2,134	1.1
			Ochromonas spp.	435,344	148.1
			Synuropsis janei	275	0.5
			Uroglenopsis americana	7,750	0.9
		Cryptophyceae	*Chroomonas* sp.	2,134	0.1
			Cryptomonas ovata	8,393	21.7
			Komma caudata	91,764	5.1
		Cyanobacteria	*Anabaena* sp.	5,600	0.3
			Aphanocapsa delicatissima	133,375	0.1
			Aphanocapsa holsatica	12,500	0.0
			Aphanocapsa sp.	221,666	1.1
			Aphanothece clathrata	144,750	0.5
			Aphanothece sp.	13,750	0.0
			Leptolyngbya sp.	216,139	2.0
		Dinophyceae	*Gymnodinium* sp.	2,134	3.5
			Gyrodinium helveticum	275	11.0
August	FF2-5	Bacillariophyceae	*Asterionella formosa*	6,563	6.9
			Cyclotella sp.	180,753	1689.5
			Fragilaria sp.	220	0.1
			Nitzschia sp.	220	0.1
			Tabellaria fenestrata	2,100	13.7
			Tabellaria flocculosa	1,140	31.3
		Chlorophyceae	*Ankistrodesmus falcatus*	2,200	0.3
			Botryococcus braunii	8,800	0.3
			Chlamydomonas sp.	880	0.2
			Chlorella ellipsoidea	2,364	0.8
			Cosmarium margaritatum	220	0.9
			Cosmarium sp.	440	0.6

DOMINION DIAMOND

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Crucigenia fenestrata	7,092	1.3
			Dictyosphaerium pulchellum	5,940	0.4
			Elakatothrix sp.	2,364	0.0
			Gloeocystis sp.	2,364	0.6
			Monoraphidium arcuatum	220	0.0
			Monoraphidium irregulare	3,300	0.1
			Monoraphidium komarkovae	10,371	0.8
			Nephrocytium agardhiunum	880	0.2
			Oocystis submarina	10,172	1.3
			Quadrigula closterioides	2,640	0.2
			Roya sp.	6,708	6.1
			Sphaerocystis sp.	37,822	0.7
			Spondylosium sp.	860	2.5
			Staurastrum sp.	20	0.8
			Staurodesmus incus	660	3.3
			Staurodesmus sp.	220	3.4
			Tetraedron incus	16,547	0.9
		Chrysophyceae	*Chrysocapsella planctonica*	4,400	0.7
			Dinobryon bavaricum	7,402	24.8
			Dinobryon divergens	6,893	40.7
			Mallomonas insignis	1,980	1.5
			Mallomonas multiunca	660	1.7
			Ochromonas spp.	408,947	129.3
			Synuropsis janei	2,804	3.1
			Synuropsis sp.	1,100	0.4
			Uroglenopsis americana	5,000	0.7
		Cryptophyceae	*Cryptomonas ovata*	6,764	12.1
			Komma caudata	73,280	7.1
		Cyanobacteria	*Anabaena* sp.	15,280	1.4
			Anabaena spp.	580	0.1
			Aphanocapsa delicatissima	45,980	0.1
			Aphanocapsa holsatica	19,020	0.1
			Aphanocapsa sp.	129,460	0.3
			Aphanothece clathrata	107,800	0.5
			Gloeothece linearis	1,980	0.1
			Leptolyngbya sp.	206,756	1.6
			Pseudanabaena sp.	9,455	0.1
		Dinophyceae	*Gyrodinium helveticum*	220	1.4
			Peridinium sp.	2,364	5.7

DOMINION DIAMOND

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Peridinium umbonatum	2,364	0.9
		Euglenophyceae	*Monomorphina* sp.	220	2.5
		Xanthophyceae	*Ophiocytium cochleare*	440	1.5
September	FF2-1	Bacillariophyceae	*Asterionella formosa*	2,250	3.3
			Cyclotella sp.	1,257	1.3
			Fragilaria sp.	2,970	4.9
			Tabellaria fenestrata	15,840	46.5
		Chlorophyceae	*Ankistrodesmus falcatus*	55,176	13.1
			Elakatothrix gelatinosa	3,960	0.4
			Monoraphidium arcuatum	198	0.0
			Monoraphidium irregulare	2,376	0.2
			Monoraphidium komarkovae	21,780	4.3
			Monoraphidium tortile	3,504	0.9
			Mougeotia sp.	216	7.6
			Roya sp.	4,752	4.1
			Spondylosium planum	990	0.8
			Staurastrum sp.	198	1.1
			Staurodesmus sp.	2,178	112.1
			Tetraedron incus	2,514	0.3
			Tetrastrum triangulare	35,200	13.4
		Chrysophyceae	*Dinobryon bavaricum*	5,940	10.4
			Dinobryon divergens	1,890	3.1
			Ochromonas sp.	292,914	44.2
			Uroglenopsis americana	36	0.0
		Cryptophyceae	*Cryptomonas erosa*	1,980	16.0
			Komma caudata	61,600	8.8
		Cyanobacteria	*Anabaena circinalis*	54	0.0
			Chroococcus sp.	12,571	0.1
			Coelosphaerium sp.	30,171	0.1
			Leptolyngbya sp.	252,189	4.0
		Dinophyceae	*Peridinium willei*	594	40.0
		Euglenophyceae	*Trachelomonas* sp.	198	2.8
September	FF2-2	Bacillariophyceae	*Asterionella formosa*	1,600	4.2
			Cyclotella sp.	5,797	7.1
			Fragilaria sp.	220	0.3
			Tabellaria fenestrata	9,429	45.9
		Chlorophyceae	*Ankistrodesmus falcatus*	14,080	5.5
			Monoraphidium arcuatum	1,100	0.2
			Monoraphidium irregulare	4,840	0.6

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
			Monoraphidium komarkovae	29,040	7.1
			Monoraphidium tortile	1,100	0.2
			Oocystis sp.	8,381	5.7
			Roya sp.	2,200	2.5
			Spondylosium planum	540	0.4
			Staurodesmus sp.	880	45.3
			Tetraedron incus	16,762	0.6
			Tetrastrum triangulare	24,947	10.3
		Chrysophyceae	*Dinobryon bavaricum*	2,700	4.9
			Dinobryon divergens	740	2.1
			Mallomonas sp.	2,057	28.6
			Ochromonas sp.	321,270	76.4
			Synuropsis janei	6,027	34.0
			Uroglenopsis americana	100	0.0
		Cryptophyceae	*Cryptomonas ovata*	7,260	57.4
			Cryptomonas sp.	660	1.5
			Komma caudata	48,889	6.4
		Cyanobacteria	*Anabaena* sp.	40	0.0
			Aphanocapsa delicatissima	8,060	0.0
			Aphanothece paralleliformis	28,000	0.2
			Chroococcus sp.	50,286	0.4
			Leptolyngbya sp.	8,541	0.1
September	FF2-3	Bacillariophyceae	*Achnanthidium* sp.	2,794	0.4
			Asterionella formosa	800	1.0
			Cyclotella sp.	4,190	3.2
			Fragilaria sp.	660	1.0
			Tabellaria fenestrata	27,955	115.6
			Tabellaria flocculosa	1,500	2.3
		Chlorophyceae	*Ankistrodesmus falcatus*	11,440	2.6
			Dictyosphaerium pulchellum	2,640	0.4
			Elakatothrix gelatinosa	1,760	0.3
			Monoraphidium irregulare	3,080	0.3
			Monoraphidium komarkovae	29,040	4.0
			Oocystis sp.	5,587	1.7
			Roya sp.	5,500	7.2
			Spondylosium planum	520	0.5
			Staurodesmus sp.	660	21.8
			Staurodesmus triangularis	440	18.7
			Tetrastrum triangulare	3,520	0.9

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m^3)
		Chrysophyceae	*Chrysocapsella planctonica*	4,190	0.9
			Dinobryon divergens	2,020	6.3
			Ochromonas sp.	314,286	89.4
			Synuropsis janei	1,540	6.6
			Uroglenopsis americana	14,000	1.4
		Cryptophyceae	*Cryptomonas ovata*	3,520	35.0
			Cryptomonas sp.	660	1.4
			Komma caudata	60,063	8.6
		Cyanobacteria	*Anabaena* sp.	80	0.0
			Aphanothece paralleliformis	240	0.0
			Chroococcus sp.	78,222	0.7
			Leptolyngbya sp.	176,000	3.3
		Dinophyceae	*Peridinium* sp.	2,200	16.0
September	FF2-4	Bacillariophyceae	*Asterionella formosa*	7,740	24.4
			Cyclotella sp.	5,139	17.8
			Fragilaria sp.	2,376	2.7
			Tabellaria fenestrata	8,473	38.4
		Chlorophyceae	*Ankistrodesmus falcatus*	27,720	7.1
			Ankistrodesmus fusiformis	396	0.1
			Elakatothrix gelatinosa	792	0.1
			Euastrum elegans	396	6.2
			Monoraphidium irregulare	2,970	0.3
			Monoraphidium komarkovae	32,670	6.0
			Roya sp.	7,920	6.7
			Spondylosium planum	2,268	3.4
			Staurodesmus sp.	3,762	210.8
			Tetraedron incus	11,853	0.6
			Tetrastrum triangulare	86,922	15.6
			Zygnema sp.	108	1.4
		Chrysophyceae	*Chrysocapsella planctonica*	9,900	3.3
			Chrysococcus rufescens	9,219	3.5
			Dinobryon bavaricum	2,052	4.2
			Dinobryon divergens	1,512	2.2
			Mallomonas sp.	2,178	12.3
			Ochromonas sp.	280,522	70.0
			Uroglenopsis americana	32,400	4.4
		Cryptophyceae	*Cryptomonas ovata*	14,385	248.8
			Cryptomonas sp.	5,268	7.1
			Komma caudata	53,997	8.8

Table A-6 Phytoplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (cells/L)	Biomass (mg/m³)
		Cyanobacteria	*Aphanocapsa* sp.	210,721	1.7
			Aphanothece paralleliformis	23,400	0.1
			Chroococcus sp.	79,020	0.8
			Leptolyngbya sp.	544,500	8.3
			Merismopedia sp.	43,560	0.7
September	FF2-5	Bacillariophyceae	*Asterionella formosa*	1,440	2.0
			Cyclotella sp.	10,637	7.1
			Fragilaria sp.	2,178	5.3
			Tabellaria fenestrata	13,860	48.8
		Chlorophyceae	*Ankistrodesmus falcatus*	11,880	2.5
			Ankistrodesmus fusiformis	11,880	2.8
			Crucigenia fenestrata	34,040	11.7
			Monoraphidium arcuatum	396	0.1
			Monoraphidium irregulare	7,687	1.1
			Monoraphidium komarkovae	87,120	21.1
			Mougeotia sp.	144	0.4
			Oocystis sp.	12,765	4.9
			Roya sp.	4,356	4.0
			Spondylosium planum	1,548	1.2
			Staurodesmus sp.	6,878	163.5
			Teilingia excavata	594	0.2
		Chrysophyceae	*Chrysocapsella planctonica*	29,785	12.0
			Dinobryon bavaricum	1,890	3.3
			Dinobryon divergens	2,700	5.5
			Mallomonas insignis	4,255	2.7
			Ochromonas sp.	489,319	89.3
			Uroglenopsis americana	21,600	5.0
		Cryptophyceae	*Cryptomonas ovata*	6,375	69.0
			Cryptomonas sp.	6,382	4.6
			Komma caudata	70,207	10.4
		Cyanobacteria	*Aphanocapsa* sp.	198,673	3.3
			Aphanothece paralleliformis	21,600	0.2
			Leptolyngbya sp.	326,700	5.1
			Merismopedia sp.	37,224	1.0
		Euglenophyceae	*Trachelomonas* sp.	2,127	6.5

Notes: Samples were analyzed by EcoAnalysts, Inc.
cells/L = number of cells per litre; mg/m³ = milligrams per cubic metre; Late Spring = July; Summer = August; Fall = September; sp. = a single species; spp. = multiple species.
a) Replicate 1.
b) Replicate 2.

Table A-7 Summary of Phytoplankton Community Data for Lakes in the Jay Project Area, 2014

Basin	Waterbody	Station	Sampling Period	Replicate	Total Abundance (cells/L)	Total Biomass (mg/m^3)	Taxonomic Richness (No. of Taxa)	Relative Abundance (%)								Relative Biomass (%)							
								Bacillariophyceae	Chlorophyceae	Chrysophyceae	Cryptophyceae	Cyanobacteria	Euglenophyceae	Dinophyceae	Xanthophyceae	Bacillariophyceae	Chlorophyceae	Chrysophyceae	Cryptophyceae	Cyanobacteria	Euglenophyceae	Dinophyceae	Xanthophyceae
Lac du Sauvage	Lac du Sauvage	Aa-1	Summer		1,565,282	545	33	1.6	5.3	62.0	18.6	11.6	0.9	0.0	0.0	7.7	4.7	69.2	12.8	2.4	3.3	0.0	0.0
			Fall		896,782	1,515	18	15.1	4.0	68.5	4.8	4.5	0.0	3.1	0.0	27.5	1.3	32.9	6.0	0.0	0.0	32.3	0.0
		Ab-1	Late Spring		457,734	244	17	3.6	4.4	77.4	4.2	8.2	0.0	2.3	0.0	16.0	0.7	27.0	10.8	2.0	0.0	43.5	0.0
			Summer		1,209,854	271	30	1.1	5.2	65.7	10.1	17.7	0.2	0.0	0.0	13.3	11.3	64.3	8.8	1.6	0.7	0.0	0.0
			Fall		502,497	704	23	16.3	13.0	57.2	10.3	0.5	0.0	2.6	0.0	49.4	7.0	15.9	2.1	0.1	0.0	25.5	0.0
		Ac-1	Late Spring		539,871	248	27	2.1	2.8	84.4	3.3	4.8	2.6	0.0	0.0	12.4	6.3	41.0	11.1	5.2	23.9	0.0	0.0
			Summer		795,246	451	48	5.1	17.0	41.7	26.9	6.4	0.4	2.3	0.2	23.5	10.3	30.5	10.0	0.6	9.1	15.8	0.1
			Fall	Rep 1	866,090	1,065	20	20.6	5.1	60.7	5.4	6.3	0.0	2.0	0.0	43.1	3.1	34.0	2.0	2.1	0.0	15.7	0.0
			Fall	Rep 2	933,088	1,032	24	18.6	4.6	60.8	6.2	7.3	0.0	2.5	0.0	50.7	2.3	28.3	2.0	3.2	0.0	13.5	0.0
		Ac-4	Late Spring		638,033	282	30	1.0	4.9	62.5	4.0	26.4	0.0	1.1	0.0	4.8	7.1	29.5	6.8	31.7	0.0	20.1	0.0
			Summer		726,728	283	32	3.9	10.1	62.9	11.6	9.0	0.2	2.3	0.0	38.7	11.5	34.5	1.7	2.1	0.3	11.2	0.0
			Fall		618,797	308	22	5.5	3.2	70.5	12.3	7.5	0.0	1.0	0.0	21.3	1.6	47.5	14.7	1.4	0.0	13.4	0.0
		Ac-7	Late Spring		721,233	483	21	1.2	3.4	74.9	4.0	15.4	0.0	1.0	0.0	3.0	3.4	30.1	15.2	3.8	0.0	44.3	0.3
			Summer		914,129	508	40	4.4	18.8	49.3	18.4	5.5	0.4	3.1	0.0	22.8	16.8	33.5	7.5	0.7	0.7	18.0	0.0
			Fall		549,905	294	19	2.3	5.4	75.3	7.0	8.6	0.3	1.2	0.0	14.9	2.5	56.7	4.6	7.3	0.6	13.4	0.0
		Ad-1	Late Spring		789,188	198	19	1.3	4.9	88.1	1.5	4.0	0.0	0.3	0.0	8.0	4.3	66.2	14.5	5.6	0.0	1.3	0.0
			Summer		676,103	473	37	2.5	15.3	51.0	13.8	15.2	0.5	1.7	0.0	11.1	18.8	58.8	2.1	0.3	0.3	8.6	0.0
			Fall		512,757	284	18	7.6	1.0	80.3	7.7	3.0	0.0	0.4	0.0	37.9	0.9	48.3	2.6	2.5	0.0	7.8	0.0
		Ae-1	Late Spring		955,784	295	25	3.2	2.0	79.0	1.7	13.1	0.0	1.0	0.0	12.1	4.5	26.0	16.8	28.5	0.0	11.4	0.6
			Summer		1,643,909	447	32	1.5	12.7	67.4	6.6	11.5	0.0	0.3	0.0	12.2	11.9	61.7	5.2	2.9	0.0	6.2	0.0
			Fall		692,645	747	21	7.9	4.0	76.7	4.9	3.2	0.0	3.2	0.0	17.3	1.9	33.6	8.1	0.9	0.1	38.0	0.0
	Duchess Lake	Af-1	Summer		3,287,508	1,327	34	1.3	6.0	78.4	8.2	5.4	0.0	0.8	0.0	5.5	3.2	73.8	3.9	1.5	0.1	11.9	0.0
			Fall		954,969	512	16	3.7	6.0	71.2	14.5	4.1	0.5	0.0	0.0	8.3	16.0	64.6	7.2	0.1	3.9	0.0	0.0

Table A-7 Summary of Phytoplankton Community Data for Lakes in the Jay Project Area, 2014

								Relative Abundance (%)								Relative Biomass (%)							
Basin	Waterbody	Station	Sampling Period	Replicate	Total Abundance (cells/L)	Total Biomass (mg/m^3)	Taxonomic Richness (No. of Taxa)	Bacillariophyceae	Chlorophyceae	Chrysophyceae	Cryptophyceae	Cyanobacteria	Euglenophyceae	Dinophyceae	Xanthophyceae	Bacillariophyceae	Chlorophyceae	Chrysophyceae	Cryptophyceae	Cyanobacteria	Euglenophyceae	Dinophyceae	Xanthophyceae
Lac de Gras	Slipper Bay	S2	Late Spring		808,528	313	17	0.9	3.5	86.0	7.7	0.5	0.0	1.3	0.0	6.8	2.0	38.9	42.6	0.1	0.0	9.6	0.0
			Summer		1,298,240	898	33	4.1	9.8	44.7	9.5	31.3	0.6	0.0	0.0	49.5	5.7	39.1	3.2	0.5	2.1	0.0	0.0
			Fall		1,626,511	593	25	0.8	3.9	46.8	5.5	42.9	0.0	0.0	0.0	5.6	3.9	84.1	5.0	1.4	0.0	0.0	0.0
		S3	Late Spring		585,574	406	14	1.4	4.8	88.0	5.7	0.0	0.0	0.1	0.0	2.8	1.7	90.6	2.1	0.0	0.0	2.8	0.0
			Summer	Rep 1	1,761,738	626	34	0.7	9.1	41.7	6.5	41.8	0.2	0.0	0.0	13.6	3.8	76.5	4.4	0.6	0.9	0.1	0.1
			Summer	Rep 2	1,500,885	871	35	4.0	3.9	42.9	9.3	38.6	0.0	1.2	0.0	60.9	2.1	28.3	2.3	0.3	0.0	6.1	0.0
			Fall		798,203	417	16	1.5	8.9	60.3	18.1	11.1	0.0	0.0	0.0	11.8	3.8	70.4	13.4	0.6	0.0	0.0	0.0
		S5	Late Spring	Rep 1	603,217	592	14	3.3	3.4	89.1	2.6	1.1	0.0	0.4	0.0	5.7	4.9	83.3	3.2	0.0	0.0	2.5	0.4
			Late Spring	Rep 2	534,247	576	18	3.6	4.7	86.5	2.4	2.0	0.0	0.7	0.1	7.5	3.7	80.4	4.2	0.0	0.0	3.5	0.7
			Summer		1,032,607	322	33	1.4	3.9	65.0	8.8	20.9	0.0	0.1	0.0	24.0	2.2	61.1	5.9	0.3	0.0	6.5	0.0
			Fall		306,342	59	13	0.2	5.7	49.8	21.0	23.3	0.0	0.0	0.0	0.3	5.5	72.5	18.6	3.2	0.0	0.0	0.0
		S6	Late Spring		209,568	298	12	1.2	2.8	90.7	4.8	0.0	0.0	0.4	0.1	4.4	2.7	84.2	3.6	0.0	0.0	4.8	0.2
			Summer		948,606	310	31	0.3	4.5	57.8	9.6	27.1	0.0	0.6	0.0	7.0	13.8	67.1	9.8	0.3	0.0	2.2	0.0
	Far-field 2	FF2-1	Late Spring		1,168,780	814	23	2.5	6.1	61.1	3.0	26.0	0.2	1.0	0.0	4.9	1.1	68.6	5.1	0.5	0.2	19.4	0.2
			Summer		1,764,661	511	39	2.3	11.0	20.3	6.0	60.3	0.0	0.0	0.0	41.5	13.9	37.5	4.0	1.4	0.0	1.7	0.0
			Fall		815,498	344	25	2.7	16.3	36.9	7.8	36.2	0.0	0.1	0.0	16.3	46.0	16.8	7.2	1.2	0.8	11.6	0.0
		FF2-2	Late Spring		1,065,176	1,993	23	1.8	2.6	90.2	4.1	0.4	0.0	0.8	0.0	1.9	1.8	81.0	6.0	0.0	0.0	9.2	0.0
			Summer		1,319,902	567	36	3.3	8.7	23.5	9.9	54.3	0.0	0.4	0.0	66.6	3.3	22.3	6.8	0.7	0.1	0.2	0.0
			Fall		605,545	348	24	2.8	17.2	55.0	9.4	15.7	0.0	0.0	0.0	16.5	22.5	42.0	18.8	0.2	0.0	0.0	0.0
		FF2-3	Late Spring		1,033,300	1,226	17	3.2	3.3	73.6	9.3	9.1	0.0	1.6	0.0	12.3	4.0	53.4	7.1	0.3	0.0	23.0	0.0
			Summer		1,391,157	768	36	5.2	9.9	42.0	6.6	36.1	0.2	0.0	0.0	58.8	4.4	30.2	2.2	0.5	2.7	1.3	0.0
			Fall		759,109	351	26	5.0	8.5	44.3	8.5	33.5	0.0	0.3	0.0	35.1	16.6	29.8	12.8	1.1	0.0	4.6	0.0
		FF2-4	Late Spring		1,096,940	1,006	25	4.8	6.8	65.0	11.1	10.2	2.1	0.0	0.0	1.9	6.8	55.9	14.9	0.3	20.1	0.0	0.1
			Summer	Rep 1	1,104,847	348	38	2.4	16.6	5.2	1.6	74.2	0.0	0.0	0.0	57.1	11.7	25.2	3.3	1.5	1.3	0.0	0.0
			Summer	Rep 2	1,507,572	1,032	36	5.7	5.5	32.2	6.8	49.6	0.0	0.2	0.0	67.0	2.7	25.9	2.6	0.4	0.0	1.4	0.0
			Fall		1,514,140	718	28	1.6	11.7	22.3	4.9	59.5	0.0	0.0	0.0	11.6	36.0	13.9	36.9	1.6	0.0	0.0	0.0
		FF2-5	Late Spring	Rep 1	918,388	1,086	29	2.1	6.9	75.3	4.7	9.8	0.0	1.2	0.1	10.5	2.3	52.6	6.6	0.6	0.0	27.3	0.2
			Late Spring	Rep 2	1,041,809	1,547	21	2.2	5.3	78.2	5.7	7.9	0.0	0.7	0.1	10.3	1.0	52.5	4.9	0.1	0.0	31.1	0.2
			Summer		1,375,229	2,006	42	13.9	8.9	31.9	5.8	39.0	0.0	0.4	0.0	86.8	1.3	10.1	1.0	0.2	0.1	0.4	0.1
			Fall		1,426,239	494	25	2.0	12.6	38.5	5.8	41.0	0.1	0.0	0.0	12.8	43.2	23.8	17.0	1.9	1.3	0.0	0.0

Notes: Samples were analyzed by EcoAnalysts, Inc. Total abundance and biomass values are rounded to the nearest whole number.
cells/L = number of cells per litre; mg/m^3 = milligrams per cubic metre; No. = number; % = percent; Late Spring = July; Summer = August; Fall = September.

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
July	Ab-1	Cladocera	*Bosmina longirostris*	1.34	1.52
			Chydorus sphaericus	0.04	0.07
			Daphnia longiremis	3.74	14.29
			Holopedium gibberum	1.65	12.85
		Rotifera	*Conochilus unicornis*	1.26	0.03
			Filinia terminalis	1.10	0.01
			Kellicottia longispina	35.92	0.37
			Keratella cochlearis	8.98	0.03
			Gastropus stylifer	0.79	0.03
			Ploesoma truncatum	0.16	0.00
			Polyarthra remata	0.16	0.01
		Copepoda - nauplii	Nauplii	4.73	1.89
		Calanoida	*Epischura* sp.	0.04	0.78
			Copepodites	0.39	0.95
		Cyclopoida	*Cyclops strenuus*	0.04	0.68
			Diacyclops thomasi	1.22	7.39
			Copepodites	2.36	3.02
July	Ac-1	Cladocera	*Bosmina longirostris*	0.49	0.43
			Chydorus sphaericus	0.03	0.03
			Daphnia longiremis	1.43	3.59
			Holopedium gibberum	1.16	9.02
		Rotifera	*Conochilus unicornis*	2.37	0.04
			Filinia terminalis	0.32	0.00
			Kellicottia longispina	27.09	0.28
			Keratella cochlearis	13.38	0.04
			Ascomorpha ecaudis	0.11	0.00
			Gastropus stylifer	0.97	0.03
			Ploesoma truncatum	0.11	0.01
			Polyarthra remata	1.62	0.08
		Copepoda - nauplii	Nauplii	2.48	0.99
		Copepodites	Copepodites	0.35	0.87
		Cyclopoida	*Diacyclops thomasi*	1.35	8.84
			Copepodites	2.19	5.30

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
July	Ac-4	Cladocera	*Bosmina longirostris*	1.20	1.44
			Daphnia longiremis	3.97	6.28
			Holopedium gibberum	2.27	17.63
		Rotifera	*Conochilus unicornis*	1.64	0.09
			Filinia terminalis	0.38	0.00
			Kellicottia longispina	24.57	0.25
			Keratella cochlearis	9.20	0.03
			Gastropus stylifer	1.64	0.06
			Polyarthra remata	0.88	0.04
			Synchaeta stylata	0.13	0.01
		Copepoda - nauplii	Nauplii	5.17	2.07
		Calanoida	*Epischura* sp.	0.06	0.36
			Copepodites	0.32	0.52
		Cyclopoida	*Cyclops strenuus*	0.06	0.63
			Diacyclops thomasi	2.39	13.02
			Copepodites	3.91	7.61
July	Ac-7	Cladocera	*Bosmina longirostris*	0.33	0.18
			Chydorus sphaericus	0.07	0.03
			Daphnia longiremis	1.19	1.86
			Holopedium gibberum	0.35	2.09
		Rotifera	*Collotheca pelagica*	0.09	0.00
			Conochilus unicornis	3.37	0.07
			Filinia terminalis	0.56	0.01
			Asplanchna priodonta	0.09	0.12
			Kellicottia longispina	37.20	0.38
			Keratella cochlearis	10.21	0.03
			Gastropus stylifer	1.12	0.04
			Ploesoma hudsoni	0.09	0.04
			Ploesoma truncatum	0.19	0.01
			Polyarthra remata	2.44	0.12
			Trichotria tetractis	0.09	0.00
		Copepoda - nauplii	Nauplii	3.94	1.57
		Calanoida	*Epischura* sp.	0.02	0.18
			Copepodites	0.63	1.25
		Cyclopoida	*Diacyclops thomasi*	1.22	6.89
			Copepodites	2.39	3.88

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
July	Ad-1	Cladocera	*Bosmina longirostris*	0.23	0.16
			Daphnia longiremis	0.59	1.08
			Holopedium gibberum	0.26	1.61
		Rotifera	*Conochilus unicornis*	1.14	0.02
			Filinia terminalis	4.34	0.04
			Kellicottia longispina	13.60	0.14
			Keratella cochlearis	4.65	0.02
			Keratella hiemalis	0.03	0.00
			Gastropus stylifer	0.31	0.01
			Ploesoma hudsoni	0.07	0.01
			Ploesoma truncatum	0.17	0.01
			Polyarthra remata	1.01	0.05
			Synchaeta stylata	0.03	0.00
		Copepoda - nauplii	Nauplii	2.46	0.99
		Copepodites	Copepodites	0.07	0.26
		Cyclopoida	*Diacyclops thomasi*	0.62	4.04
			Copepodites	2.05	4.27
July	Ae-1	Cladocera	*Bosmina longirostris*	0.84	0.78
			Chydorus sphaericus	0.16	0.13
			Daphnia longiremis	2.36	6.26
			Holopedium gibberum	1.48	9.45
		Rotifera	*Conochilus unicornis*	3.04	0.08
			Filinia terminalis	0.48	0.01
			Asplanchna priodonta	0.16	0.18
			Kellicottia longispina	22.73	0.23
			Keratella cochlearis	10.72	0.03
			Gastropus stylifer	0.16	0.00
			Ploesoma hudsoni	0.08	0.01
			Ploesoma truncatum	0.24	0.01
			Polyarthra remata	2.00	0.10
		Copepoda - nauplii	Nauplii	2.64	1.06
		Copepodites	Copepodites	0.52	0.81
		Cyclopoida	*Diacyclops thomasi*	1.20	6.69
			Copepodites	2.52	2.89

DOMINION DIAMOND

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
August	Aa-1	Cladocera	*Bosmina longirostris*	9.49	6.14
			Daphnia longiremis	2.71	4.23
			Holopedium gibberum	4.07	19.04
		Rotifera	*Collotheca* sp.	0.45	0.01
			Conochilus unicornis	6.10	0.14
			Filinia terminalis	4.18	0.04
			Asplanchna priodonta	0.23	0.25
			Kellicottia longispina	31.08	0.32
			Keratella cochlearis	10.06	0.03
			Ascomorpha ecaudis	0.11	0.00
			Gastropus stylifer	2.03	0.07
			Ploesoma hudsoni	0.11	0.02
			Ploesoma truncatum	0.11	0.00
			Polyarthra remata	0.90	0.04
		Copepoda - nauplii	Nauplii	5.76	2.31
		Calanoida	*Leptodiaptomus minutus*	0.11	1.15
			Leptodiaptomus pribilofensis	0.11	0.87
			Epischura sp.	0.11	1.99
		Cyclopoida	*Diacyclops thomasi*	1.70	9.26
			Copepodites	3.73	5.99
August	Ab-1	Cladocera	*Bosmina longirostris*	3.00	3.55
			Daphnia longiremis	6.28	9.18
			Holopedium gibberum	3.23	27.55
		Rotifera	*Collotheca pelagica*	1.04	0.00
			Conochilus unicornis	3.80	0.09
			Filinia terminalis	0.12	0.00
			Kellicottia longispina	18.44	0.19
			Keratella cochlearis	2.42	0.01
			Ascomorpha ecaudis	0.12	0.00
			Ascomorpha ovalis	0.12	0.00
			Gastropus stylifer	0.81	0.03
			Monostyla lunaris	0.12	0.00
			Polyarthra major	1.27	0.06
		Copepoda - nauplii	Nauplii	4.27	1.71
		Calanoida	*Leptodiaptomus minutus*	0.12	1.20
			Copepodites	0.06	0.39
		Cyclopoida	*Diacyclops thomasi*	2.19	13.00
			Copepodites	1.90	4.46

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
August	Ac-1	Cladocera	*Bosmina longirostris*	1.67	0.92
			Daphnia longiremis	5.83	10.80
			Holopedium gibberum	3.65	25.71
		Rotifera	*Collotheca pelagica*	0.64	0.01
			Conochilus unicornis	7.43	0.16
			Filinia terminalis	0.26	0.00
			Asplanchna priodonta	0.26	0.50
			Kellicottia longispina	25.23	0.26
			Keratella cochlearis	2.18	0.01
			Ascomorpha ovalis	0.26	0.00
			Gastropus stylifer	0.64	0.03
			Monostyla lunaris	0.13	0.00
			Polyarthra major	1.02	0.05
		Copepoda - nauplii	Nauplii	7.94	3.18
		Calanoida	*Leptodiaptomus minutus*	0.32	2.71
			Epischura nevadensis	0.06	1.64
			Copepodites	0.06	0.44
		Cyclopoida	*Diacyclops thomasi*	1.54	10.17
			Copepodites	1.41	2.09
August	Ac-4	Cladocera	*Bosmina longirostris*	1.13	0.95
			Eubosmina longispina	0.14	0.21
			Daphnia longiremis	13.00	19.00
			Holopedium gibberum	3.11	28.11
		Rotifera	*Collotheca pelagica*	0.85	0.00
			Conochilus unicornis	5.51	0.11
			Asplanchna priodonta	0.28	0.32
			Kellicottia longispina	26.42	0.27
			Keratella cochlearis	2.83	0.01
			Gastropus stylifer	2.12	0.08
			Polyarthra major	0.99	0.05
		Copepoda - nauplii	Nauplii	11.59	4.63
		Calanoida	*Leptodiaptomus minutus*	0.28	3.18
			Leptodiaptomus pribilofensis	0.14	1.83
			Copepodites	0.14	0.80
		Cyclopoida	*Diacyclops thomasi*	4.66	26.37
			Copepodites	5.93	11.02

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
August	Ac-7	Cladocera	*Bosmina longirostris*	1.79	1.81
			Daphnia longiremis	3.63	6.16
			Holopedium gibberum	1.21	8.92
		Rotifera	*Collotheca pelagica*	0.63	0.00
			Conochilus unicornis	8.07	0.15
			Filinia terminalis	0.27	0.00
			Asplanchna priodonta	0.27	0.29
			Kellicottia longispina	19.19	0.20
			Keratella cochlearis	0.72	0.00
			Ascomorpha ovalis	0.09	0.00
			Gastropus stylifer	1.17	0.05
			Ploesoma hudsoni	0.09	0.01
			Polyarthra major	0.27	0.01
		Copepoda - nauplii	Nauplii	5.83	2.33
		Calanoida	*Leptodiaptomus minutus*	0.31	2.61
			Leptodiaptomus pribilofensis	0.04	0.43
			Epischura nevadensis	0.13	4.00
			Copepodites	0.22	1.54
		Cyclopoida	*Diacyclops thomasi*	1.48	9.61
			Copepodites	1.48	3.08
August	Ad-1	Cladocera	*Bosmina longirostris*	1.79	1.28
			Daphnia longiremis	5.44	11.42
			Holopedium gibberum	3.01	22.48
		Rotifera	*Collotheca pelagica*	0.38	0.00
			Conochilus unicornis	6.79	0.13
			Asplanchna priodonta	0.51	0.34
			Kellicottia longispina	31.38	0.32
			Keratella cochlearis	6.40	0.02
			Ascomorpha ovalis	0.13	0.00
			Gastropus stylifer	1.28	0.05
			Ploesoma truncatum	0.26	0.01
			Polyarthra major	2.18	0.11
		Copepoda - nauplii	Nauplii	9.48	3.79
		Calanoida	*Leptodiaptomus minutus*	0.26	2.37
			Copepodites	0.26	1.15
		Cyclopoida	*Diacyclops thomasi*	1.73	10.61
			Copepodites	3.71	4.56

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
August	Ae-1	Cladocera	*Bosmina longirostris*	4.58	3.91
			Daphnia longiremis	13.56	18.97
			Holopedium gibberum	11.02	84.53
		Rotifera	*Collotheca pelagica*	0.85	0.00
			Conochilus unicornis	14.41	0.24
			Kellicottia longispina	31.87	0.33
			Keratella cochlearis	1.19	0.00
			Ascomorpha ovalis	0.17	0.00
			Gastropus stylifer	1.53	0.06
			Ploesoma truncatum	0.17	0.01
			Polyarthra major	1.36	0.07
		Copepoda - nauplii	Nauplii	7.63	3.05
		Calanoida	*Leptodiaptomus minutus*	0.51	4.90
			Leptodiaptomus pribilofensis	0.51	4.08
			Epischura nevadensis	0.17	3.37
			Copepodites	0.51	1.81
		Cyclopoida	*Diacyclops thomasi*	4.07	24.51
			Copepodites	0.85	1.77
September	Aa-1	Cladocera	*Bosmina longirostris*	3.73	5.72
			Eubosmina longispina	0.47	1.41
			Chydorus sphaericus	0.38	0.35
			Daphnia longiremis	1.04	2.87
			Holopedium gibberum	0.05	0.23
		Rotifera	*Collotheca pelagica*	0.19	0.00
			Conochilus unicornis	11.06	0.27
			Filinia terminalis	3.69	0.03
			Asplanchna priodonta	9.92	6.29
			Kellicottia longispina	14.56	0.15
			Keratella cochlearis	5.77	0.02
			Ascomorpha ecaudis	0.28	0.00
			Ascomorpha ovalis	1.51	0.02
			Gastropus stylifer	0.76	0.03
			Polyarthra major	0.28	0.01
		Copepoda - nauplii	Nauplii	7.28	2.91
		Calanoida	*Leptodiaptomus minutus*	0.09	0.84
			Copepodites	0.05	0.19
		Cyclopoida	*Diacyclops thomasi*	2.79	14.56
			Copepodites	4.68	7.25

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
September	Ab-1	Cladocera	*Bosmina longirostris*	3.58	5.63
			Eubosmina longispina	0.11	0.39
			Acroperus harpae	0.04	0.07
			Chydorus sphaericus	0.18	0.14
			Daphnia longiremis	0.21	0.36
		Rotifera	*Collotheca pelagica*	0.70	0.00
			Conochilus unicornis	12.23	0.26
			Filinia terminalis	0.42	0.00
			Asplanchna priodonta	3.37	2.52
			Kellicottia longispina	10.54	0.11
			Keratella cochlearis	3.37	0.01
			Ascomorpha ovalis	0.56	0.01
			Gastropus stylifer	0.56	0.02
			Polyarthra major	1.41	0.07
		Copepoda - nauplii	Nauplii	16.16	6.47
		Cyclopoida	*Diacyclops thomasi*	1.55	9.31
			Copepodites	3.55	3.90
September	Ac-1[(a)]	Cladocera	*Bosmina longirostris*	1.38	2.52
			Eubosmina longispina	0.28	1.02
			Chydorus sphaericus	0.35	0.33
			Daphnia longiremis	0.57	1.26
		Rotifera	*Asplanchna priodonta*	1.55	1.33
			Collotheca pelagica	0.57	0.00
			Conochilus unicornis	12.43	0.26
			Filinia terminalis	0.28	0.00
			Kellicottia longispina	7.91	0.08
			Keratella cochlearis	2.40	0.01
			Ascomorpha ecaudis	0.14	0.00
			Ascomorpha ovalis	0.57	0.01
			Gastropus stylifer	0.28	0.01
			Monostyla lunaris	0.14	0.00
			Polyarthra major	2.83	0.14
		Copepoda - nauplii	Nauplii	13.85	5.54
		Calanoida	*Leptodiaptomus minutus*	0.04	0.50
			Epischura sp.	0.04	1.18
		Cyclopoida	*Cyclops strenuus*	0.04	0.27
			Diacyclops thomasi	1.77	8.54
			Copepodites	5.16	6.71

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
September	Ac-1[(b)]	Cladocera	*Bosmina longirostris*	1.47	1.25
			Eubosmina longispina	0.28	0.97
			Chydorus sphaericus	0.28	0.25
			Daphnia longiremis	0.65	1.07
		Rotifera	*Asplanchna priodonta*	3.05	2.31
			Collotheca pelagica	1.02	0.01
			Conochilus unicornis	10.51	0.23
			Filinia terminalis	0.11	0.00
			Kellicottia longispina	8.93	0.09
			Keratella cochlearis	3.05	0.01
			Ascomorpha ovalis	0.34	0.00
			Gastropus stylifer	0.79	0.03
			Polyarthra major	2.15	0.11
		Copepoda - nauplii	Nauplii	13.11	5.24
		Cyclopoida	*Epischura nevadensis*	0.06	1.66
			Diacyclops thomasi	1.95	9.38
			Copepodites	4.07	4.25
September	Ac-4	Cladocera	*Bosmina longirostris*	1.19	1.15
			Eubosmina longispina	0.27	0.93
			Chydorus sphaericus	0.15	0.08
			Daphnia longiremis	1.34	3.06
		Rotifera	*Collotheca pelagica*	0.54	0.00
			Conochilus unicornis	10.84	0.24
			Filinia terminalis	0.08	0.00
			Asplanchna priodonta	2.46	2.24
			Kellicottia longispina	5.92	0.06
			Keratella cochlearis	1.77	0.01
			Gastropus stylifer	0.15	0.01
			Polyarthra major	0.46	0.02
		Copepoda - nauplii	Nauplii	15.98	6.39
		Calanoida	*Epischura nevadensis*	0.04	0.92
		Cyclopoida	*Diacyclops thomasi*	2.92	14.65
			Copepodites	4.23	4.77

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
September	Ac-7	Cladocera	*Bosmina longirostris*	1.61	1.65
			Eubosmina longispina	0.12	0.65
			Acroperus harpae	0.04	0.07
			Chydorus sphaericus	0.04	0.04
			Daphnia longiremis	1.31	2.07
		Rotifera	*Collotheca pelagica*	0.61	0.00
			Conochilus unicornis	10.30	0.22
			Asplanchna priodonta	1.92	1.89
			Kellicottia longispina	5.53	0.06
			Keratella cochlearis	2.00	0.01
			Ascomorpha ovalis	0.38	0.00
			Gastropus stylifer	0.69	0.03
			Polyarthra major	0.46	0.02
		Copepoda - nauplii	Nauplii	14.83	5.93
		Calanoida	*Epischura nevadensis*	0.04	0.85
		Cyclopoida	*Diacyclops thomasi*	1.96	10.29
			Copepodites	3.84	5.10
September	Ad-1	Cladocera	*Bosmina longirostris*	0.47	0.38
			Eubosmina longispina	0.09	0.42
			Chydorus sphaericus	0.09	0.07
			Daphnia longiremis	1.04	1.48
		Rotifera	*Collotheca pelagica*	1.04	0.00
			Conochilus unicornis	17.77	0.28
			Filinia terminalis	0.28	0.00
			Ascomorpha ovalis	0.28	0.00
			Asplanchna priodonta	3.50	2.14
			Kellicottia longispina	5.58	0.06
			Keratella cochlearis	1.89	0.01
			Gastropus stylifer	1.23	0.05
			Monostyla lunaris	0.09	0.00
			Polyarthra major	1.23	0.06
		Copepoda - nauplii	Nauplii	15.69	6.28
		Cyclopoida	*Diacyclops thomasi*	3.73	15.48
			Copepodites	5.67	7.68

Table A-8 Zooplankton Abundance and Biomass in Lac du Sauvage, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
September	Ae-1	Cladocera	*Bosmina longirostris*	1.71	1.83
			Eubosmina longispina	0.68	3.28
			Daphnia longiremis	2.44	6.82
		Rotifera	*Collotheca pelagica*	2.34	0.01
			Conochilus unicornis	19.34	0.32
			Filinia terminalis	0.20	0.00
			Asplanchna priodonta	3.52	4.10
			Kellicottia longispina	13.09	0.13
			Keratella cochlearis	1.17	0.00
			Gastropus stylifer	0.20	0.01
			Polyarthra major	1.56	0.08
		Copepoda - nauplii	Nauplii	21.88	8.75
		Calanoida	*Leptodiaptomus minutus*	0.05	0.38
			Leptodiaptomus pribilofensis	0.10	1.30
			Heterocope septentrionalis(c)	-	-
		Cyclopoida	*Diacyclops thomasi*	3.91	20.10
			Copepodites	7.33	7.70

Notes: Samples were analyzed by EcoAnalysts, Inc. Values are rounded to the nearest whole number.

org/L = number of organisms per litre; mg/m^3 = milligrams per cubic metre; sp. = species; - = not applicable.

a) Replicate 1.

b) Replicate 2.

c) Presence of *Heterocope septentrionalis* was noted in the fine fraction of this sample, but not enumerated or measured by the taxonomist. This taxon was counted towards taxonomic richness, but abundance and biomass could not be quantified.

DOMINION DIAMOND

Table A-9 Zooplankton Abundance and Biomass in Duchess Lake, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
August	Af-1	Cladocera	*Bosmina longirostris*	27.61	17.25
			Daphnia longiremis	2.80	6.22
			Holopedium gibberum	1.12	7.43
		Rotifera	*Collotheca pelagica*	1.12	0.01
			Conochilus unicornis	11.20	0.25
			Asplanchna priodonta	0.16	0.14
			Kellicottia longispina	5.36	0.06
			Keratella cochlearis	1.12	0.00
			Ascomorpha ecaudis	0.08	0.00
			Gastropus stylifer	0.40	0.01
			Lecane mira	0.08	0.00
			Ploesoma hudsoni	0.48	0.09
			Ploesoma truncatum	4.88	0.19
			Polyarthra major	0.48	0.02
			Synchaeta stylata	0.08	0.02
		Copepoda - nauplii	Nauplii	8.08	3.23
		Calanoida	*Epischura nevadensis*	0.08	2.93
		Cyclopoida	*Diacyclops thomasi*	0.16	1.80
			Copepodites	0.32	0.84
September	Af-1	Cladocera	*Daphnia longiremis*	8.48	7.58
			Holopedium gibberum	0.14	1.00
		Rotifera	*Collotheca* sp.	0.42	0.08
			Conochilus unicornis	14.13	0.34
			Asplanchna priodonta	5.93	4.09
			Kellicottia longispina	8.48	0.09
			Keratella cochlearis	7.63	0.03
			Ascomorpha ovalis	3.11	0.04
			Gastropus stylifer	3.67	0.14
			Polyarthra major	2.68	0.13
		Copepoda - nauplii	Nauplii	1.55	0.62
		Calanoida	*Leptodiaptomus minutus*	0.14	0.80
		Cyclopoida	Copepodites	4.66	6.55

Notes: Samples were analyzed by EcoAnalysts, Inc.
org/L = number of organisms per litre; mg/m^3 = milligrams per cubic metre; sp. = species.

DOMINION DIAMOND

Table A-10 Zooplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
July	S2	Cladocera	*Daphnia longiremis*	0.10	0.18
			Holopedium gibberum	0.29	1.83
		Rotifera	*Conochilus unicornis*	22.16	0.44
			Asplanchna priodonta	0.35	0.48
			Kellicottia longispina	28.23	0.29
			Keratella cochlearis	2.45	0.01
			Gastropus stylifer	1.17	0.05
			Cephalodella gibba	0.12	0.00
			Polyarthra remata	2.45	0.12
			Synchaeta stylata	0.35	0.03
		Copepoda - nauplii	Nauplii	0.93	0.37
		Copepodites	Copepodites	0.66	3.38
		Cyclopoida	*Cyclops strenuus*	1.01	14.39
			Copepodites	2.53	5.51
July	S3	Cladocera	*Daphnia longiremis*	0.06	0.27
			Holopedium gibberum	0.02	0.20
		Rotifera	*Collotheca* sp.	0.06	0.00
			Conochilus unicornis	3.52	0.07
			Kellicottia longispina	4.74	0.05
			Keratella cochlearis	2.69	0.01
			Keratella hiemalis	0.51	0.02
			Ascomorpha ecaudis	0.06	0.00
			Gastropus stylifer	0.26	0.01
			Polyarthra remata	1.09	0.05
			Trichotria tetractis	0.06	0.00
		Copepoda - nauplii	Nauplii	2.50	1.00
		Calanoida	*Epischura* sp.	0.02	0.41
			Copepodites	1.25	7.32
		Cyclopoida	*Cyclops strenuus*	0.45	4.89
			Copepodites	3.20	11.54
July	S5[(a)]	Cladocera	*Chydorus sphaericus*	0.01	0.01
			Daphnia middendorffiana	0.08	0.54
			Holopedium gibberum	0.08	0.33
		Rotifera	*Conochiloides natans*	0.03	0.01
			Conochilus unicornis	2.33	0.06
			Kellicottia longispina	4.14	0.04
			Keratella cochlearis	0.45	0.00
			Keratella hiemalis	0.26	0.01
			Ascomorpha ecaudis	0.05	0.00

Table A-10 Zooplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
			Gastropus stylifer	0.10	0.00
			Polyarthra remata	0.42	0.02
		Copepoda - nauplii	Nauplii	1.15	0.46
		Calanoida	Diaptomidae	0.01	0.21
			Epischura sp.	0.01	0.31
			Heterocope septentrionalis	0.01	0.94
			Copepodites	1.49	4.96
		Cyclopoida	*Cyclops strenuus*	0.47	5.00
			Copepodites	0.89	2.62
July	S5[(b)]	Cladocera	*Daphnia longiremis*	0.01	0.02
			Daphnia middendorffiana	0.04	0.23
			Holopedium gibberum	0.03	0.28
			Conochilus unicornis	2.59	0.07
			Kellicottia longispina	4.37	0.04
			Keratella cochlearis	0.58	0.00
			Keratella hiemalis	0.26	0.01
			Ascomorpha ecaudis	0.10	0.00
			Gastropus stylifer	0.18	0.01
			Polyarthra remata	0.16	0.01
		Copepoda - nauplii	Nauplii	1.52	0.61
			Leptodiaptomus sicilis	0.03	0.17
			Heterocope septentrionalis	0.01	0.35
			Copepodites	2.12	5.79
		Cyclopoida	*Cyclops strenuus*	0.52	5.43
			Copepodites	1.01	3.19
July	S6	Cladocera	*Daphnia middendorffiana*	0.06	0.76
			Holopedium gibberum	0.02	0.19
		Rotifera	Collotheca sp.	0.04	0.00
			Conochilus unicornis	3.85	0.11
			Kellicottia longispina	4.53	0.05
			Keratella cochlearis	0.40	0.00
			Keratella hiemalis	0.24	0.01
			Ascomorpha ecaudis	0.08	0.00
			Polyarthra remata	0.20	0.01
			Gastropus stylifer	0.28	0.01
		Copepoda - nauplii	Nauplii	2.47	0.99
		Calanoida	*Leptodiaptomus sicilis*	0.06	0.76
			Epischura sp.	0.02	0.39
			Copepodites	1.92	5.51

Table A-10 Zooplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
		Cyclopoida	*Cyclops strenuus*	0.35	3.91
			Copepodites	1.02	2.88
August	S2	Cladocera	*Daphnia longiremis*	0.12	0.64
			Holopedium gibberum	1.46	8.35
		Rotifera	Bdelloidea	0.09	0.00
			Collotheca pelagica	0.26	0.00
			Conochilus unicornis	4.55	0.10
			Kellicottia longispina	12.16	0.12
			Keratella cochlearis	0.87	0.00
			Gastropus stylifer	0.70	0.03
			Polyarthra major	2.19	0.11
		Copepoda - nauplii	Nauplii	5.34	2.13
		Calanoida	*Leptodiaptomus minutus*	0.12	1.14
			Leptodiaptomus pribilofensis	0.17	2.43
			Epischura nevadensis	0.03	0.54
			Heterocope septentrionalis[c]	-	-
			Copepodites	1.78	14.05
		Cyclopoida	*Acanthocyclops robustus*	0.06	0.58
			Cyclops strenuus	0.23	2.53
			Copepodites	1.92	7.47
August	S3[a]	Cladocera	*Holopedium gibberum*	0.08	0.69
		Rotifera	*Collotheca pelagica*	0.09	0.00
			Conochilus unicornis	1.48	0.04
			Kellicottia longispina	4.40	0.05
			Keratella cochlearis	0.09	0.00
			Gastropus stylifer	0.49	0.02
			Polyarthra major	0.63	0.03
		Copepoda - nauplii	Nauplii	2.32	0.93
		Calanoida	*Leptodiaptomus minutus*	0.07	0.75
			Leptodiaptomus pribilofensis	0.08	1.47
			Epischura nevadensis	0.02	0.64
			Heterocope septentrionalis	0.05	4.91
			Copepodites	0.93	7.01
		Cyclopoida	*Acanthocyclops robustus*	0.01	0.16
			Cyclops strenuus	0.06	0.80
			Copepodites	1.12	5.10

Table A-10 Zooplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
August	S3[b]	Cladocera	*Holopedium gibberum*	0.07	0.48
		Rotifera	*Collotheca pelagica*	0.12	0.00
			Conochilus unicornis	1.41	0.04
			Kellicottia longispina	4.05	0.04
			Keratella cochlearis	0.12	0.00
			Gastropus stylifer	0.47	0.02
			Polyarthra major	1.05	0.05
		Copepoda - nauplii	Nauplii	2.20	0.88
		Calanoida	*Leptodiaptomus minutus*	0.07	0.71
			Leptodiaptomus pribilofensis	0.06	0.93
			Heterocope septentrionalis	0.01	1.17
			Copepodites	0.91	6.97
			Acanthocyclops robustus	0.00	0.00
		Cyclopoida	*Cyclops strenuus*	0.13	2.01
			Copepodites	1.14	5.32
August	S5	Cladocera	*Daphnia middendorffiana*	0.13	3.21
			Holopedium gibberum	0.04	0.49
		Rotifera	*Collotheca pelagica*	0.05	0.00
			Conochilus unicornis	1.99	0.06
			Kellicottia longispina	3.68	0.04
			Keratella cochlearis	0.13	0.00
			Gastropus stylifer	0.08	0.00
			Polyarthra major	0.36	0.02
		Copepoda - nauplii	Nauplii	1.84	0.74
		Calanoida	*Leptodiaptomus minutus*	0.02	0.15
			Leptodiaptomus pribilofensis	0.02	0.33
			Epischura nevadensis	0.01	0.16
			Heterocope septentrionalis	0.05	4.70
			Copepodites	2.25	13.29
		Cyclopoida	*Cyclops strenuus*	0.19	2.14
			Copepodites	0.61	2.35
August	S6	Cladocera	*Daphnia middendorffiana*	0.08	2.34
			Holopedium gibberum	0.04	0.35
		Rotifera	*Collotheca pelagica*	0.07	0.00
			Conochilus unicornis	1.69	0.05
			Kellicottia longispina	3.64	0.04
			Keratella cochlearis	0.19	0.00
			Keratella hiemalis	0.05	0.00
			Gastropus stylifer	0.05	0.00

Table A-10 Zooplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	Taxonomic Name	Abundance (org/L)	Biomass (mg/m³)
			Polyarthra major	0.16	0.01
		Copepoda - nauplii	Nauplii	3.10	1.24
		Calanoida	*Leptodiaptomus minutus*	0.01	0.15
			Leptodiaptomus pribilofensis	0.04	0.47
			Heterocope septentrionalis	0.02	1.72
			Copepodites	1.69	11.06
		Cyclopoida	*Cyclops strenuus*	0.20	2.23
			Copepodites	1.04	4.33
September	S2	Cladocera	*Daphnia longiremis*	0.04	0.41
			Daphnia middendorffiana	0.02	0.40
			Holopedium gibberum	0.63	8.54
		Rotifera	*Collotheca* sp.	0.36	0.06
			Kellicottia longispina	7.65	0.08
			Keratella cochlearis	1.12	0.00
			Ascomorpha ovalis	0.04	0.00
			Gastropus stylifer	0.32	0.01
			Monostyla lunaris	0.07	0.00
			Polyarthra major	0.72	0.04
		Copepoda - nauplii	Nauplii	5.30	2.12
		Calanoida	*Leptodiaptomus ashlandi*	0.04	0.29
			Leptodiaptomus minutus	0.34	2.78
			Leptodiaptomus pribilofensis	0.43	5.78
			Leptodiaptomus sicilis	0.78	9.97
			Epischura nevadensis	0.02	0.46
			Heterocope septentrionalis	0.07	5.76
			Copepodites	0.23	1.75
		Cyclopoida	*Cyclops strenuus*	0.14	1.20
			Copepodites	1.39	5.71
September	S3	Cladocera	*Daphnia middendorffiana*	0.13	4.81
			Holopedium gibberum	0.08	1.32
		Rotifera	*Collotheca* sp.	0.34	0.06
			Conochilus unicornis	1.24	0.03
			Kellicottia longispina	6.10	0.06
			Keratella cochlearis	0.23	0.00
			Gastropus stylifer	0.14	0.01
			Polyarthra major	0.14	0.01
		Copepoda - nauplii	Nauplii	3.19	1.28
		Calanoida	*Leptodiaptomus ashlandi*	0.07	0.43
			Leptodiaptomus minutus	0.28	2.09

Table A-10 Zooplankton Abundance and Biomass in Lac de Gras, Slipper Bay Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
			Leptodiaptomus pribilofensis	0.31	4.01
			Leptodiaptomus sicilis	0.75	10.75
			Epischura nevadensis	0.08	2.13
			Heterocope septentrionalis	0.07	5.91
			Copepodites	0.17	1.15
		Cyclopoida	*Cyclops strenuus*	0.04	0.33
			Copepodites	0.88	3.43
September	S5	Cladocera	*Daphnia middendorffiana*	0.43	21.05
			Holopedium gibberum	0.02	0.21
		Rotifera	*Collotheca* sp.	0.05	0.01
			Conochilus unicornis	0.27	0.01
			Kellicottia longispina	1.48	0.02
			Keratella cochlearis	0.02	0.00
			Gastropus stylifer	0.19	0.01
			Polyarthra major	0.03	0.00
		Copepoda - nauplii	Nauplii	2.36	0.94
		Calanoida	*Leptodiaptomus ashlandi*	0.06	0.31
			Leptodiaptomus minutus	0.35	2.20
			Leptodiaptomus pribilofensis	0.47	5.09
			Leptodiaptomus sicilis	1.14	10.15
			Heterocope septentrionalis	0.04	4.02
			Copepodites	0.82	4.83
		Cyclopoida	*Cyclops strenuus*	0.11	1.16
			Copepodites	0.76	2.74

Notes: Samples were analyzed by EcoAnalysts, Inc. Values are rounded to the nearest whole number.
org/L = number of organisms per litre; mg/m^3 = milligrams per cubic metre; sp. = species; - = not applicable.
a) Replicate 1.
b) Replicate 2.
c) Presence of *Heterocope septentrionalis* was noted in the fine fraction of this sample, but not enumerated or measured by the taxonomist. This taxon was counted towards taxonomic richness, but abundance and biomass could not be quantified.

Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
July	FF2-1	Cladocera	*Chydorus sphaericus*	0.01	0.01
			Daphnia longiremis	0.01	0.19
			Holopedium gibberum	0.04	0.30
		Rotifera	*Collotheca* sp.	0.06	0.00
			Conochiloides natans	0.17	0.02
			Conochilus unicornis	1.17	0.03
			Kellicottia longispina	13.19	0.14
			Keratella cochlearis	3.17	0.01
			Notholca laurentiae	0.89	0.03
			Gastropus stylifer	0.17	0.01
			Polyarthra remata	2.34	0.12
			Synchaeta stylata	1.06	0.09
		Copepoda - nauplii	Nauplii	1.06	0.42
		Calanoida	Diaptomidae	0.01	0.18
			Copepodites	0.86	3.66
		Cyclopoida	*Cyclops strenuus*	0.64	7.28
			Copepodites	2.09	6.50
July	FF2-2	Cladocera	*Daphnia longiremis*	0.02	0.02
			Holopedium gibberum	0.09	0.33
		Rotifera	*Conochiloides natans*	0.12	0.02
			Conochilus unicornis	2.66	0.06
			Filinia terminalis	0.06	0.00
			Kellicottia longispina	11.52	0.12
			Keratella cochlearis	1.61	0.01
			Keratella hiemalis	0.06	0.00
			Notholca laurentiae	0.37	0.01
			Gastropus stylifer	0.12	0.01
			Polyarthra remata	2.66	0.13
			Synchaeta stylata	0.62	0.05
		Copepoda - nauplii	Nauplii	1.98	0.79
		Calanoida	*Epischura sp.*	0.03	1.07
			Copepodites	2.57	11.74
		Cyclopoida	*Cyclops strenuus*	0.73	7.28
			Diacyclops thomasi	0.02	0.18
			Copepodites	1.70	4.29

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Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
July	FF2-3	Cladocera	*Bosmina longirostris*	0.02	0.01
			Chydorus sphaericus	0.02	0.02
			Daphnia longiremis	0.11	0.32
			Holopedium gibberum	0.09	0.53
		Rotifera	*Collotheca pelagica*	0.09	0.00
			Conochiloides natans	0.15	0.02
			Conochilus unicornis	1.89	0.04
			Filinia terminalis	0.19	0.00
			Asplanchna priodonta	0.03	0.03
			Kellicottia longispina	13.13	0.13
			Keratella cochlearis	2.42	0.01
			Notholca laurentiae	0.09	0.00
			Gastropus stylifer	0.40	0.02
			Ploesoma truncatum	0.03	0.00
			Polyarthra remata	2.45	0.13
			Synchaeta stylata	0.99	0.08
		Copepoda - nauplii	Nauplii	2.29	0.92
		Calanoida	Copepodites	1.47	6.21
		Cyclopoida	*Cyclops strenuus*	0.62	6.57
			Diacyclops thomasi	0.06	0.54
			Copepodites	3.24	5.85
July	FF2-4	Cladocera	*Daphnia longiremis*	0.07	0.07
			Holopedium gibberum	0.12	0.55
		Rotifera	*Collotheca pelagica*	0.28	0.00
			Conochilus unicornis	1.72	0.04
			Filinia terminalis	0.28	0.00
			Kellicottia longispina	12.03	0.12
			Keratella cochlearis	1.67	0.01
			Keratella hiemalis	0.14	0.01
			Notholca laurentiae	0.70	0.02
			Gastropus stylifer	0.19	0.01
			Ploesoma truncatum	0.05	0.00
			Polyarthra remata	1.58	0.08
			Synchaeta stylata	1.67	0.19
		Copepoda - nauplii	Nauplii	1.25	0.50
		Calanoida	*Epischura nevadensis*	0.02	0.66
			Copepodites	1.35	6.12
		Cyclopoida	*Cyclops strenuus*	0.72	7.67
			Copepodites	2.56	5.25

Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
July	FF2-5[a]	Cladocera	*Bosmina longirostris*	0.05	0.18
			Daphnia longiremis	0.07	0.30
			Daphnia middendorffiana	0.02	0.13
			Holopedium gibberum	0.12	0.58
		Rotifera	*Collotheca pelagica*	0.42	0.01
			Conochiloides natans	0.19	0.03
			Conochilus unicornis	1.72	0.04
			Filinia terminalis	0.09	0.00
			Asplanchna priodonta	0.05	0.05
			Kellicottia longispina	11.52	0.12
			Keratella cochlearis	3.21	0.01
			Keratella hiemalis	0.09	0.00
			Notholca laurentiae	0.33	0.01
			Gastropus stylifer	0.19	0.01
			Polyarthra remata	2.23	0.12
			Synchaeta stylata	0.88	0.10
		Copepoda - nauplii	Nauplii	1.58	0.63
		Copepodites	Copepodites	1.21	6.04
		Cyclopoida	*Cyclops strenuus*	0.84	9.33
			Diacyclops thomasi	0.05	0.37
			Copepodites	2.67	5.15
July	FF2-5[b]	Cladocera	*Bosmina longirostris*	0.01	0.01
			Daphnia longiremis	0.06	0.11
			Daphnia middendorffiana	0.00	0.00
			Holopedium gibberum	0.00	0.00
		Rotifera	*Collotheca pelagica*	0.14	0.00
			Conochiloides natans	0.09	0.01
			Conochilus unicornis	2.23	0.05
			Filinia terminalis	0.14	0.00
			Asplanchna priodonta	0.05	0.03
			Kellicottia longispina	10.87	0.11
			Keratella cochlearis	2.23	0.01
			Notholca laurentiae	0.19	0.01
			Gastropus stylifer	0.33	0.02
			Polyarthra remata	2.42	0.12
			Synchaeta stylata	0.79	0.06
		Copepoda - nauplii	Nauplii	2.23	0.89
		Copepodites	Copepodites	1.14	5.17
		Cyclopoida	*Cyclops strenuus*	0.56	6.54

Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
			Diacyclops thomasi	0.03	0.24
			Copepodites	1.93	4.83
August	FF2-1	Cladocera	*Daphnia longiremis*	0.15	0.79
			Holopedium gibberum	0.21	2.74
		Rotifera	*Collotheca pelagica*	0.17	0.00
			Conochilus unicornis	7.93	0.15
			Asplanchna priodonta	0.08	0.14
			Kellicottia longispina	17.61	0.18
			Keratella cochlearis	1.59	0.01
			Gastropus stylifer	1.09	0.04
			Ploesoma hudsoni	0.08	0.01
			Polyarthra major	1.25	0.06
		Copepoda - nauplii	Nauplii	4.01	1.60
		Calanoida	*Leptodiaptomus minutus*	0.10	0.84
			Leptodiaptomus pribilofensis	0.08	1.26
			Epischura sp.	0.02	0.38
			Heterocope septentrionalis	0.02	1.46
			Copepodites	1.96	14.11
		Cyclopoida	*Cyclops strenuus*	0.44	4.33
			Diacyclops thomasi	0.13	0.79
			Copepodites	2.67	9.23
August	FF2-2	Cladocera	*Daphnia longiremis*	0.30	1.51
			Holopedium gibberum	0.30	3.72
		Rotifera	*Collotheca pelagica*	0.15	0.00
			Conochilus unicornis	7.09	4.88
			Kellicottia longispina	22.16	0.23
			Keratella cochlearis	1.92	0.01
			Notholca laurentiae	0.07	0.01
			Gastropus stylifer	1.77	0.06
			Polyarthra major	0.52	0.03
		Copepoda - nauplii	Nauplii	2.51	1.00
		Calanoida	*Leptodiaptomus minutus*	0.26	2.52
			Leptodiaptomus pribilofensis	0.07	1.18
			Epischura sp.	0.02	0.24
			Heterocope septentrionalis[(c)]	-	-
			Copepodites	3.38	25.28
		Cyclopoida	*Cyclops strenuus*	0.48	5.48
			Diacyclops thomasi	0.06	0.27
			Copepodites	2.16	6.75

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Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m³)
August	FF2-3	Cladocera	*Bosmina longirostris*	0.02	0.04
			Daphnia longiremis	0.39	2.27
			Holopedium gibberum	0.35	4.47
		Rotifera	*Collotheca pelagica*	0.16	0.00
			Conochilus unicornis	6.76	0.16
			Kellicottia longispina	28.52	0.29
			Keratella cochlearis	2.51	0.01
			Gastropus stylifer	1.26	0.05
			Polyarthra major	2.36	0.12
		Copepoda - nauplii	Nauplii	3.14	1.26
		Calanoida	*Leptodiaptomus minutus*	0.10	0.99
			Leptodiaptomus pribilofensis	0.06	0.86
			Epischura sp.	0.06	1.41
			Heterocope septentrionalis[(c)]	-	-
			Copepodites	1.87	13.26
		Cyclopoida	*Cyclops strenuus*	0.22	2.79
			Diacyclops thomasi	0.04	0.32
			Copepodites	2.12	7.79
August	FF2-4[(a)]	Cladocera	*Daphnia longiremis*	0.22	0.71
			Holopedium gibberum	0.15	2.12
		Rotifera	*Ascomorpha ecaudis*	0.15	0.00
			Collotheca pelagica	0.22	0.00
			Conochilus unicornis	11.29	0.27
			Kellicottia longispina	29.17	0.30
			Keratella cochlearis	1.83	0.01
			Gastropus stylifer	0.44	0.02
			Polyarthra major	2.86	0.14
		Copepoda - nauplii	Nauplii	3.22	1.29
		Calanoida	*Leptodiaptomus pribilofensis*	0.07	1.09
			Leptodiaptomus sicilis	0.07	0.87
			Heterocope septentrionalis[(c)]	-	-
			Copepodites	3.30	26.97
		Cyclopoida	*Cyclops strenuus*	0.81	8.65
			Diacyclops thomasi	0.04	0.23
			Copepodites	3.63	13.73

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Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
August	FF2-4[(b)]	Cladocera	*Daphnia longiremis*	0.11	0.83
			Holopedium gibberum	0.26	1.51
		Rotifera	*Asplanchna priodonta*	0.07	0.18
			Collotheca pelagica	0.22	0.00
			Conochilus unicornis	12.90	0.31
			Kellicottia longispina	34.59	0.36
			Keratella cochlearis	2.27	0.01
			Gastropus stylifer	1.17	0.04
			Polyarthra major	2.20	0.11
		Copepoda - nauplii	Nauplii	4.91	1.96
		Calanoida	*Leptodiaptomus minutus*	0.11	0.88
			Leptodiaptomus pribilofensis	0.22	2.66
			Heterocope septentrionalis	0.04	3.95
			Copepodites	3.08	23.49
		Cyclopoida	*Cyclops strenuus*	0.59	6.54
			Diacyclops thomasi	0.15	0.83
			Copepodites	4.40	14.96
August	FF2-5	Cladocera	*Bosmina longirostris*	0.03	0.08
			Eubosmina longispina	0.03	0.19
			Daphnia longiremis	0.34	1.44
			Holopedium gibberum	0.50	3.98
		Rotifera	*Collotheca pelagica*	0.19	0.00
			Conochilus unicornis	22.23	0.49
			Asplanchna priodonta	0.13	0.13
			Kellicottia longispina	15.15	0.16
			Keratella cochlearis	0.88	0.00
			Gastropus stylifer	0.31	0.01
			Polyarthra major	1.25	0.06
		Copepoda - nauplii	Nauplii	3.88	1.55
		Calanoida	*Leptodiaptomus minutus*	0.13	1.22
			Leptodiaptomus pribilofensis	0.16	2.23
			Epischura nevadensis	0.09	1.79
			Heterocope septentrionalis[(c)]	-	-
			Copepodites	2.97	17.58
		Cyclopoida	*Cyclops strenuus*	0.69	7.83
			Diacyclops thomasi	0.16	0.94
			Copepodites	3.51	11.83

Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
September	FF2-1	Cladocera	*Bosmina longirostris*	0.05	0.11
			Daphnia longiremis	0.28	1.27
			Holopedium gibberum	0.05	1.11
		Rotifera	*Collotheca pelagica*	0.56	0.00
			Conochilus unicornis	6.94	0.12
			Filinia terminalis	0.19	0.00
			Kellicottia longispina	10.84	0.11
			Keratella cochlearis	0.68	0.00
			Keratella serrulata	0.06	0.00
			Gastropus stylifer	0.25	0.01
			Polyarthra major	0.62	0.03
		Copepoda - nauplii	Nauplii	6.88	2.75
		Calanoida	*Leptodiaptomus pribilofensis*	0.39	5.49
			Leptodiaptomus sicilis	0.85	11.37
			Epischura nevadensis	0.08	1.71
			Copepodites	0.15	1.19
		Cyclopoida	*Cyclops strenuus*	0.68	5.70
			Diacyclops thomasi	0.19	1.37
			Copepodites	2.18	7.90
September	FF2-2	Cladocera	*Bosmina longirostris*	0.03	0.02
			Eubosmina longispina	0.05	0.29
			Daphnia longiremis	0.81	2.34
			Holopedium gibberum	0.11	2.12
		Rotifera	*Collotheca pelagica*	0.22	0.00
			Conochilus unicornis	7.10	0.11
			Asplanchna priodonta	0.05	0.08
			Kellicottia longispina	10.73	0.11
			Keratella cochlearis	1.46	0.00
			Ascomorpha ecaudis	0.05	0.00
			Gastropus stylifer	0.11	0.00
			Polyarthra major	0.54	0.03
		Copepoda - nauplii	Nauplii	7.53	3.01
		Calanoida	*Leptodiaptomus pribilofensis*	0.68	9.27
			Leptodiaptomus sicilis	1.25	15.15
			Epischura nevadensis	0.03	0.60
			Copepodites	0.03	0.23
		Cyclopoida	*Cyclops strenuus*	0.65	5.82
			Diacyclops thomasi	0.60	3.68
			Copepodites	2.57	9.71

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Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
September	FF2-3	Cladocera	*Daphnia longiremis*	0.28	0.90
		Rotifera	*Collotheca pelagica*	0.32	0.00
			Conochilus unicornis	6.61	0.12
			Asplanchna priodonta	0.16	0.22
			Kellicottia longispina	8.63	0.09
			Keratella cochlearis	1.85	0.00
			Polyarthra major	0.81	0.04
		Copepoda - nauplii	Nauplii	6.85	2.74
		Calanoida	*Leptodiaptomus pribilofensis*	0.38	5.50
			Leptodiaptomus sicilis	1.75	24.65
			Epischura nevadensis	0.04	0.95
			Copepodites	0.08	0.65
		Cyclopoida	*Cyclops strenuus*	0.50	5.56
			Diacyclops thomasi	0.36	2.45
			Copepodites	2.38	8.64
September	FF2-4	Cladocera	*Bosmina longirostris*	0.15	0.19
			Daphnia longiremis	0.76	2.31
			Daphnia middendorffiana	0.03	0.27
			Holopedium gibberum	0.06	0.60
		Rotifera	*Collotheca pelagica*	0.23	0.00
			Conochilus unicornis	6.33	0.11
			Filinia terminalis	0.12	0.00
			Kellicottia longispina	8.56	0.09
			Keratella cochlearis	1.17	0.00
			Gastropus stylifer	0.12	0.00
			Monostyla lunaris	0.06	0.00
			Polyarthra major	0.23	0.01
			Trichotria tetractis	0.06	0.00
		Copepoda - nauplii	Nauplii	6.92	2.77
		Calanoida	*Leptodiaptomus ashlandi*	0.06	0.43
			Leptodiaptomus minutus	0.03	0.23
			Leptodiaptomus pribilofensis	0.29	3.72
			Leptodiaptomus sicilis	1.11	14.65
			Epischura nevadensis	0.03	0.63
			Copepodites	0.03	0.20
		Cyclopoida	*Cyclops strenuus*	0.56	5.46
			Diacyclops thomasi	0.41	2.25
			Copepodites	2.11	7.49

Table A-11 Zooplankton Abundance and Biomass in Lac de Gras, Far-Field 2 Area, 2014

Sampling Period	Station	Major Taxonomic Group	*Taxonomic Name*	Abundance (org/L)	Biomass (mg/m^3)
September	FF2-5	Cladocera	*Eubosmina longispina*	0.02	0.03
			Daphnia longiremis	0.40	1.57
			Holopedium gibberum	0.02	0.37
		Rotifera	*Collotheca pelagica*	0.81	0.00
			Conochilus unicornis	5.86	0.10
			Asplanchna priodonta	0.07	0.05
			Kellicottia longispina	10.55	0.11
			Keratella cochlearis	1.32	0.00
			Ascomorpha ecaudis	0.07	0.00
			Ascomorpha ovalis	0.07	0.00
			Gastropus stylifer	0.07	0.00
			Polyarthra major	2.27	0.11
		Copepoda - nauplii	Nauplii	6.38	2.55
		Calanoida	*Leptodiaptomus pribilofensis*	0.13	1.73
			Leptodiaptomus sicilis	1.34	17.75
			Epischura nevadensis	0.04	0.73
			Copepodites	0.07	0.67
		Cyclopoida	*Cyclops strenuus*	0.27	2.44
			Diacyclops thomasi	0.33	1.84
			Copepodites	1.70	6.35

Notes: Samples were analyzed by EcoAnalysts, Inc. Values are rounded to the nearest whole number.
org/L = number of organisms per litre; mg/m^3 = milligrams per cubic metre; sp. = species; - = not applicable.
a) Replicate 1.
b) Replicate 2.
c) Presence of *Heterocope septentrionalis* was noted in the fine fraction of this sample, but not enumerated or measured by the taxonomist. This taxon was counted towards taxonomic richness, but abundance and biomass could not be quantified.

Table A-12 Summary of Zooplankton Community Data for Lakes in the Jay Project Area, 2014

Basin	Waterbody	Station	Sampling Period	Replicate	Total Abundance (org/L)	Total Biomass (mg/m^3)	Taxonomic Richness (No. of Taxa)	Relative Abundance (%)					Relative Biomass (%)				
								Calanoida	Cladocera	Cyclopoida	Rotifera	Copepod nauplii	Calanoida	Cladocera	Cyclopoida	Rotifera	Copepod nauplii
Lac du Sauvage	Lac du Sauvage	Aa-1	August		83	52	16	0.4	19.6	6.5	66.6	6.9	7.7	56.7	29.4	1.8	4.4
			September		69	43	15	0.2	8.3	10.9	70.0	10.6	2.4	24.5	50.6	15.8	6.7
		Ab-1	July		64	44	14	0.7	10.6	5.7	75.7	7.4	3.9	65.4	25.2	1.1	4.3
			August		49	61	14	0.4	25.4	8.3	57.3	8.7	2.6	65.6	28.4	0.6	2.8
			September		59	29	14	0.0	7.0	8.7	56.7	27.6	0.0	22.5	45.1	10.3	22.1
		Ac-1	July		55	30	13	0.6	5.6	6.4	82.9	4.5	2.9	44.2	47.8	1.6	3.4
			August		61	59	16	0.7	18.4	4.9	62.9	13.1	8.2	63.8	20.9	1.7	5.4
			September	Rep 1	53	30	16	0.1	4.9	13.2	55.4	26.3	5.7	17.2	52.3	6.2	18.6
			September	Rep 2	52	27	16	0.1	5.2	11.6	57.8	25.3	6.2	13.2	50.7	10.3	19.5
		Ac-4	July		58	50	13	0.7	12.9	11.0	66.5	8.9	1.7	50.7	42.5	1.0	4.1
			August		79	97	12	0.7	22.0	13.4	49.3	14.6	6.0	49.8	38.6	0.9	4.8
			September		48	35	13	0.1	6.1	14.8	45.9	33.1	2.7	15.1	56.2	7.5	18.5
		Ac-7	July		66	19	16	1.0	3.0	5.5	84.5	6.0	7.6	22.2	57.4	4.4	8.4
			August		47	41	16	1.5	14.1	6.3	65.6	12.4	20.8	41.0	30.8	1.7	5.7
			September		46	29	14	0.1	6.8	12.7	47.9	32.5	3.0	15.5	53.3	7.7	20.5
		Ad-1	July		32	13	12	0.2	3.4	8.4	80.2	7.8	2.1	22.4	65.4	2.4	7.8
			August		64	44	14	0.7	10.6	5.7	75.7	7.4	3.9	65.4	25.2	1.1	4.3
			September		60	34	14	0.0	2.9	15.8	55.1	26.3	0.0	6.8	67.4	7.6	18.3
		Ae-1	July		51	29	13	1.0	9.4	7.2	77.2	5.1	2.8	57.9	33.4	2.3	3.7
			August		95	152	14	1.8	30.7	5.2	54.3	8.0	9.3	70.8	17.3	0.5	2.0
			September		80	55	12	0.2	6.1	14.1	52.1	27.5	3.1	21.8	50.7	8.5	16.0
	Duchess Lake	Af-1	August		66	41	16	0.1	48.0	0.7	38.8	12.3	7.2	76.3	6.5	2.0	8.0
			September		76	33	13	0.2	30.8	6.2	60.8	2.1	2.4	60.5	20.1	15.1	1.9

Table A-12 Summary of Zooplankton Community Data for Lakes in the Jay Project Area, 2014

Basin	Waterbody	Station	Sampling Period	Replicate	Total Abundance (org/L)	Total Biomass (mg/m³)	Taxonomic Richness (No. of Taxa)	Relative Abundance (%)					Relative Biomass (%)				
								Calanoida	Cladocera	Cyclopoida	Rotifera	Copepod nauplii	Calanoida	Cladocera	Cyclopoida	Rotifera	Copepod nauplii
Lac de Gras	Slipper Bay	S2	July		63	27	11	1.1	0.6	5.6	91.2	1.5	12.5	7.4	73.5	5.2	1.4
			August		32	40	14	6.6	4.9	6.9	65.0	16.7	45.1	22.3	26.3	0.9	5.3
			September		20	45	13	9.7	3.5	7.8	52.2	26.9	59.0	20.6	15.2	0.4	4.7
		S3	July		20	26	12	6.2	0.4	17.8	63.4	12.2	29.9	1.9	63.5	0.8	3.9
			August	Rep 1	12	23	12	9.6	0.7	10.0	60.3	19.4	65.4	3.1	26.8	0.6	4.1
			August	Rep 2	12	19	10	8.9	0.6	10.7	61.1	18.7	52.5	2.6	39.4	0.8	4.7
			September		14	38	12	12.2	1.5	6.4	57.5	22.4	70.0	16.2	9.9	0.4	3.4
		S5	July	Rep 1	12	16	14	12.8	1.4	11.4	64.8	9.6	41.4	5.6	49.1	1.0	3.0
			July	Rep 2	14	16	11	16.0	0.6	11.3	60.9	11.2	38.9	3.3	53.2	0.9	3.7
			August		11	28	12	20.5	1.5	7.0	54.9	16.1	67.3	13.4	16.2	0.4	2.7
			September		9	53	12	33.6	5.3	10.0	23.8	27.4	50.4	40.3	7.4	0.1	1.8
		S6	July		16	16	12	12.9	0.5	8.8	61.9	15.9	42.8	6.1	43.6	1.2	6.3
			August		12	24	11	14.6	1.0	10.3	48.4	25.7	55.9	11.2	27.3	0.4	5.2
	Far-field 2	FF2-1	July		27	19	14	3.3	0.3	10.1	82.4	3.9	20.2	2.6	72.6	2.3	2.2
			August		40	38	15	5.5	0.9	8.2	75.3	10.1	47.3	9.2	37.7	1.6	4.2
			September		32	40	14	4.6	1.2	9.6	63.1	21.6	49.1	6.2	37.2	0.7	6.8
		FF2-2	July		27	26	14	9.6	0.4	9.1	73.5	7.4	49.1	1.3	45.0	1.6	3.0
			August		43	53	14	8.6	1.4	6.2	77.9	5.8	29.2	5.2	12.5	5.2	1.0
			September		35	53	15	5.7	2.9	11.0	58.6	21.8	48.0	9.1	36.5	0.6	5.7
		FF2-3	July		30	21	18	4.9	0.8	13.2	73.4	7.7	29.0	4.1	60.4	2.2	4.3
			August		50	36	14	4.2	1.5	4.8	83.2	6.3	45.8	18.8	30.2	1.7	3.5
			September		31	53	11	7.3	0.9	10.5	59.3	22.1	60.5	1.7	31.7	0.9	5.2
		FF2-4	July		26	21	14	5.2	0.7	12.4	76.9	4.8	31.9	2.9	60.6	2.3	2.4
			August	Rep 1	57	56	13	6.0	0.6	7.8	80.0	5.6	51.3	5.0	40.1	1.3	2.3
			August	Rep 2	67	59	13	5.1	0.5	7.6	79.4	7.3	52.8	4.0	38.1	1.7	3.4
			September		29	41	16	5.3	3.4	10.5	57.4	23.5	47.9	8.1	36.7	0.5	6.7
		FF2-5	July	Rep 1	28	23	16	4.4	0.9	12.9	76.0	5.7	26.0	5.1	64.0	2.2	2.7
			July	Rep 2	25	18	15	4.5	0.3	9.9	76.6	8.8	28.4	0.6	63.7	2.4	4.9
			August		53	52	15	6.4	1.7	8.3	76.3	7.4	44.3	11.0	40.0	1.7	3.0
			September		32	36	15	5.0	1.4	7.3	66.4	20.0	57.3	5.4	29.2	1.1	7.0

Notes: Samples were analyzed by EcoAnalysts, Inc. Total abundance and biomass values are rounded to the nearest whole number.
org/L = number of organisms per litre; mg/m³ = milligrams per cubic metre; No. = number; % = percent; Late Spring = July; Summer = August; Fall = September.