JERICHO DIAMOND PROJECT
AQUATIC STUDIES PROGRAM (2000)

RL&L
Environmental Services Ltd.

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Cover Photo: Lake C3 viewed from the southeast inlet stream, September 2000.

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EXECUTIVE SUMMARY

The Jericho Diamond Project was initiated by Tahera Corporation in 1995 based on the discovery of a kimberlite pipe situated 420 km northeast of Yellowknife in the Northwest Territories (Nunavut Territory as of April 1, 1999). In anticipation of possible development of this deposit, Tahera has completed several years of baseline environmental inventories in the area. R.L. & L. Environmental Services Ltd. was contracted to complete the aquatic biota component of these baseline inventories.

The Year 2000 aquatic studies program had two major objectives. The first was to undertake synoptic surveys to characterize waterbodies not previously sampled. The second was to complete detailed surveys of waterbodies that may be removed from production by the proposed development. This document is a comprehensive data report that summarizes the information collected in 2000.

Surveys were completed on six lakes (Carat Lake, Lakes C3, C4, and D10, Control Lake, and Contwoyto Lake bay) and four streams (Stream C1, C2, C3, and D1) in the Jericho Study Area.

A detailed bathymetric survey of Lake C3 was completed in 2000. This lake has a large central basin associated with a smaller elongated basin that extends to the west. The central basin comprises two smaller sub-basins having maximum depths of 14 and 15 m. The elongated basin consists of three sub-basins. It has a mean depth of 5.0 m and a maximum depth of 12 m.

During summer (27 to 29 July), temperature profiles of two waterbodies (Lakes C4 and D10) indicated uniform mixing (i.e., isothermal). In contrast, water temperatures in Lake C3, Carat, and Control decreased from surface to bottom (11 to 5^{o}C) and exhibited varying degrees of stratification.

All surveyed streams were small and likely freeze to the bottom during winter. The average channel width ranged from 1.5 m to 10.0 m, and average maximum depths were less than 0.12 m. A variety of channel types were documented including single and multiple braids, as well as dispersed flow and subsurface water flow. Substrates consisted primarily of silt/sands or cobble/boulders. Stream discharges were too low to measure during the summer period. Due to their small size, all surveyed streams contained barriers to fish passage.

Continuous monitoring of three streams (Streams C1, C2, and C3) indicated that maximum water temperatures were reached at the end of July (e.g., 22^{o}C in Stream C1). Water temperatures gradually dropped throughout the remainder of the open-water period until reaching values close to 0^{o}C by 10 September.

In general, water quality constituent concentrations were low in sampled lakes and streams. This was true for turbidity ($\leq$1.10 NTU), total alkalinity ($\leq$17 mg/L), and total dissolved solids ($\leq$10 mg/L). Stream and lake pH values were between 6.5 and 7.0. Total phosphorus concentrations ranged from 0.003 to 0.006 mg/L. The TKN concentrations in Lake C4 and Stream C2 exhibited higher values (0.42 and 0.77 mg/L, respectively) then those recorded in Control Lake and Stream D1 (0.18 and 0.19 mg/L, respectively). Nitrite/nitrate-N concentrations were generally low at most sites; they ranged from < 0.003 to 0.078 mg/L. Total carbon concentrations ranged from 4.0 to 10.7 mg/L.

Sampled components of the nonvertebrate community included periphyton, phytoplankton, zooplankton, and benthic macroinvertebrates. The periphyton and phytoplankton assemblages in surveyed waterbodies were simple and indicative of oligotrophic systems. Periphyton chlorophyll *a* concentrations were low ($\leq$17 $\mu g/cm^2$) at all sites and AFDM values were also low ($\leq$79 mg/cm^2). Similarly, phytoplankton chlorophyll *a*, biovolume, and density values were all low.

Zooplankton exhibited variation between lakes in terms of community biomass and density, but values were consistently low. Calanoid copepods were the dominant taxonomic group. Within this group, *Leptodiaptomus minutus* and *Leptodiaptomus sicilis* were the most important species.

Benthic macroinvertebrate groups encountered in surveyed lakes included chironomids, nematodes, pelecypods, oligochaetes, and ostracods and this taxonomic composition was indicative of a homogenous substrate dominated by fine sediments in lake environments. The communities were dominated by a few taxa: chironomids and nematodes were numerically abundant. In general, densities and numbers of taxonomic groups were greater in the littoral zone than in the profundal zone.

Most sampled lakes in the Jericho Study Area supported populations of lake trout, Arctic char and round whitefish. Lake trout was the predominant species with Arctic char and round whitefish being less numerous. Notable exceptions were Lake C4, which contained no fish, and Lake D10 which supported only burbot and slimy sculpin.

Several fish species were encountered in sampled streams. Arctic char, lake trout, and slimy sculpin were the most numerous, followed by limited numbers of burbot. Overall, fish abundance was very low.

Limited recapture data for tagged fish made it difficult to assess movement patterns; however, characteristics of most watercourses indicated that large numbers of fish likely do not undertake movements between waterbodies. It should be noted that fish did move between Jericho and Carat Lakes, as evidenced by the recapture of a single tagged lake trout.

Lake trout and Arctic char in prespawning and spawning condition were present in all lakes sampled, with most of the captured fish being males. One ripe female (lake trout) was captured during the present study at the southeast corner of Carat Lake. No spawning females were captured in Control or Contwoyto Lakes. The low numbers of females in spawning condition, suggested that sampling was undertaken prior to the peak spawning period.

Potential fish production was severely limited in the waterbodies examined. Estimates of annual fish yields were 0.79 kg/ha in Lake D10 and 1.11 kg/ha in Lake C3. Due to the extreme environmental conditions experienced by fish residing these lakes (i.e., cold water temperatures and short growing period), the actual yield in these waterbodies was likely much lower.

The shoreline areas of surveyed lakes were dominated by low to moderately sloped areas and by cobble-boulder substrates. These shoreline characteristics provided potential spawning areas for species such as lake trout, Arctic char, and round whitefish. The same shoreline characteristics that provided spawning habitat also provided some rearing habitat for fish. Although rearing habitat was available, no high quality areas were identified.

Surveyed streams provided limited habitat for fish populations originating from study area lakes. The primary reasons for this finding were the small size of the streams and their poorly defined channels, which contained barriers to fish passage.

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1.0 INTRODUCTION

1.1 BACKGROUND

The Jericho Diamond Project was initiated by Tahera Corporation (formerly Lytton Minerals Ltd.) in 1995 based on the discovery of a kimberlite pipe adjacent to the southern shore of an unnamed lake (locally known as Carat Lake).

In anticipation of the possible development of this deposit, Tahera Corporation completed baseline inventory programs in 1995, 1996, and 1999. This involved collection of data on meteorological conditions, water quality, hydrology, wildlife, and aquatic biota. R.L. & L. Environmental Services Ltd. was contracted to complete the aquatic biota component of the baseline inventory programs, which focused on the aquatic community within the Carat Lake drainage in the immediate vicinity of the deposit. The information from the aquatic inventories were presented in three reports entitled "Jericho Diamond Project Aquatic Studies, 1995, 1996, and 1999" (RL&L 1995, 1997, 2000).

As part of the ongoing baseline inventory program for the Jericho Diamond Project, R.L. & L. Environmental Services Ltd. initiated field investigations in summer 2000 to address data gaps associated with existing baseline information.

1.2 STUDY PURPOSE AND OBJECTIVES

The purpose of the 2000 aquatic studies program was to collect information in preparation of an environmental impact assessment. The specific objectives of this study included:

1) Complete synoptic surveys to collect descriptive data from waterbodies not previously sampled:
   - to describe the physical characteristics (morphology and water quality) of waterbodies;
   - to describe the abundance, distribution and biological characteristics of nonvertebrate communities (benthic macroinvertebrates, zooplankton, phytoplankton, and periphyton);
   - to describe the seasonal abundance, distribution, and biological characteristics of fish species in the study area, as well as the habitat used by these fish; and,
   - to assess the importance of waterbodies that may be impacted by development to fish populations residing within, immediately downstream or upstream of the development.

2) Complete detailed surveys to collect scientifically defensible data from waterbodies (lakes and streams) that may be removed from production by the proposed development:

- to develop density estimates for fish;
- to quantify the amount of fish habitat; and,
- to quantify the trophic status of these waterbodies.

1.3 STUDY AREA

The study area is located approximately 420 km northeast of Yellowknife in the general vicinity of Echo Bay Mines Ltd. Lupin production facility. The Jericho study site is situated 50 km north of Lupin (66° 00' N, 111° 29') (Figure 1.1).

The study area (referred to as Jericho Study Area) encompasses lakes and streams in the immediate vicinity of the Jericho Diamond Project Site (Figure 1.2 and Table 1.1). Waterbodies selected for investigation in 2000 and the study tasks in each waterbody, were based on the following criteria:

- the potential for adverse effects from the development;
- the relative importance of the waterbody to the aquatic biological system; and,
- work not previously undertaken on a particular waterbody.

The waterbodies selected and the activities that will potentially impact the given waterbody in the project area include (as per the project description in spring 2000):

- Stream C1 will be diverted around the mine site;
- Carat Lake will be the receiving waterbody from mining activities in the vicinity of Stream C1 and C2 outlets;
- Lake D10 and associated ponds will be used for the Processed Kimberlite Containment Area (PKCA);
- Effluent from the PKCA could potentially affect fish communities in Stream C3, Lake C3, Carat Lake, and Control Lake;
- Lake C4 and Stream C2 may be used to dilute mine runoff before release into Carat Lake;
- Streams D1 and C2 may be affected by the proposed permanent road to Contwoyto Lake; and,
- Contwoyto Lake bay could be affected by the ramp associated with the road.

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Figure 1.1

Jericho Study Area, 2000.

Table 1.1 Waterbodies investigated and tasks completed during the aquatic studies program in the Jericho Study Area, 2000.

Category	Task	Waterbody										
		Carat Lake	Lake C3	Lake C4	Lake D10	Lake D10 ponds	Control Lake	Contwoyto Lake	Stream C1	Stream C2	Stream C3	Stream D1
Synoptic Survey	**Lake Characteristics**											
	Morphology	ps[a]	✓	✓	ps	✓	✓	ps				
	Limnology	ps	ps	✓	✓		✓	ps				
	Stream Characteristics											
	Morphology								ps	✓	✓	✓
	Temperature								✓	✓	✓	
	Water Quality	ps	ps	✓	ps		✓	ps	ps	✓	ps	✓
	Nonvertebrates											
	Zooplankton	ps	ps	✓	ps		✓	ps				
	Phytoplankton	ps	ps	✓	ps		✓	ps				
	Periphyton	ps	ps	✓	ps		✓	ps	ps		ps	
	Benthic Macroinvertebrates	ps	ps	✓	ps		✓	ps				
	Fish											
	Species Composition and Abundance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Biological Characteristics/Feeding Habits	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
	Movements	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
	Habitat Characteristics	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Detailed Survey	Fish Abundance				ps				ps	✓	✓	✓
	Fish Habitat Characteristics				ps				ps	✓	✓	✓
	Trophic Status											
	Phytoplankton Standing Crop			✓	ps							
	Periphyton Standing Crop			✓	ps				ps	✓	ps	✓

[a] Previously sampled.

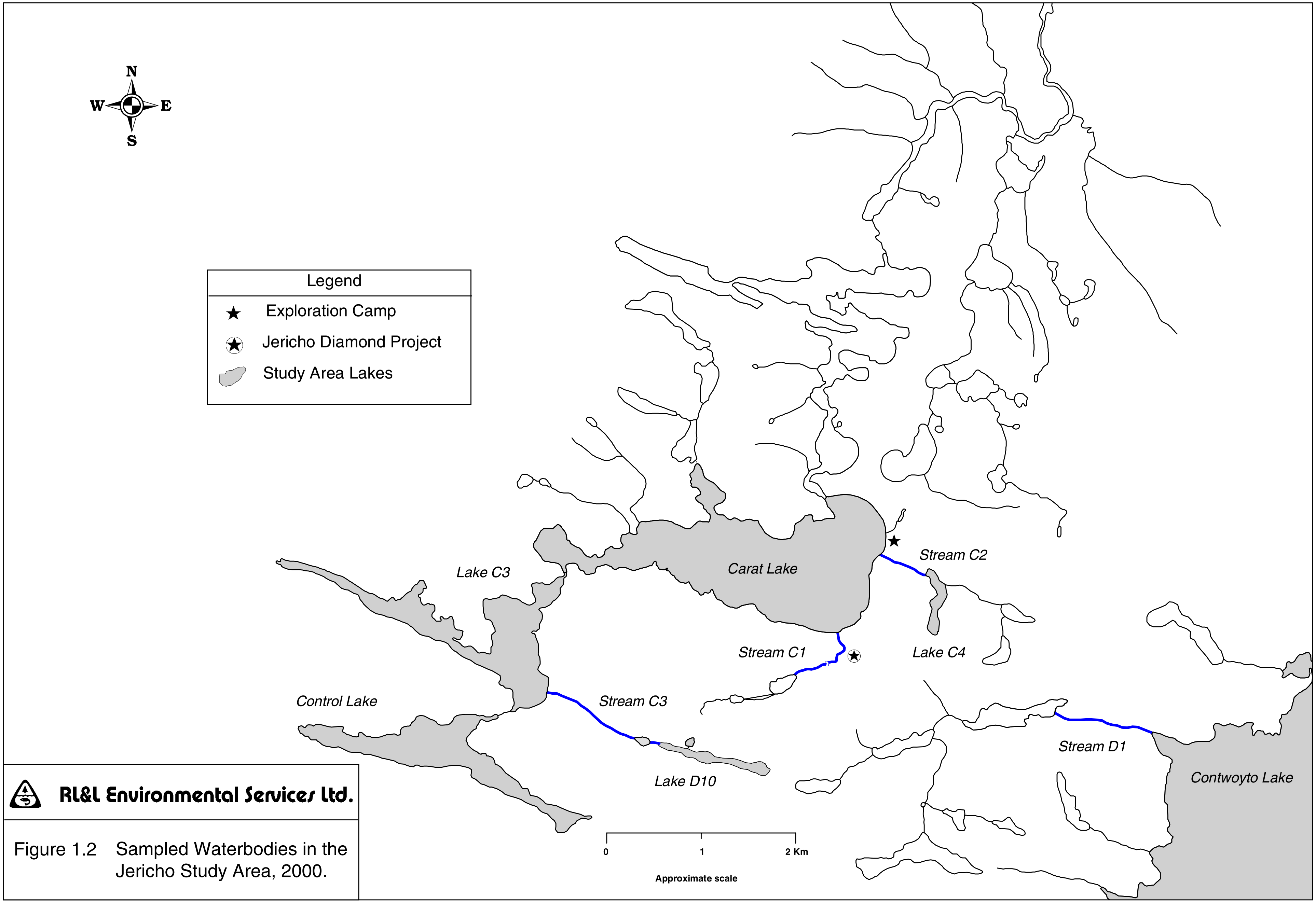

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Figure 1.2 Sampled Waterbodies in the Jericho Study Area, 2000.

1.4 TIMING AND LOGISTICS OF SAMPLING

The 2000 field program was conducted on a seasonal basis (summer and fall).The summer field period was conducted between 20 and 29 July and involved several sampling components. Tributary investigations included collection of fish and habitat data from streams and lakes, as well as collection of periphyton and water quality samples from selected locations. Lake work involved collection of limnological data, and samples of phytoplankton, zooplankton, periphyton, and benthic macroinvertebrates. Fish species distribution and abundance were investigated and a tagging program was undertaken in an attempt to assess fish movements between waterbodies and to develop density estimates for selected species in some waterbodies.

The fall session (31 August-7 September) involved documentation of fish distribution and abundance in lakes, to identify potential spawning areas.

Access to the site was by fixed-wing aircraft from Yellowknife. Accommodations were at the Tahera Corporation exploration camp located on the east shore of Carat Lake. Transportation of personnel and equipment to sampling sites was provided by helicopter.

2.0 METHODOLOGY

2.1 FIELD SAMPLING

2.1.1 Physical Environment

2.1.1.1 Lake Morphometry

Bathymetric surveys of selected lakes were conducted in summer 2000. The surveys were carried out using a Lowrance (Model X16) echo sounder, which provided a graphic output of depth measurements. The resulting depth database was merged with the digital location data generated from transect locations identified on the digitized maps.

2.1.1.2 Limnology and Water Quality

To document the limnology and general water quality characteristics of waterbodies in the study area, water chemistry, water temperature (^{o}C), and dissolved oxygen concentrations (mg/L) were measured at selected locations. Oxygen and temperature were measured in selected waterbodies using an Oxyguard Handy Beta dissolved oxygen-temperature meter. Water transparency was measured to the nearest 0.1 m using a standard Secchi disk (20 cm diameter). Additional parameters measured at the water surface included conductivity (Oakton TDS Testr meter) and pH (Oakton pH Testr 2 meter).

Water temperature was continuously monitored from several streams (Streams C1, C2 and C3) during the open water period (late-July to early-September). This provided a database of seasonal changes and daily temperature fluctuations. Vemco Minilog-TR thermographs were deployed to electronically record water temperatures at 30 minute intervals.

Water samples were collected during summer at selected waterbodies to document existing water quality characteristics. Stream water samples were collected from approximately 0.1 m below the water surface (surface grab). Lake water samples were collected at established sites using a prewashed 4 L Van Dorn bottle submerged to a depth of 1 m. Polyethylene gloves were worn during water collection to prevent contamination of the samples. Appropriate premeasured preservatives were added to the samples (if needed) and the samples were placed on ice and shipped to Enviro-Test Laboratories in Edmonton for analyses within 48 h of collection.

As part of the quality assurance / quality control (QA/QC) program, a water sample was split (i.e., collected from the same site but labelled as different sites) and submitted to the lab as a blind control. The QA/QC procedure was designed to document possible contamination of the samples from the bottles or the laboratory process.

2.1.1.3 Stream Discharge

Due to extremely low water levels during summer 2000, stream discharges could not be measured.

2.1.2 Nonvertebrates

2.1.2.1 Periphyton

The periphyton communities in selected lakes and streams were sampled during summer to assess the algal community composition, and to measure chlorophyll *a* and ash-free dry mass (AFDM). To ascertain productivity levels of selected waterbodies, additional chlorophyll *a* and ash-free dry mass (AFDM) samples were collected from selected locations (total of three at each site) throughout the open water period.

Each sample consisted of a composite of five scrapings following the methods described in Charlton et al. (1981) and Hickman et al. (1982). Each scraping (4 cm^2) was collected from a stone, selected at random, from the lake or stream bottom. Samples used for algal identification and enumeration were placed in individually labelled 20 mL dark containers and preserved with 5% acid-Lugol’s solution. Shortly after collection, two drops of 100% formalin were added to each of these samples to prevent growth of bacteria and fungi. Samples destined for chlorophyll *a* analysis were filtered (5 mL) onto Whatman GF/C filter paper, covered with anhydrous $MgCO_3$, and frozen. Samples for AFDM were subsampled in the laboratory, from the acid-Lugol’s preserved samples.

2.1.2.2 Phytoplankton

Phytoplankton were collected from selected lakes once during summer to characterize the community (species composition and chlorophyll *a*). Samples were collected from the euphotic zone, which is equal to the depth of 1% light penetration (approximately two times the Secchi depth). A sample consisted of a composite of five discrete vertical collections within this zone, which were made using a weighted plastic tube. In lakes that were shallower than two times the Secchi depth, phytoplankton hauls encompassed the entire water column to 1 m above the lake bottom (to avoid contamination of the sample with sediment). Samples were placed in labelled 500 mL containers, preserved with 5% acid-Lugol's solution, and stored in the dark. Three drops of 100% formalin were added to each sample to prevent growth of bacteria and fungi during storage. Prior to preservation, samples destined for chlorophyll *a* analysis were filtered (5 mL) onto Whatman GF/C filter paper, covered with anhydrous $MgCO_3$, and frozen. Samples for AFDM were subsampled in the laboratory, from the acid-Lugol’s preserved samples. Equipment was thoroughly rinsed before and after sampling at each site to prevent contamination. To ascertain productivity levels of selected lakes, additional chlorophyll *a* samples were collected from selected locations (total of three at each site) throughout the open water period.

2.1.2.3 Zooplankton

To characterize the zooplankton community in study area lakes, zooplankton samples also were collected from selected lakes once during summer. Each sample consisted of a composite of five vertical hauls, each of which were taken from a depth that was equal to the euphotic zone (approximately two times the Secchi depth). In lakes that were shallower than three times the Secchi depth, zooplankton hauls encompassed the entire water column to 1 m above the lake bottom (to avoid contamination of the sample with sediment). Zooplankton collections were made with a Wisconsin plankton net constructed with Nitex® mesh (net mouth diameter 130 mm; 0.064 x 0.064 mm mesh). To prevent predation by cyclopoid copepods, each sample was immediately preserved in 5% formalin and stored in labelled 500 mL polyethylene bottles. Equipment was thoroughly rinsed before and after sampling at each site to prevent contamination.

2.1.2.4 Benthic Macroinvertebrates

Benthic macroinvertebrates were sampled once from sites located in littoral (<5.0 m depth) and profundal (>5.0 m depth) zones of selected lakes during summer. The samples were used to characterize the nonvertebrate community in each of these zones. An Ekman grab sampler (aperture area equal to 0.023 m^2) was used to collect a composite of three grabs for each sample. Samples were then sieved through a 0.243 mm mesh net to remove excess sediments, placed in labelled polyethylene sample bags, and preserved in 10% formalin.

2.1.3 Fish

Fish sampling focussed on determining species composition, relative abundance, and seasonal use of lakes and streams. In addition, captured fish of selected species were tagged using individually numbered Floy anchor tags in an attempt to ascertain movement patterns and to develop density estimates. The type of sampling technique employed was dependent on the habitats sampled and size-classes of fish targeted.

2.1.3.1 Backpack Electrofishing

Shallow-water habitats in streams and lake margins were sampled during spring and summer using a Smith-Root Type XII high output backpack electrofisher. The electrofisher operator waded along the banks and sampled in the vicinity of suspected fish holding areas (undercut banks, boulder cover, etc.). The netter, who was positioned immediately downstream, collected the stunned fish and placed them in a holding bucket. Recorded information at each sampled site included UTM coordinates, date and time of day, water temperature and conductivity, distance sampled (m), sampling effort (s), electrofisher settings, and the number and species of fish captured or observed.

2.1.3.2 Gill Netting

Variable-mesh standard gill net sets were employed to sample deep-water habitats in lakes during the summer and fall field sessions. Each standard gill net set was comprised of 15.2 × 1.8 m panels of 2.5, 3.8, 6.4, 8.9, 11.4, and 14.0 cm mesh sizes (stretched measure). These sets were used to sample a wide range of fish size-classes and to allow comparison of catch rates. The majority of set times were kept short (less than 2 h) to minimize capture mortality.

During summer, a variety of habitats were sampled. During fall, sampling sites were chosen based on their potential as spawning habitat for lake trout, Arctic char, and round whitefish. Pertinent data recorded at each gill net site included set/pull time, set location/orientation, water depth, and substrate type.

2.1.3.3 Fyke Net

A modified Arctic fyke net (specifically designed to capture small fish <150 mm length) was utilized to sample near-shore areas in selected waterbodies. Sampled waterbodies included: Carat Lake near the outlet of Streams C1 and C2; Lake C3 near the outlet of Stream C3; and Lake D10 in the mid-section on the south shore.

The fyke net consisted of a single trap net, two 7.6 m wings, and a 7.6 m lead to shore. The trap was 0.9 m long and 0.9 m wide, contained two throats (7.5 × 7.5 cm each), and was constructed of 1.0 cm dark grey knotless nylon mesh. Wings and lead were also constructed of 1.0 cm dark grey knotless nylon and were 0.9 m deep. The fyke net was held in place by metal stakes driven into the lake bottom. The fyke net was checked daily and the following information was recorded: water temperature, set duration, the number and species of fish captured.

2.1.3.4 Minnow Traps

To capture smaller size-classes of fish in habitats not effectively sampled by gillnetting, standard minnow traps (gee type) baited with cat food were used in rocky shoreline areas. Dimensions of standard gee traps were 0.4 m length x 0.2 m diameter with an aperture of 0.02 m. Data recorded at each site included set/pull time, location/orientation, water depth, and substrate type.

2.1.3.5 Biological Characteristics

All captured fish were identified to species. Data recorded for each fish included fork length (to the nearest 1 mm), weight (to the nearest 5 g), sex, and maturity. An appropriate ageing structure was also collected (Mackay et al. 1990) from fish that succumbed during sampling. Data were recorded on standardized record sheets to facilitate data analyses in the laboratory.

To determine feeding habits, stomach contents of fish that succumbed during sampling were analysed in the field using the method described by Thompson (1959), which is a modification of the numerical method used by Hynes (1950). Each stomach was examined and evaluated for fullness, and allotted a designated number of fullness points (i.e., 20 points for a full stomach and 0 points for an empty stomach). After points were allocated for the degree of fullness, the stomach was opened and the points allotted to individual food categories based on their volume. To account for the presence of empty stomachs, values of zero were incorporated into the analysis.

2.1.4 Fish Habitat

2.1.4.1 Lakes

The shoreline habitat characteristics of some lakes in the study area were described using a standardized habitat classification system developed by R.L. & L. Environmental Services Ltd. (Appendix A). The classification system categorized shoreline habitat into discrete habitat types based on two variables: slope and substrate type. Lake habitat assessments were accomplished by circumnavigating each lake by boat. In addition to categorizing lake shoreline into habitat types, important features such as high quality rearing and spawning areas were identified based on visual assessments by qualified field personnel.

2.1.4.2 Streams

The physical habitat available to fish in study area streams was examined during summer to ascertain their importance to fish (habitat quality). Surveys were undertaken using a variety of methods. The physical habitat provided by streams was described using a classification system specifically developed for this purpose by R.L. & L. Environmental Services Ltd. (Appendix A). The classification system categorizes stream habitat into discrete habitat types (e.g., Run, Pool, Riffle). Once the stream was described using this system, several parameters were quantified. Cross-sectional transects within the stream channel were used to measure water depth, water velocity, substrate type, instream cover and stream width. Water velocity was not measured due to the lack of sufficient water flow. Substrate characteristics were recorded according to the modified Wentworth Classification System (Appendix A).

2.2 OFFICE ANALYSES

2.2.1 Physical Environment

2.2.1.1 Lake Morphometry

Morphometric characteristics of the study area lakes (surface area, shoreline length, island area, and perimeter) were calculated from digitized maps (generated from 1:50,000 scale N.T.S maps) using the MapInfo™ software package. Lake area calculations were obtained by using the MapInfo™ software package. Shoreline development indices were calculated using the following formula (from Wetzel 1983):

$$\textit{Shoreline Development} = \frac{\text{Shoreline Length}}{2\sqrt{(\text{pi} \cdot \text{Surface Area})}}$$

To generate bathymetric maps, the depth database generated during the field survey was merged with the digital location data generated from transect locations identified on digitized maps. These x, y, z data were then analysed by Vertical Mapper™ software, which generated isobaths at 1.0 m contour intervals. The computer-generated isobaths were then visually assessed and corrected in cases where contours did not agree with the conditions identified in the field. Lake area calculations were obtained by using the MapInfo™ software package. Lake volumes were calculated using the following formula (Wetzel 1983):

$$Volume = \frac{h}{3}\left(a_1 + a_2 + \sqrt{a_1 \cdot a_2}\right)$$

where h is the vertical depth of each stratum, a_1 is the area of the upper surface, and a_2 is the area of the lower surface of the stratum whose volume is to be determined.

2.2.1.2 Water Quality

The water chemistry constituents measured in the Jericho Study Area and their detection limits are listed in Table 2.1.

Table 2.1 Water chemistry constituents and their detection limits, Jericho Study Area, 2000.

Constituent	Unit	Detection Limit
Conductivity	µS/cm	0.2
Total Alkalinity	mg/L	5
Carbonate (CO_3)	mg/L	5
Calcium	mg/L	0.05
Bicarbonate	mg/L	1
Magnesium	mg/L	0.01
Potassium	mg/L	0.01
Sodium	mg/L	0.1
Chloride	mg/L	0.05
Sulphate	mg/L	0.05
Turbidity	NTU	0.1
Total Suspended Solids	mg/L	3
Total Dissolved Solids	mg/L	1
Total Hardness	mg/L	1

Constituent	Unit	Detection Limit
Hydroxide	mg/L	1
Total Kjeldahl-N	mg/L	0.05
Ammonia-N	mg/L	0.005
Nitrate+Nitrite-N	mg/L	0.006
Nitrate-N	mg/L	0.006
Total Phosphorus	mg/L	0.001
Dissolved Phosphorus	mg/L	0.001
Ortho-Phosphorus	mg/L	0.001
Total Carbon	mg/L	0.5
Total Organic Carbon	mg/L	0.5
Total Inorganic Carbon	mg/L	0.5
Cation/Anion Balance	%	1
pH	pH	0.1

2.2.2 Nonvertebrates

2.2.2.1 Periphyton

In the laboratory, the periphytic algal samples were processed as outlined in Lund et al. (1958). Samples were first mixed and then subjected to serial dilutions (generally 0 to 1000 fold dilutions depending on algal and organic debris in the original sample). Subsequently, 1 to 10 mL subsamples were dispensed into sedimentation chambers. After a 12 h settling period, the basal area of each chamber was scanned qualitatively with an inverted Lietz™ microscope to identify the best dilution factor for subsequent quantitative analyses and to obtain a comprehensive species list. Once the appropriate dilution factor was established, taxonomic groups within the sample were identified and enumerated.

Taxonomic keys of Smith (1950), Prescott (1970), and Webber (1971) were used for species identification. Counts were made at a magnification of approximately 450× along horizontal transects across the diameter of the chamber; a minimum of 200 algal units were examined. Species that were encountered, but not enumerated during routine transect counts, were recorded as present.

To identify and enumerate diatoms, subsamples were treated with a mixture of concentrated sulphuric acid, potassium dichromate, and hydrogen peroxide followed by repeated washes in distilled water. The cleaned frustules were then dried on cover glasses and mounted in Storax™.

Chlorophyll *a* analysis was conducted on all five replicates using the spectrophotometric-acetone extraction method described by Moss (1967a, 1967b). The AFDM subsamples were removed from the five replicate acid-Lugol's preserved samples and filtered onto pre-washed and pre-weighed Whatman™ GF/C filters. They were subsequently dried (at 105˚C for 24 h) and weighed. The dried samples were then ashed in a muffle furnace (at 550˚C for 1 h) and cooled in a desiccator. The difference between dry mass and ash mass is ash-free dry mass (APHA 1992).

2.2.2.2 Phytoplankton

Prior to analyses, the phytoplankton samples were gently inverted, and 10 to 100 mL subsamples were dispensed into sedimentation chambers (Lund et al. 1958). After a 24 h sedimentation period, samples were processed. To obtain a comprehensive species list, the entire basal area of the chamber was scanned qualitatively with an inverted microscope (Wild™ —40). Taxonomic keys used for identification included Prescott (1970), Taft and Taft (1971), and Webber (1971).

Once a comprehensive species list was established, cell density was assessed. To calculate cell density (cells/mL), individual cells were enumerated within a specified area of the sedimentation chamber. This was accomplished by counting the number of cells along horizontal transects placed across the specified area. To calculate the cell density of each species in the sample, the number of cells within the specified area was extrapolated to the subsample, and then to the entire sample.

Cell biovolume ($\mu m^3/m^3$) was calculated by first measuring the physical dimensions (length, width, and depth) of 10 to 30 cells of each species in the sample. Estimates of cell biovolume were then generated by multiplying the mean dimension of cells of a particular species by the number of cells enumerated for that species. The mean cell biovolume estimate for the subsample was then extrapolated to the entire sample. Species that were encountered during the qualitative assessment, but not enumerated (i.e., very low numbers or located outside the enumeration transects) were recorded as present.

For diatom identification and enumeration, a separate subsample was concentrated, dried onto a coverslip, ashed in a muffle furnace to remove organic matter, and mounted in Storax™.

2.2.2.3 Zooplankton

Zooplankton counts were conducted using a dissecting stereo-microscope (Wild^{TM}-5); identifications were made using a compound microscope equipped with a phase-contrast condenser (Wild^{TM}-20). Taxonomic keys used for crustacean plankton were Brooks, Wilson, and Yeatman (in Edmondson 1959), supplemented by the keys of Brooks (1957), Smirnov (1971), Brandlova et al. (1972), Flössner (1972), and Kiefer (1978). The taxonomic key used for identification of rotifers was the Voigt revision by Koste (1978), supplemented by keys of Ahlstrom (1943) and Ruttner-Kolisko (1974). Chaoboridae were identified using the keys of Cook (1956) and Saether (1970). Specimens were identified to the lowest taxonomic level possible.

Enumeration of zooplankton involved different techniques that were dependent on taxonomic group. Cladocerans and copepods (all stages) were enumerated either from three 15 mL subsamples or from the entire sample using a dissecting microscope at 12× to 50× magnification. For cladocerans and copepods, subsampling was performed (using an automatic pipette) on samples that contained large numbers of specimens. All samples were subsampled (using an automatic pipette) for rotifer enumeration; however, each subsample was allowed to settle for 24 h before processing. An inverted microscope (100× or 200× magnification) was used to enumerate rotifers by counting either six fields (one field = 0.02625 cm^2) or the entire counting chamber (4.907 cm^2). Subsamples were continually removed from the original sample until approximately 200 mature or identifiable rotifer organisms were processed. Once numbers of organisms within each sample were established, these values were converted to densities per cubic metre. This was accomplished by dividing the number of organisms encountered in a sample by the total volume filtered (i.e., net mouth area × depth of haul × number of hauls).

The biomass of major taxonomic groups within each sample was also determined. To calculate biomass, lengths were measured from the first 30 individuals observed in a sample. Lengths of larger zooplankton were measured directly with a microscope connected to a calibrated Sigma Scan^{TM} digitizing tablet. Smaller zooplankton, such as rotifers, were measured using an eyepiece graticule and corrected for magnification. Using length measurements from individual organisms, weights were calculated from published length-weight regression equations (Table 2.2). For each sample, a mean individual weight was calculated by averaging the estimated weights generated from the length-weight regression equation (it is important to average weights and not lengths; Bird and Prairie 1985). Biomass for each taxonomic group was calculated by multiplying the number enumerated for that sample by the mean individual weight.

2.2.2.4 Benthic Macroinvertebrates

In the laboratory, samples were first processed to remove all extraneous substrate and organic matter. Individual samples were washed to remove the preservative and repeatedly elutriated to remove excess silt, sand, and gravel (i.e., inorganic materials). This procedure was continued until nonvertebrates were no longer observed in the elutriated water. The sample was then subsampled using the method described in Wrona et al. 1982; only one third of the sample was used to enumerate the macroinvertebrates.

Table 2.2 Length-weight regression equations used to calculate zooplankton weights.

Organism	Equation	Reference
Copepods (N1-Adult)	$\ln W(\mu g) = 1.9526 + 2.399 \cdot \ln L(mm)$	Bottrell et al. (1976)
Daphnia spp.	$\ln W(\mu g) = 1.6 + 2.84 \cdot \ln L(mm)$	Bottrell et al. (1976)
Bosmina and *Eubosmina* spp.	$\ln W(\mu g) = 3.0896 + 3.0395 \cdot \ln L(mm)$	Bottrell et al. (1976)
Chydorus sphaericus	$\ln W(\mu g) = 4.543 + 3.636 \cdot \ln L(mm)$	Downing and Rigler (1984)
Holopedium spp.	$\ln W(\mu g) = 6.4957 + 3.190 \cdot \ln L(mm)$	Downing and Rigler (1984)
Rotifers	$\ln W(\mu g) = -10.3815 + 1.574 \cdot \ln L(\mu m)$	Stemberger and Gilbert (1987)

Using a dissecting microscope (6 to 42× magnification), nonvertebrates were then sorted by major taxonomic group and identified to the lowest practical taxonomic level (genus or species where possible). More difficult groups, such as nematodes, were identified to a higher taxonomic level. Keys used for identification included Wiggins (1977), and Clifford (1991). As part of the quality assurance / quality control (QA/QC) program, discarded sample material (material thrown out after being examined and sorted for macroinvertebrates) was thoroughly checked by an independent individual.

2.2.3 Fish

Relative abundance of fish was calculated in terms of catch-per-unit-effort (CPUE) based on the number of captured fish per unit of effort which was dependent on the sampling method. For backpack electrofishing, the units of effort included minutes of sampling time. For gill nets, catch rates were assessed by using a net-unit approach (i.e., 100 m^2 surface area of net fished for the equivalent of a 12-hour period constitutes one net-unit of effort). Catch-per-unit-effort (CPUE) was expressed as the number of fish (by species) per net-unit.

Length-weight relationships were characterized based on the least squares regression formula using SPSS for Windows (Version 7.0). Condition factors were calculated using Fulton's Condition Factor, K according to Cone (1989) as follows:

$$\textit{Fulton's Condition Factor} = W/L^3 \cdot 10^n$$

where W = weight,
L = fork length, and
n = 4

To facilitate data recording and presentation of the results, all captured fish species were assigned a four-letter code in accordance with Mackay et al. (1990). The common and scientific names of all fish species mentioned in this report, as well as their corresponding coded abbreviations, are presented in Table 2.3.

Table 2.3 Common and scientific names of fish species (and coded abbreviations) recorded in the Jericho Study Area, 2000.

Common Name	Scientific Name	Code[a]
Arctic char	*Salvelinus alpinus* (Linnaeus)	ARCH
Lake trout	*Salvelinus namaycush* (Walbaum)	LKTR
Round whitefish	*Prosopium cylindraceum* (Pallas)	RNWH
Burbot	*Lota lota* (Linnaeus)	BURB
Slimy sculpin	*Cottus cognatus* Richardson	SLSC

[a] According to Mackay et al. (1990).

3.0 RESULTS

The primary waterbodies sampled during the 2000 program included six lakes (Carat, Contwoyto, and Control Lakes, and Lakes C3, C4, and D10) and four streams (Streams C1, C2, C3, and D1) (Table 1.1 and Figure 3.1). These waterbodies were chosen based on the potential for adverse effects from the development, their relative importance to the aquatic biological community, and work previously undertaken on the waterbody. This work was completed to provide a more complete assessment of the fish community in the vicinity of the development.

To be consistent with previous studies, site designations and labelling correspond to those established in previous years study (1995, 1996, 1998, and 1999). Appendix B, Table B1 provides geodetic data for all sampled sites referenced in this report.

Summary information for waterbodies that are not included in this document can be accessed in the aquatic studies reports from 1995 (RL&L 1995), 1996 (RL&L 1997), and 1999 (RL&L 2000). The results of the 2000 program have been presented in the following sections based on the component investigated. All raw data used to generate these summaries are presented in appendices and have been referenced when appropriate.

3.1 PHYSICAL CHARACTERISTICS

3.1.1 Lake Morphology

Morphological characteristics of three lakes were determined during the 2000 program (Figure 3.2). Surveyed waterbodies included: Lake C4, Control Lake, and the west arm of Lake C3. The central basin of Lake C3 was surveyed in 1999. Bathymetric survey data are presented in Appendix B, Table B2.

Lake C3, with a surface area of 103 ha, was the largest waterbody surveyed in the Jericho Study Area in 2000 (Table 3.1). This lake is situated immediately upstream and to the southwest of Carat Lake, and is connected to Carat Lake by a narrow, shallow channel. Lake C3 has a central basin associated with an elongated basin that extends to the west (Figure 3.3). Lake C3 receives the majority of its inflow from inlet streams that enter at the southern and northwestern corners of the lake. Several intermittent streams also flow into Lake C3; the largest of these is Stream C3, which drains Lake D10.

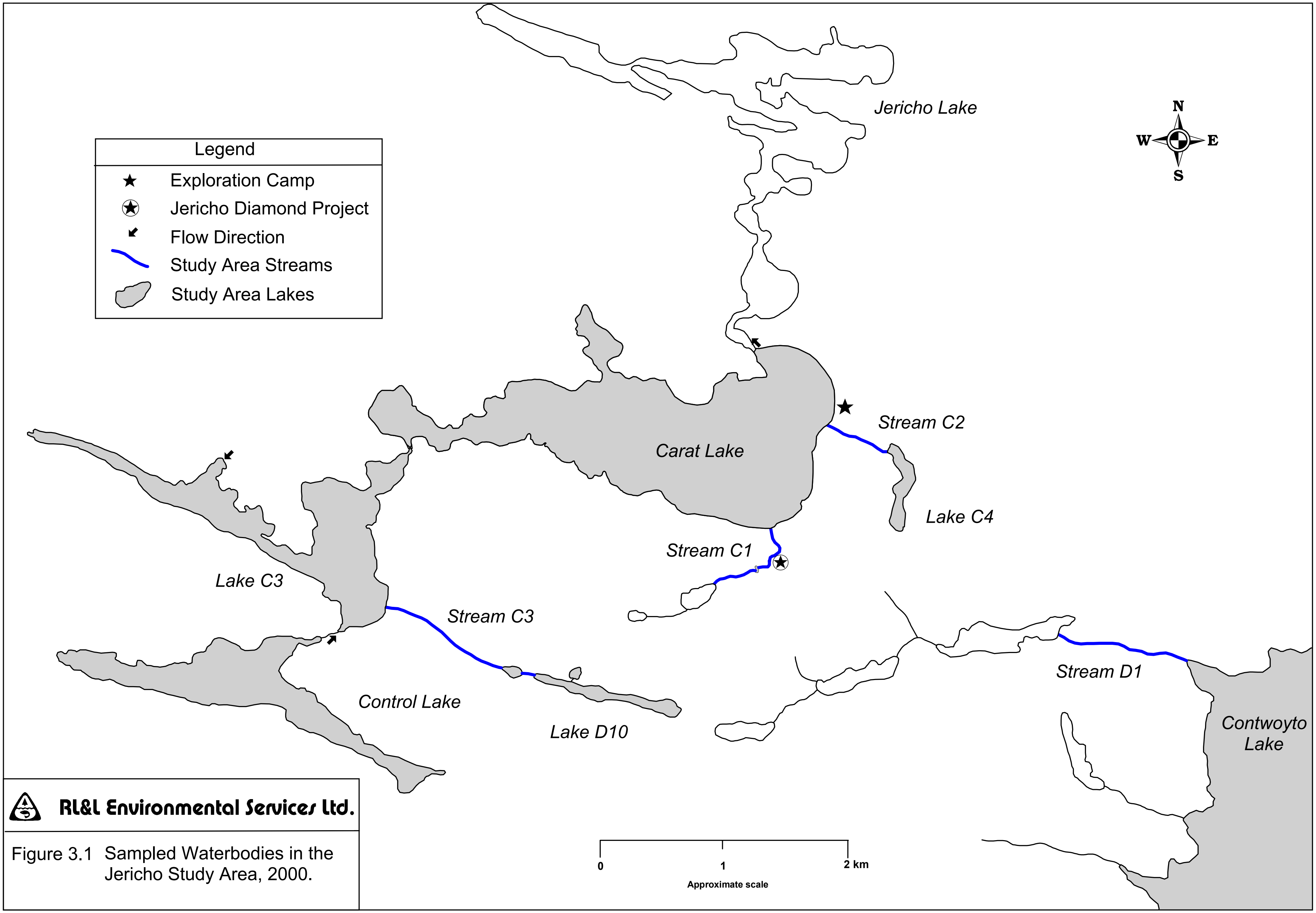

Figure 3.1 Sampled Waterbodies in the Jericho Study Area, 2000.

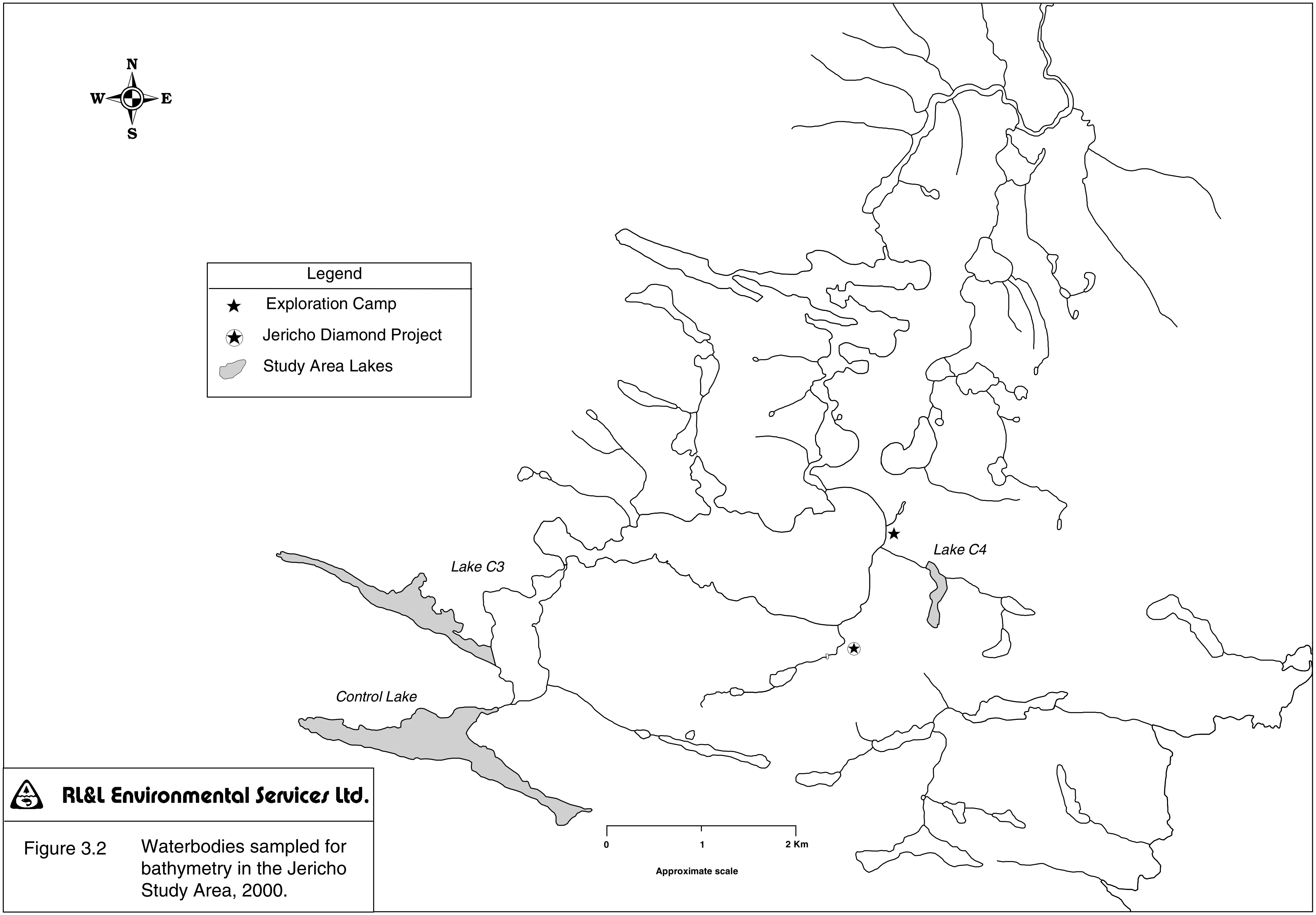

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Figure 3.2 Waterbodies sampled for bathymetry in the Jericho Study Area, 2000.

Table 3.1 Morphometric characteristics of surveyed lakes in the Jericho Study Area, 2000.

Lake	Total Volume (m^3)	Surface Area (ha)	Shoreline Length (m)	Shoreline Development Ratio
Lake C3	4 743 239	102.5	10 830	3
Lake C4	-	7.2	1701	1.8
Control Lake	-	82.9	8316	2.6

The main body of Lake C3 forms a central basin, comprised of two smaller sub-basins; one in the southern section of the basin and the other in the northern section of the basin. The southern sub-basin area exhibits a maximum depth of 14 m, while the northern sub-basin area is 15 m deep. The elongated basin that extends to the west, consists of three sub-basins. Two are situated in the central section, while the third is situated in the northern bay. The maximum depth in the elongated basin is 12 m deep. The irregular shoreline of Lake C3 results in a high shoreline development ratio (3.0).

The smallest waterbody surveyed in 2000 was Lake C4 (7.2 ha; Table 3.1). This lake is situated in the headwater area of Stream C2 located north of the Jericho Diamond Project. There are no well-defined inlet or outlet streams to this waterbody, but the outlet to Lake C4 is the primary water source for Stream C2. Lake C4 exhibits a simple morphology, consisting of a single basin. It is very shallow (maximum depth of 2.3 m), and likely freezes to the bottom in its entirety. The shoreline development ratio for Lake C4 was low (1.8).

Control Lake is located to the south of Lake C3. This waterbody has no defined inlet stream, but drains to the north via a narrow, shallow channel into Lake C3. This moderate-sized waterbody (83 ha) is elongated along an east-west axis. The littoral zone throughout most of the lake is narrow (varying between 5 and 10 m width). The maximum depth in this lake is 41 m.

Two small ponds associated with Lake D10 were also sampled for maximum depth. One pond is located directly to the west, while the other is located to the north. Both ponds are small (<1 ha) and have maximum depths of 7 m.

3.1.2 Lake Limnology

In July 2000, temperature and dissolved oxygen were sampled on five lakes in the Jericho Study Area (Figure 3.4). Dissolved oxygen-temperature profiles were determined at each of these sites (Figure 3.5; Appendix B, Table B3).

During summer (27 to 29 July), the temperature profiles of two waterbodies (Lakes C4 and D10) indicated uniform mixing (i.e., isothermal). In contrast, water temperatures in Lake C3, Carat, and Control decreased from surface to bottom (11 to 5°C) and thermoclines were present. This indicated that these waterbodies thermally stratified during the open water period. In 1999, Lake C3 was not stratified at the time of sampling.

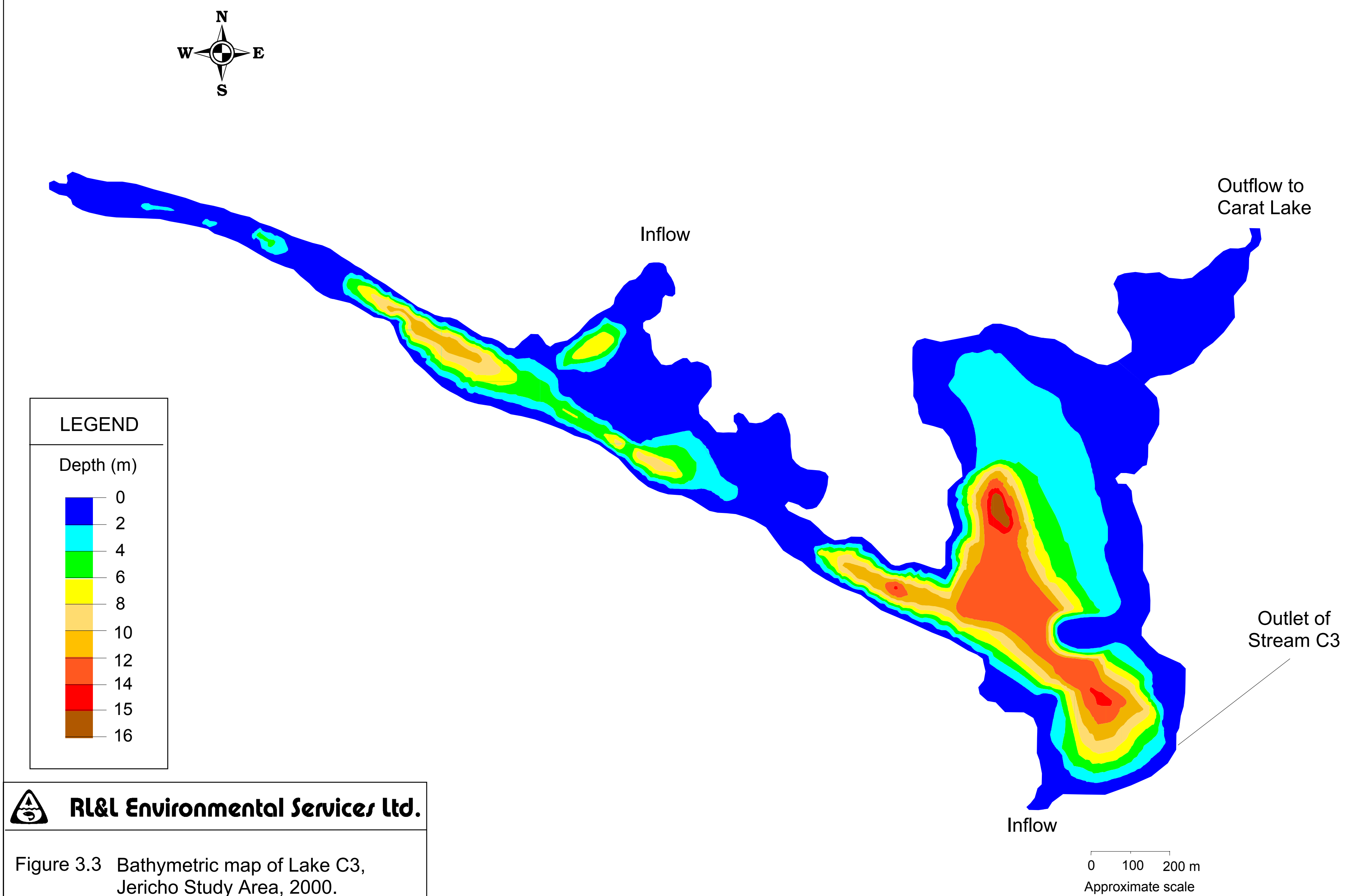

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Figure 3.3 Bathymetric map of Lake C3, Jericho Study Area, 2000.

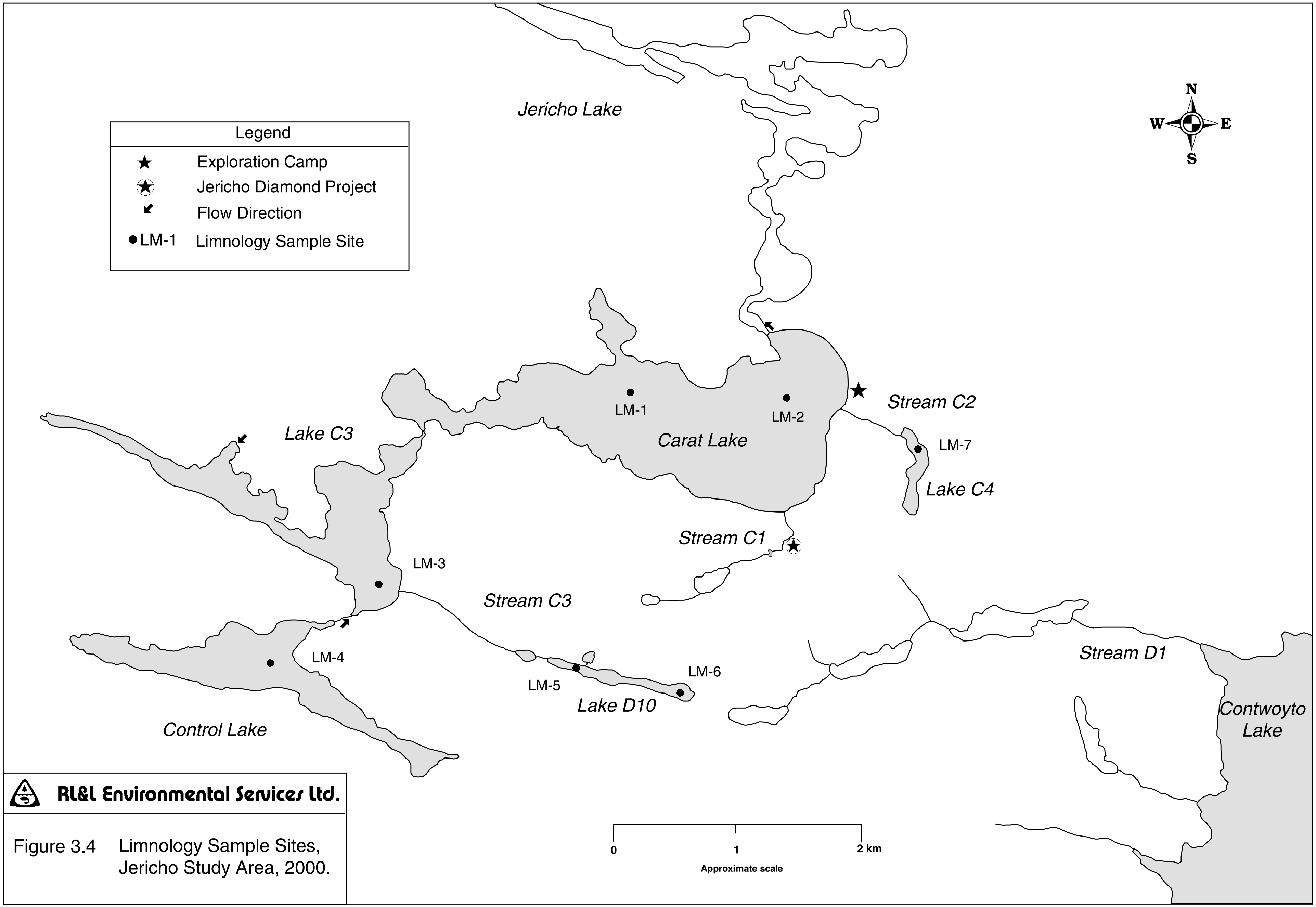

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Figure 3.4 Limnology Sample Sites, Jericho Study Area, 2000.

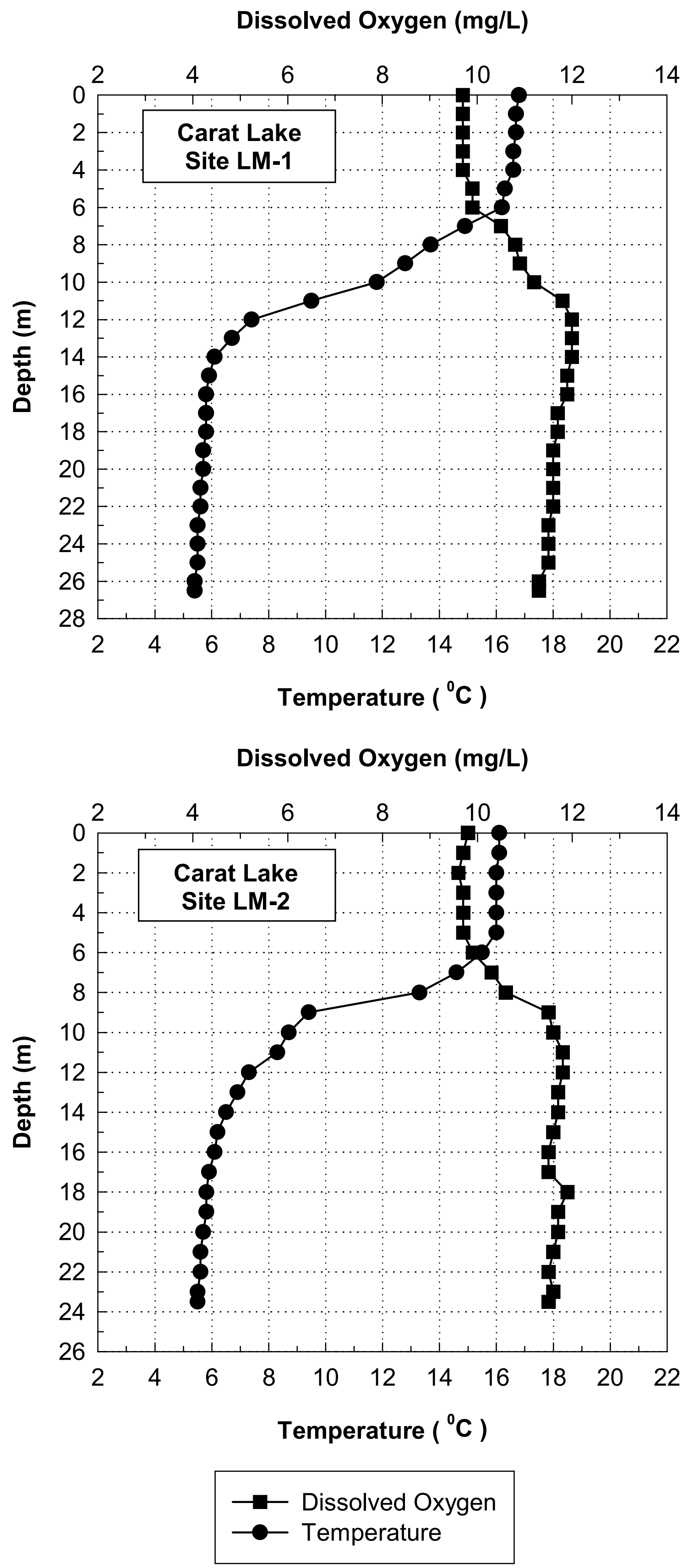
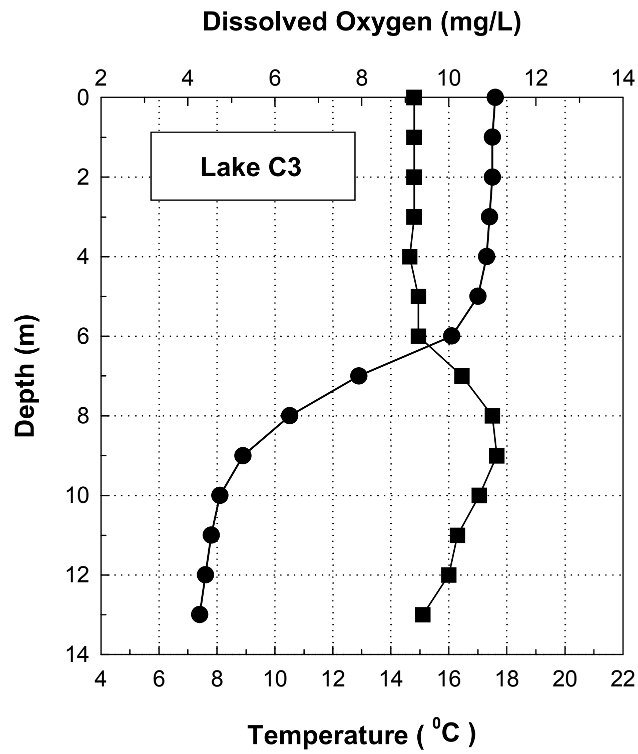


Figure 3.5 Dissolved oxygen and temperature profiles of selected lakes in the Jericho Study Area, 27 to 29 July 2000.



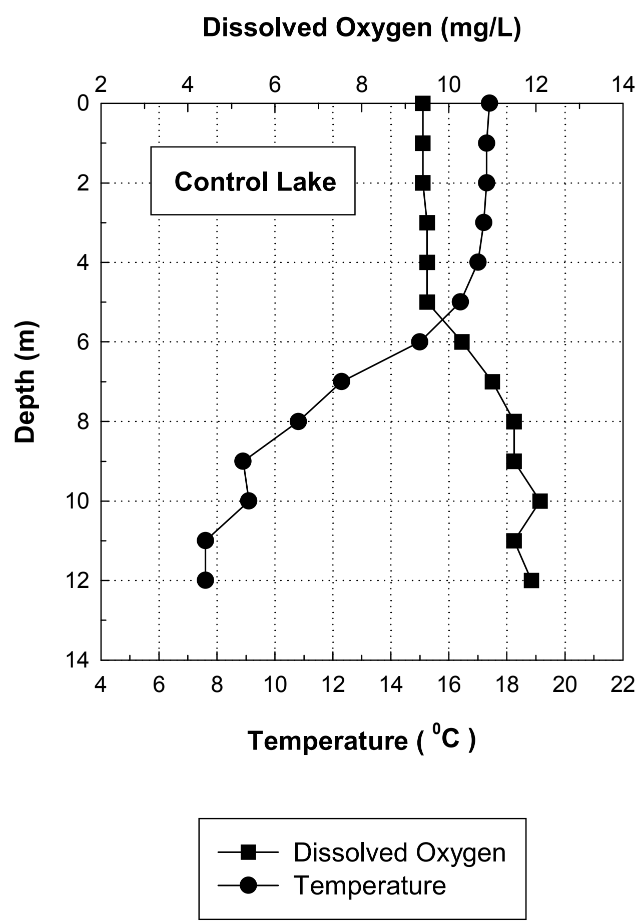


Figure 3.5 continued

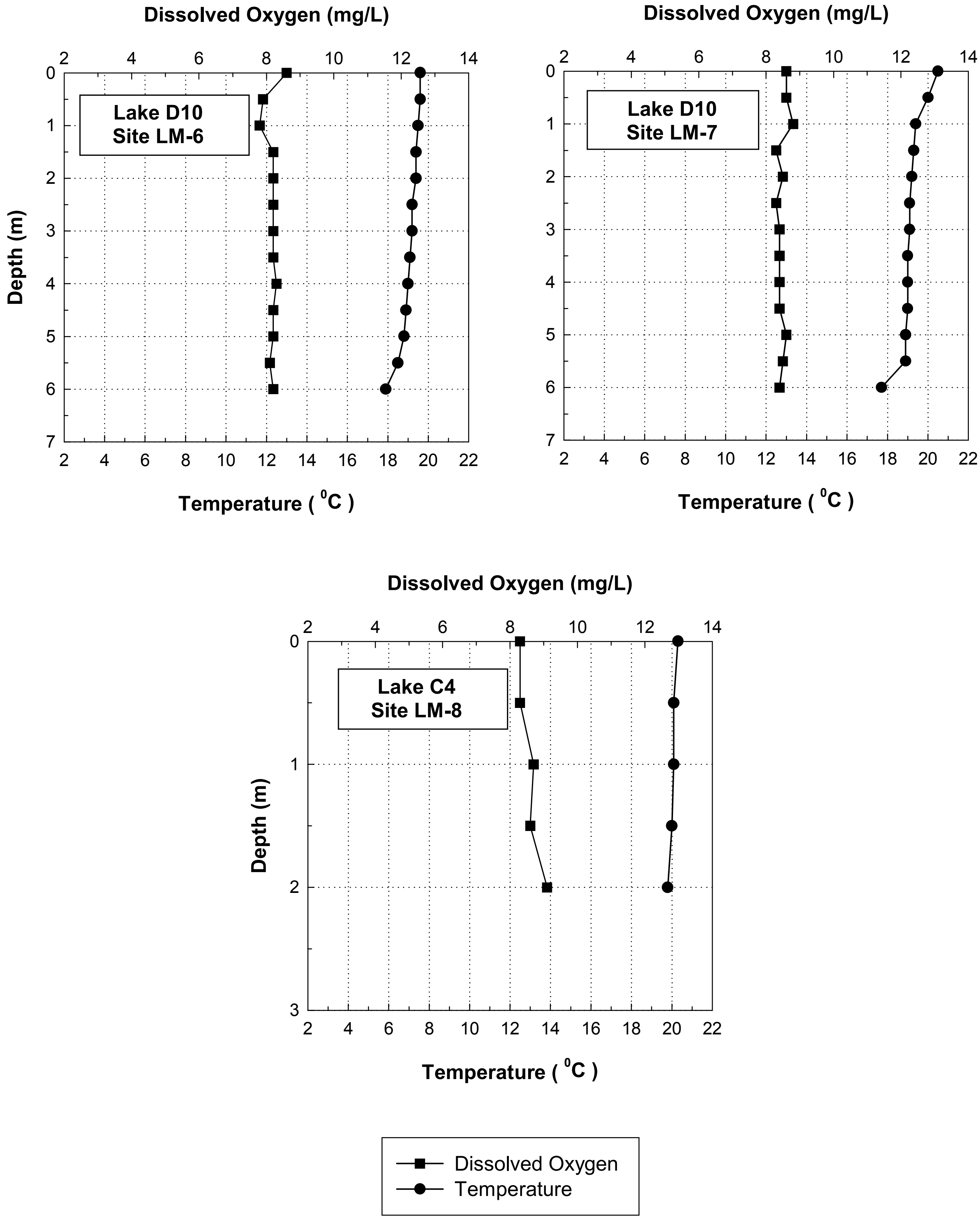


Figure 3.5 concluded.

Dissolved oxygen concentrations were near saturation at all sites. Values for Lake C3, Carat and Control Lakes were approximately 10 mg/L at the lake surface and approximately 18 mg/L lower down in the water column. Dissolved oxygen concentrations in Lakes C4 and D10 were between 8 and 9 mg/L throughout the water column. Anoxic conditions did not occur in any of the study area lakes at the time of sampling.

3.1.3 Stream Characteristics

Physical characteristics of streams (length, gradient, discharge, and temperature) were assessed during the summer field program. This section provides summary information; all raw data are provided in Appendix B, Table B4.

Stream C3 is a small system that drains Lake D10 into Lake C3, while Stream C2 drains into Carat Lake in the vicinity of the exploration camp. Stream D1 is also small; it connects Lynne Lake to Contwoyto Lake. All of these streams exhibited ephemeral flow during the 2000 open water period and likely freeze to the bottom during winter.

The length of streams surveyed ranged between 543 and 1079 m (Table 3.2). All were small, having average channel widths of 1.5 to 10 m, and average maximum depths of less than 0.12 m. Discharge was too low to measure in the surveyed streams during summer. The gradients of these streams ranged between 28 and 46 m/km. Due to their small size, all surveyed streams contained barriers to fish passage.

Table 3.2 Summary of physical characteristics of inventoried streams during summer in the Jericho Study Area, 2000.

Stream	Surveyed Length (m)	Average Width (m)	Average Depth (m)	Discharge (m^3/s)	Gradient (m/km)	Channel Type [a] (%)					Bank Type [b] (%)		Substrate Type [c] (%)			
						C1	C2	C3	C4	C5	D1	D2	Sa	Gr	Co	Bo
C2	543	1.5	0.04	Trace	46	9	4	40	28	19	85	15	20	6	8	65
C3	912	2.7	0.12	Trace	44	33	4	21	42	-	58	42	37	12	7	44
D1	1079	10	-	Trace	28	-	-	-	-	100	100	-	-	-	-	100

[a] C1=single; C2=double; C3=multiple; C4=dispersed; C5=subsurface.
[b] D1=defined; D2=ill-defined.
[c] Sa=sand; Gr=gravel; Co=cobble; Bo=boulder.

With the exception of Stream D1 the surveyed streams contain a variety of channel types. Stream C2 exhibits primarily multiple and dispersed channel types, while Stream C3 exhibits primarily single and dispersed channel types. Stream D1 consists entirely of a subsurface channel with water flowing under a boulder garden. Substrates in most of the surveyed streams consist primarily (>80%) very fine (i.e., silt/sands) and/or coarse materials (i.e., cobble/boulders). In contrast, gravels contribute a much smaller percentage (between 0 and 12%).

Water temperatures in all streams closely tracked air temperatures during the 2000 open-water period (Appendix B, Table B6; Figures 3.6 to 3.8). During the period that water temperatures were monitored (23 July to 11 September), maximum values in each stream were reached at the end of July; these values ranged from 16˚C in Stream C2 to 22˚C in Stream C1. Water temperatures dropped gradually throughout the remainder of the open-water period until reaching values close to 0^{o}C by 10 September, corresponding to the first substantial snowfall.

3.1.4 Water Quality

The water quality assessment of waterbodies in the Jericho Study Area is based on data collected in July 2000. Sites were established on two lakes and two streams (Figure 3.9). As part of quality control procedures duplicate samples were collected in Control Lake to ascertain whether water chemistry analyses were precise and accurate.

This section provides a description of water quality in the study area based on selected physical and chemical constituents. Where applicable, the water quality constituents were assessed according to their compliance to the guidelines for the protection of aquatic life (Canadian Water Quality Guidelines or CWQG; CCME 1999) and drinking water (Guidelines for Canadian Drinking Water Quality or GCDWQ; Health and Welfare Canada 1993). The water quality raw data, including the field split for QA/QC are provided in Appendix B, Table B5; the QA/QC results indicated that the precision and accuracy of water quality determinations were within acceptable levels (Shaw et al. 1994; Noton and Saffran 1995).

Turbidity and Suspended Solids

Turbidity was extremely low at both all and stream sites (Figure 3.10). Values ranged from 0.12 to 0.31 NTU, which is within the GCDWQ of 2 NTU for clear water. Total suspended solids (TSS) were also below detection limits (3 mg/L) at all sites except Stream D1, where values were 6 mg/L.

Alkalinity, pH, and *Total Dissolved Solids*

Total alkalinity values were low at all sites. Values ranged from 6 to 16 mg/L. Although there are no formal water quality guidelines for total alkalinity, levels ranging from 30 to 500 mg/L are generally acceptable for drinking water (McNeely et al. 1979). Alkalinity refers to the neutralizing capacity of water; therefore, the low total alkalinity levels suggest that waterbodies in the Jericho Study Area have a poor buffering capacity against acids.

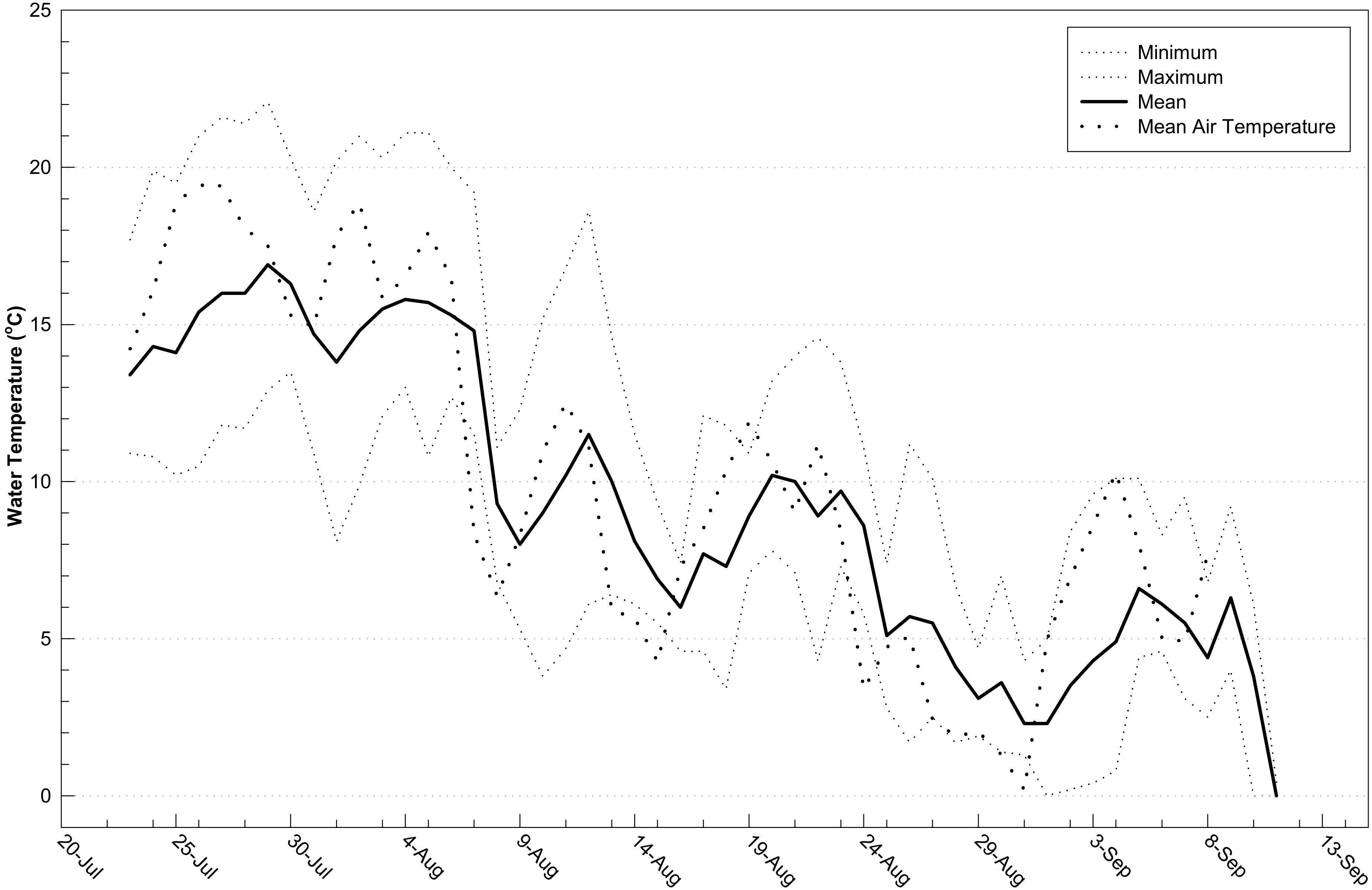


Figure 3.6 Daily water temperatures in Stream C1, Jericho Study Area (July to September 2000).

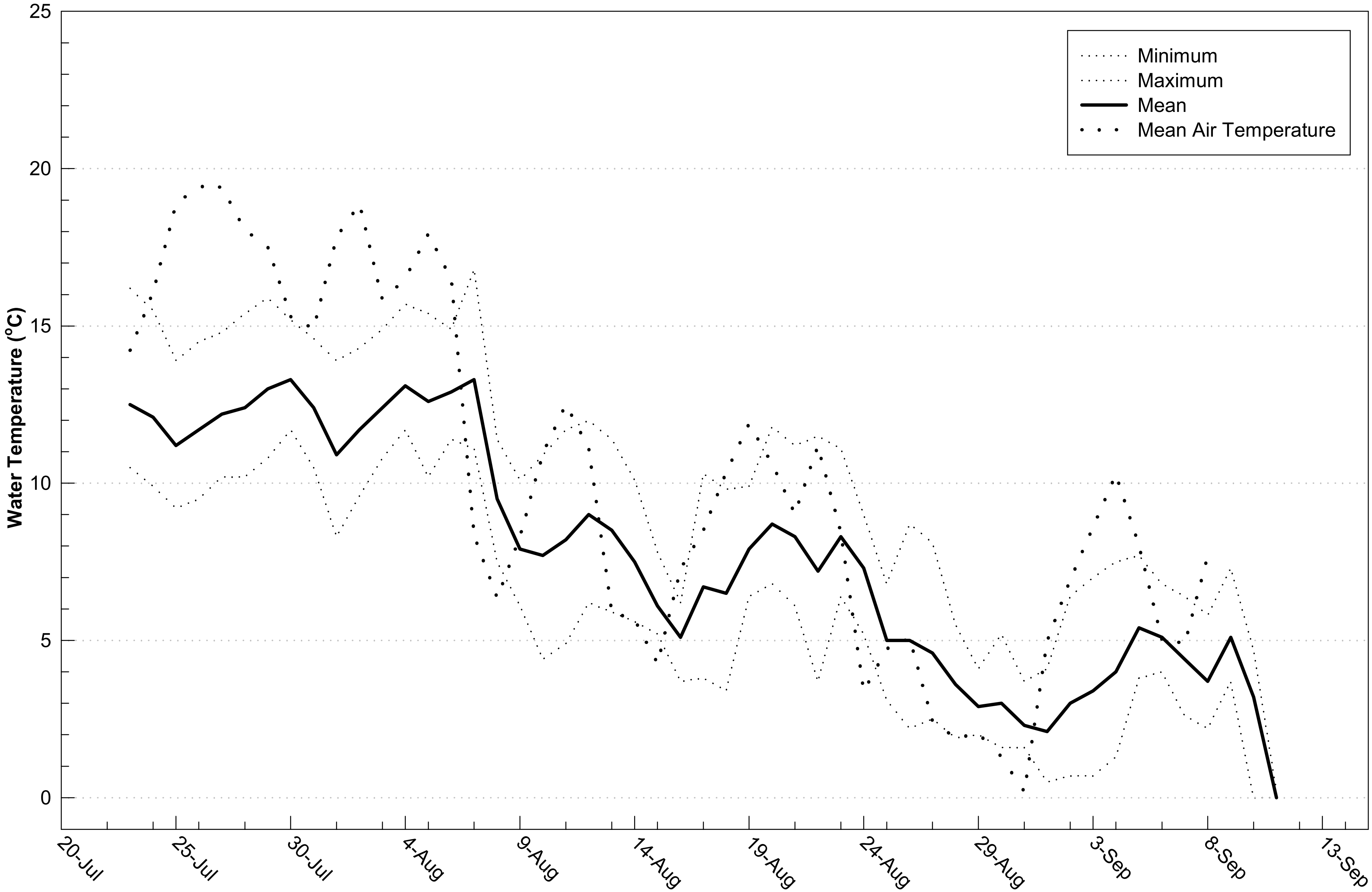


Figure 3.7 Daily water temperatures in Stream C2, Jericho Study Area (July to September 2000).

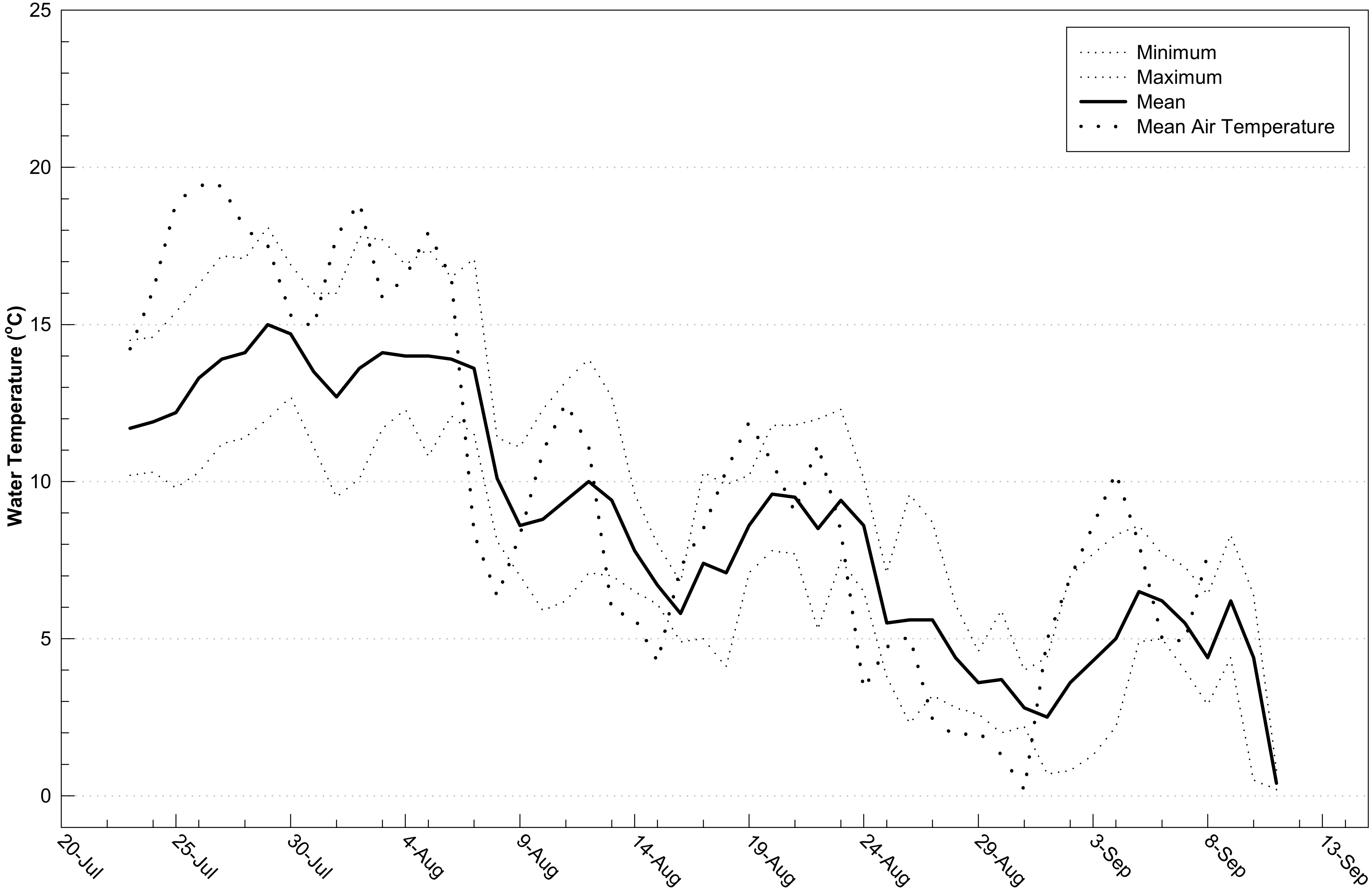


Figure 3.8 Daily water temperatures in Stream C3, Jericho Study Area (July to September 2000).

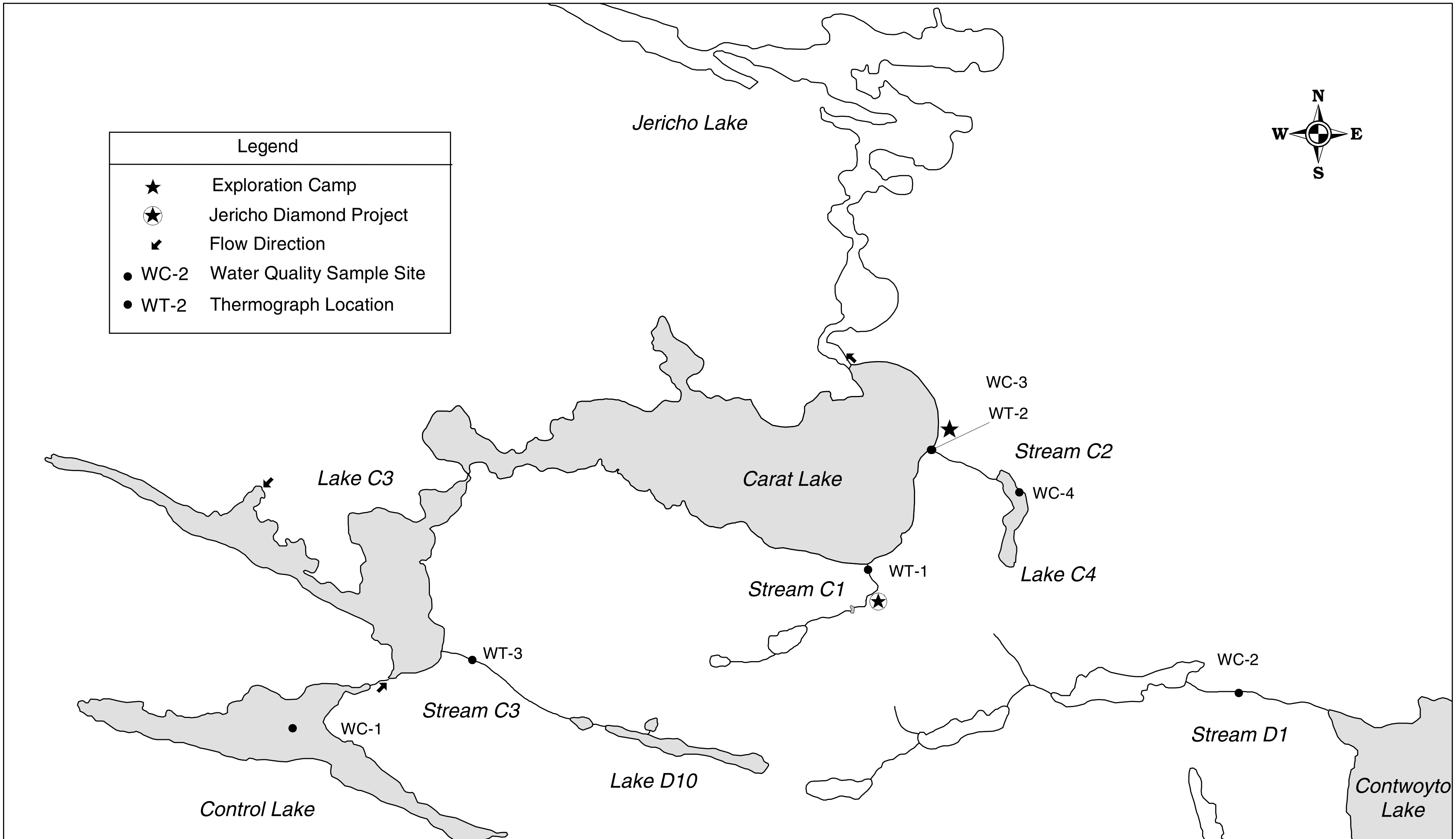


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Figure 3.9 Water Quality Sample Sites, Jericho Study Area, 2000.

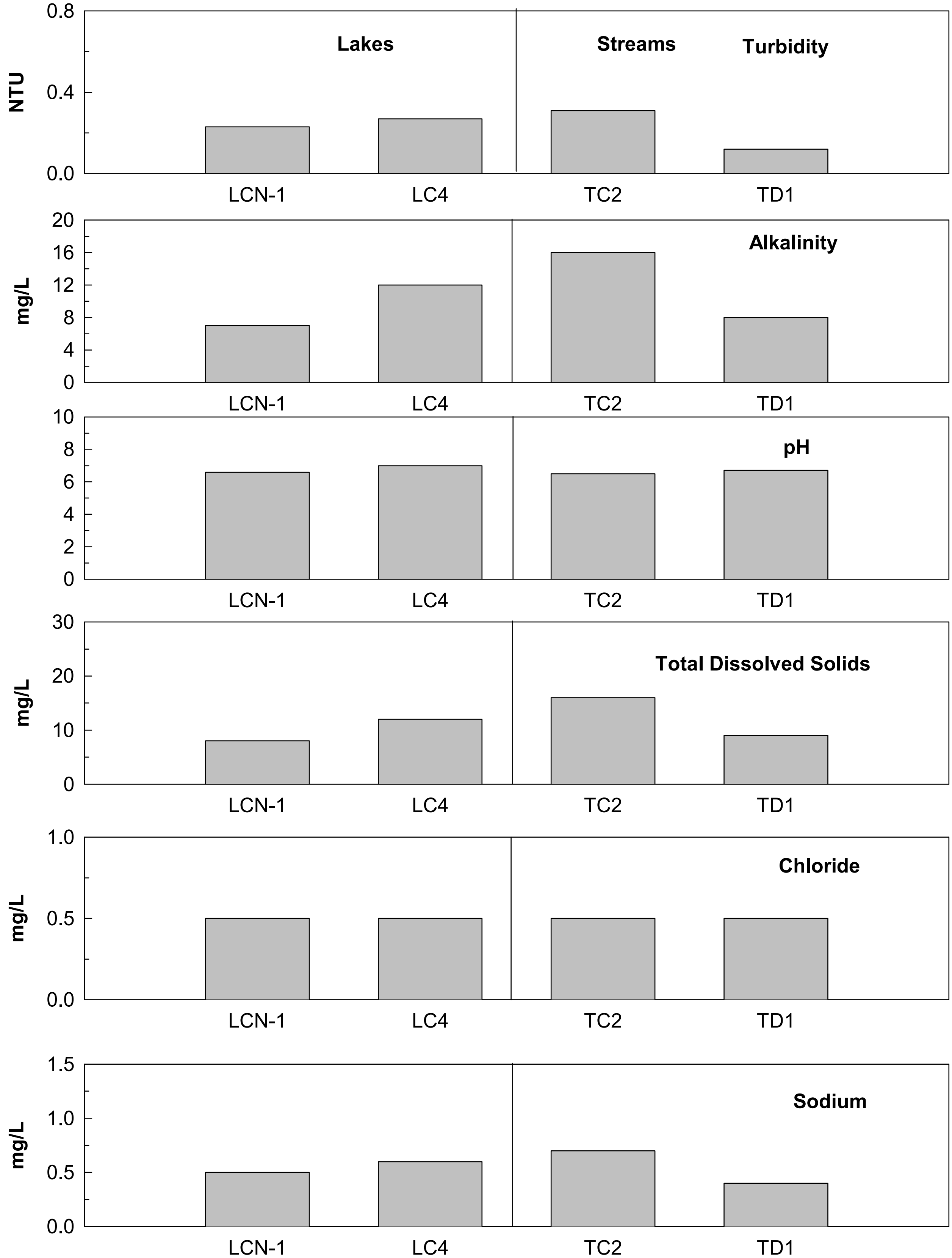


Figure 3.10 Concentrations of selected water quality constituents in samples collected from lakes and streams in the Jericho Study Area, 2000.

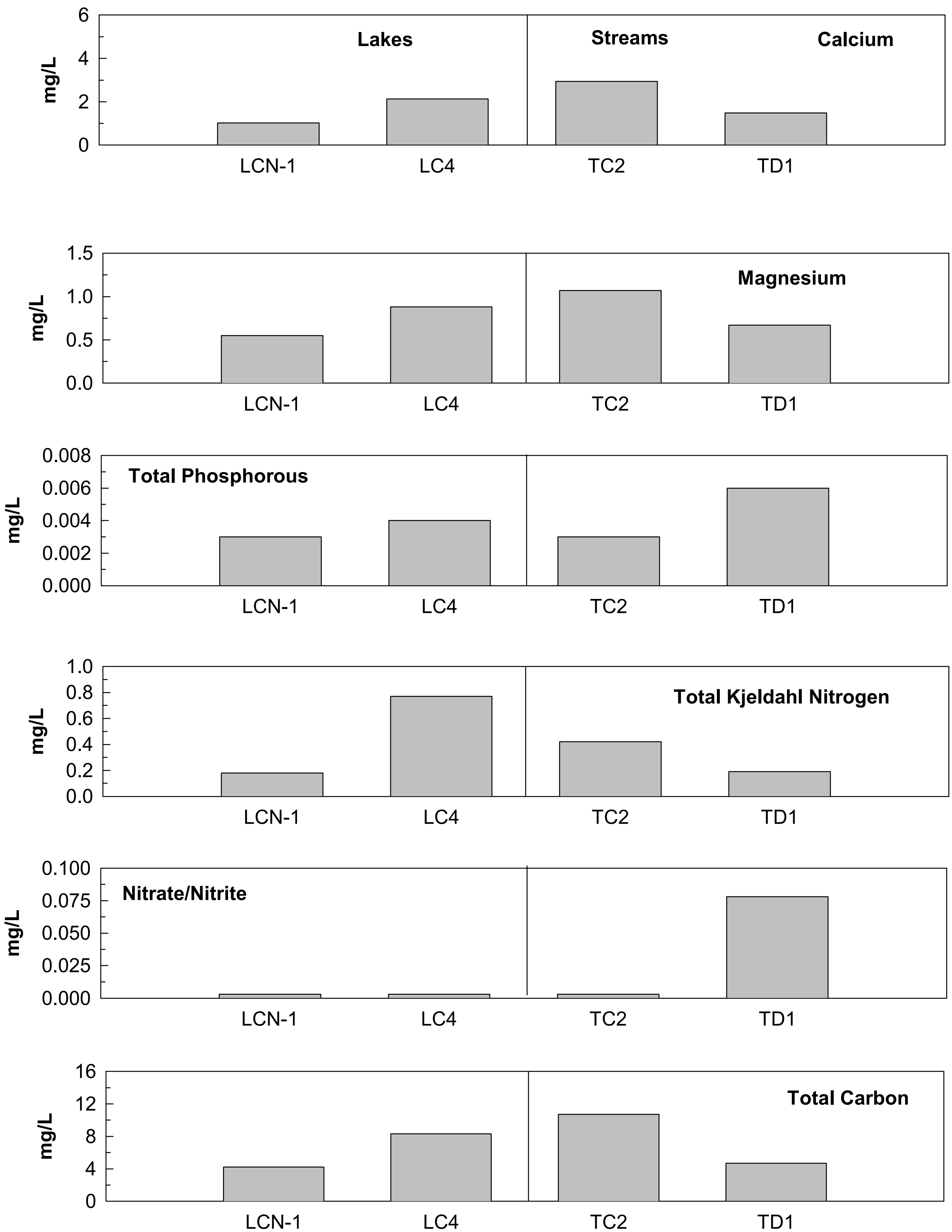


Figure 3.10 concluded.

Stream and lake pH ranged from 6.5 to 7.0. These values were within the CWQG and the GCDWQ of 6.5-9.5 and 6.5-8.5, respectively.

Concentrations of total dissolved solids (TDS) were low at all sites (<17 mg/L). TDS was highest at Stream C2 (16 mg/L) and lowest in Control Lake (8 mg/L). There are no TDS guidelines for the protection of aquatic life; however, the GCDWQ is 500 mg/L for drinking water.

Major Ions and Total Hardness

The major ions consist of Cl^-, Na^+, Ca^{++}, Mg^{++}, K^+, HCO_3^-, and $SO_4^=$. As a group, the major ions were generally low at all sites. The concentrations of major ions at all sites were in compliance with the GCDWQ. They state that concentrations of sodium, chloride, and sulphate should not exceed 200, 250, and 500 mg/L, respectively.

Phosphorus

Total phosphorus concentrations in lakes and streams in the Jericho Study Area were very low. They ranged from 0.003 to 0.006 mg/L. Total dissolved phosphorus concentrations (the phosphorus form available for primary production) constituted the dominant portion of all forms of phosphorus analysed. Because phosphorus is a nutrient that limits primary productivity in freshwater ecosystems, these results indicate that waterbodies in the Jericho Study Area are extremely nutrient poor. No CWQG or GCDWQ exist for phosphorus, although 0.10 mg/L is considered a maximum desirable concentration for streams (McNeely et al. 1979).

Nitrogen

In aquatic systems, nitrogen occurs as organic and inorganic (dissolved, nitrite, nitrate, ammonium, and ammonia compounds). Total Kjeldahl nitrogen (TKN) is the sum of organic and ammonia nitrogen fractions, while total nitrogen is the sum of TKN and nitrite/nitrate-nitrogen.

The TKN concentrations in lakes and streams of the Jericho Study Area were generally low, with the exception of Lake C4 and Stream C2 . The highest TKN concentration was recorded from the water sample collected in Lake C4 (0.77 mg/L), followed by Stream C2 (0.42 mg/L). Concentrations of TKN in waterbodies that are not influenced by excessive organic inputs, typically range from 0.1 to 0.5 mg/L (McNeely et al. 1979). The high values recorded in Lake C4 and Stream C2 are likely attributed to the large quantity of vegetative growth observed in Lake C4 while Ekman grab samples were taken.

Nitrite/nitrate-N concentrations were generally low at most sites; they ranged from < 0.003 to 0.078 mg/L. Such low values indicated that total nitrogen concentrations consisted mainly of organic forms. There are no CWQG or GCDWQ for TKN. Ammonia and nitrate concentrations at all sites were within the CWQG of 1.37 and 10 mg/L, respectively.

Carbon

Total carbon concentrations were low at all sites; values ranged from 4.0 to 10.7 mg/L. In aquatic systems, total organic carbon content can vary from 1 to 30 mg/L with higher levels generally being the result of anthropogenic inputs (McNeely et al. 1979). There are no CWQG or GCDWQ available for carbon.

3.2 NONVERTEBRATES

This section provides summary results for periphyton, phytoplankton, zooplankton, and benthic macroinvertebrate communities in selected streams and lakes of the Jericho Study Area. Specific sampling locations are depicted in Figure 3.11; georeferenced site locations are listed in Appendix B, Table B1.

3.2.1 Periphyton

Periphyton refers to the community of algae, bacteria, fungi, and their secretions that grow on substrates in freshwater systems (Lock et al. 1984). Periphyton provides food and habitat resources for benthic invertebrates and herbivorous fish, especially in flowing waters (Warren et al. 1964; Hynes 1970; Horner and Welch 1981; Lock et al. 1984; Merritt and Cummins 1984). Although periphyton in temperate zone lakes generally account for a small amount of the system's primary productivity (i.e., phytoplankton is the major source), it has been documented that Arctic lakes can derive a large proportion (15 to 80%) of their primary production from periphyton communities (Welch and Kalff 1974; Welch et al. 1988; Welch et al.1989). For these reasons, periphyton communities were sampled in both streams and lakes of the Jericho Study Area.

In July 2000, periphyton samples were collected from two lake sites (Lake C4 and Control Lake) and two stream sites (Stream C2 and Stream D1). In streams, only chlorophyll *a* was measured to assess primary production; no ash-free-dry-mass or community structure data were collected. Summary results of chlorophyll *a* concentration (a measure of the amount of live algae), ash-free-dry-mass (AFDM) concentration (an estimate of the total organic content of periphyton), and the periphyton algal community are presented for sampled sites. Detailed data are provided in Appendix C, Tables C1 and C2.

3.2.1.1 Biomass and Density

Chlorophyll *a* is an important photosynthesizing pigment of plants and its concentration is an index of the amount of living tissue or biomass. Chlorophyll *a* concentrations during early summer were 0.60 $\mu g/cm^2$ in Stream D1, 16.81 $\mu g/cm^2$ in Stream C2, 2.45 mg/m^3 in Lake C4, and 0.90 mg/m^3 in Control Lake (Table 3.3). AFDM values in lakes ranged from 35.5 mg/cm^2 (Control Lake) to 78.2 mg/cm^2 (Lake C4). Periphyton density values were 3.95 x 10^6 cells/cm^2 in Lake C4 and 1.36 x 10^6 cells/cm^2 in Control Lake. Although the density was higher in Lake C4 there were a higher number of taxa present in Control Lake; 70 taxa in Lake C4 versus 95 taxa in Control Lake.

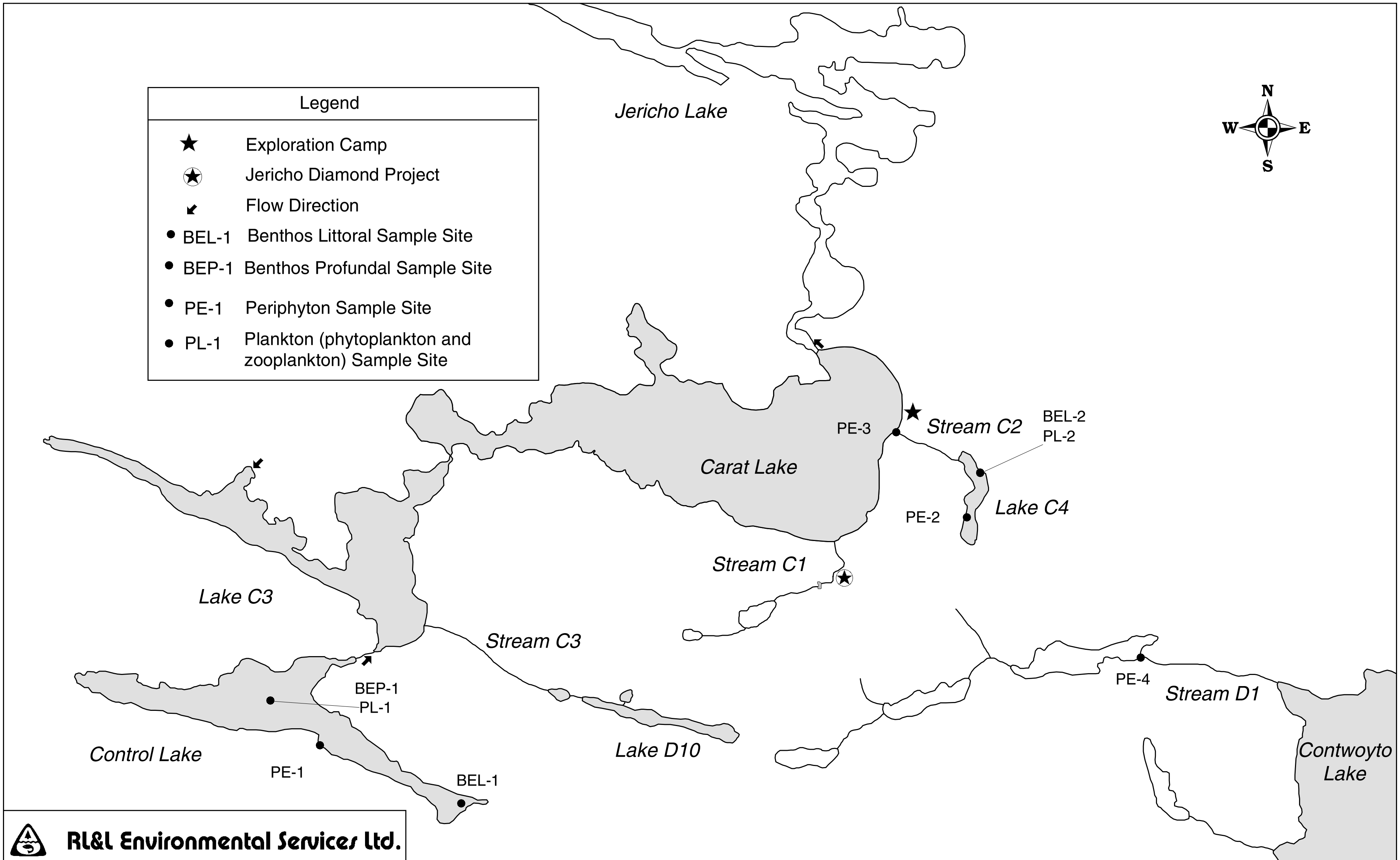


Figure 3.11 Nonvertebrate Sample Sites, Jericho Study Area, 2000.

Table 3.3 Density, number of taxa, chlorophyll *a* and ash free dry mass values for periphyton samples in lakes and streams of the Jericho Study Area, 2000.

Category	Site			
	Lake C4	Control Lake	Stream C2	Stream D1
Chlorophyll *a*[a]	2.45	0.9	16.81	0.6
Ash Free Dry Mass (mg/cm^2)	78.16	35.52	-	-
Density (cells/mL)	3 951 647	1 356 961	-	-
Taxa	70	95	-	-

a Unit of measure is (mg/m^3) for lakes and $\mu g/cm^2$ for streams.

3.2.1.2 Community Structure

In total, 119 periphytic algal species were identified (Appendix C, Table C2); the number of species at sampled sites ranged from 70 (Lake C4) to 95 (Control Lake). The periphytic algal community in Lake C4 was represented by three major taxonomic divisions: Bacillariophyta (diatoms), Chlorophyta (green algae), and Cyanophyta (cyanobacteria), while the periphytic algal community in Control Lake was represented by six major taxonomic divisions (in addition to those listed above), taxa included Chrysophyta (golden-brown algae), Euglenophyta (flagellates), and Pyrrophyta (dinoflagellates) (see Appendix C, Table C2 for detailed data). For both lakes, cyanobacteria dominated (Figure 3.12). The overall numerical dominance of this group was a reflection of their colonial nature and small cell size exhibited by most species. In terms of frequency of occurrence, cyanobacteria were dominated by *Schizothrix calcicola*, while diatoms were well represented in both lake and stream sites by *Achnanthes minutissima* and *Tabellaria flocculosa*.

3.2.1.3 Primary Production

Biomass (chlorophyll *a)* of periphyton can be used as an indicator of primary production. Samples were collected three times during the open water period in an attempt to measure the full range of production. Chlorophyll *a* concentrations from samples collected from streams varied between sampling periods (Table 3.4). The highest chlorophyll *a* concentration was recorded in Stream C2 (16.81 mg/m^3); however, the maximum concentration was much lower in Stream D1 (3.09 mg/m^3).

Table 3.4 Summary of chlorophyll *a* concentrations of phytoplankton (mg/m^3) and periphyton ($\mu g/cm^2$) samples collected three times[a] from selected waterbodies in the Jericho Study Area, 2000.

Waterbody	Phytoplankton				Periphyton			
	Early	Mid	Late	Range	Early	Mid	Late	Range
Lake C4	0.78	0.74	0.72	0.06	2.45	-	2.46	0.01
Stream C2	ns	ns	ns	-	16.81	3.35	9.39	13.46
Stream D1	ns	ns	ns	-	0.60	2.21	3.09	2.49

a Early (22 July); mid (25 July); late (29 July).
b Not sampled.

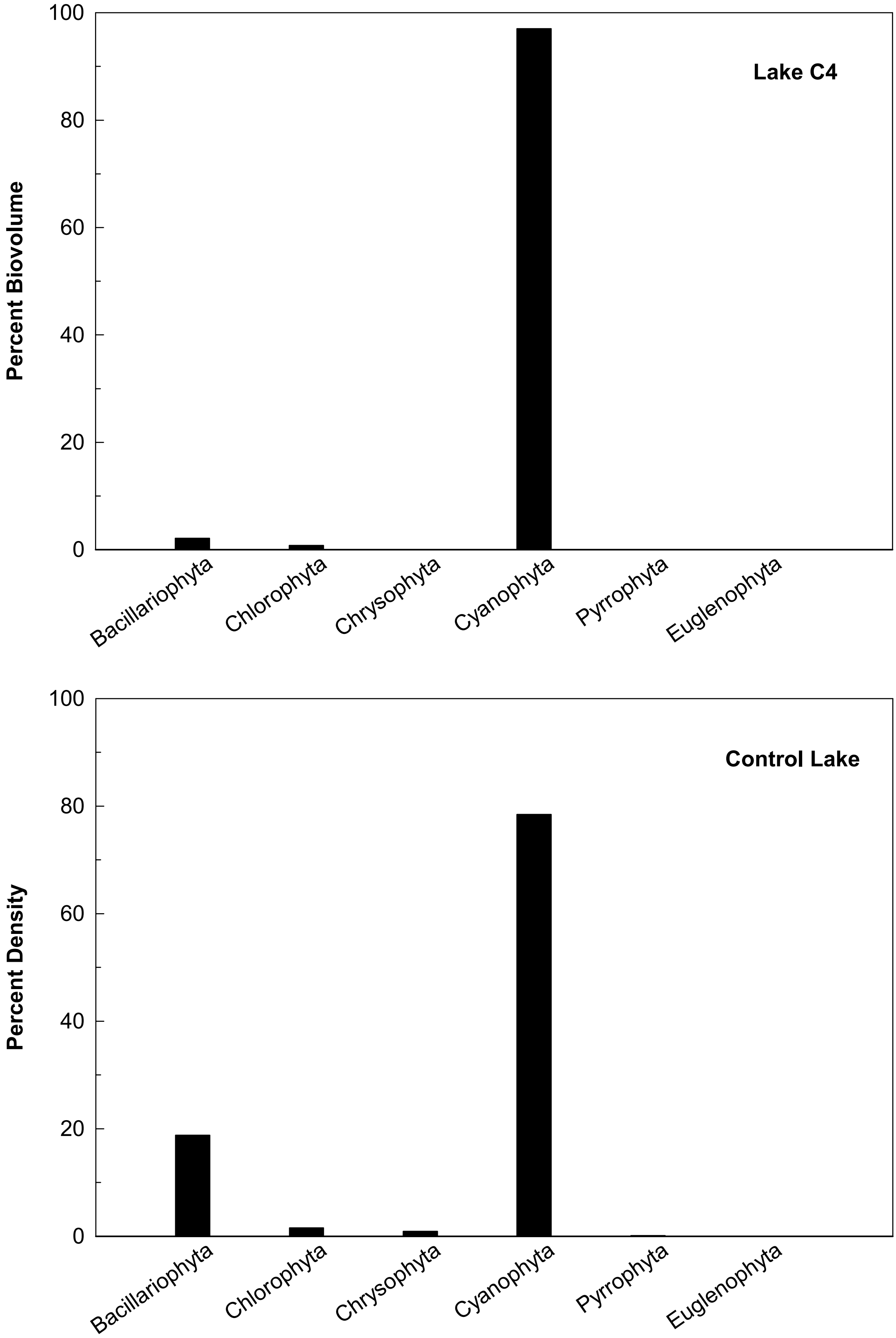


Figure 3.12 Percent density for major taxonomic periphyton groups in lakes of the Jericho Study Area, 2000.

3.2.1.4 Summary

Chlorophyll *a* values were low at all sites as were AFDM concentrations. In streams, the amount of chlorophyll *a* found in periphytic communities is controlled primarily by light quality and quantity, water velocity, and nutrient concentrations (Horner and Welch 1981). The locations sampled during the present study were not shaded by riparian vegetation, exhibited current velocities within the range reported by Horner and Welch (1981), and were not exposed to a known toxic substance. Therefore, the low chlorophyll *a* concentrations were likely due to low nutrient levels. Phosphorus limitation in Arctic streams has been reported to have dramatic effects on overall productivity (Peterson et al. 1983, 1985, and 1986).

Lake periphyton biomass is also adversely affected by nutrient deficiencies (Kalff and Welch 1974; Welch and Kalff 1974; Bergmann and Welch 1990). In general, the periphytic biomass indices documented in streams and lakes of the Jericho Study Area were low, which is characteristic of oligotrophic conditions.

3.2.2 Phytoplankton

To provide baseline information on the phytoplankton community, samples were collected from selected lakes in the Jericho Study Area during July 2000. Sites were established on Control Lake and Lake C4 (Figure 3.11). Relevant data are summarized in the following sections; all data are presented in Appendix C, Tables C3 and C4.

Phytoplankton are microscopic free-floating algae (Smith 1950). Summary results for biovolume (μm^3/mL) and density (no. cells/mL) are both presented because density alone does not provide an accurate assessment of a taxon's importance. For example, taxa that are extremely numerous may have a low biovolume due to the small size of individual organisms. Conversely, taxa that have large biovolumes (due to the large size of individual organisms) may not be numerically abundant. These large bodied groups can contribute significantly to lake productivity. As such, they can influence the abundance of herbivores that feed on them (generally zooplankton) and can modify nutrient availability for competing plants or algae.

3.2.2.1 Biomass and Density

Chlorophyll *a* concentrations were 0.78 mg/m^3 in Lake C4 and 0.90 mg/m^3 in Control Lake (Table 3.5). The biovolumes of all algae varied between the two sites as did the density of cells. Biovolume was greatest in Control Lake (1622 $\mu m^3 x10^3$/mL) and lowest in Lake C4 (379 $\mu m^3 x10^3$/mL). In contrast, the values for total density were reversed; Lake C4 had the highest density (8081 cells/mL), whereas Control Lake had the lowest density (3922 cells/mL).

Table 3.5 Biovolume, density, number of taxa, and chlorophyll *a* values for phytoplankton samples in lakes of the Jericho Study Area, 2000.

Category	Site	
	Lake C4	Control Lake
Biovolume ($\mu m^3 x10^3$/mL)	379	1622
Chlorophyll *a* (mg/m^3)	0.78	0.9
Density (cells/mL)	8081	3922
Taxa	73	56

3.2.2.2 Community Structure

In total, 94 species of algae were identified in the samples collected in Lake C4 and Control Lake (Appendix C, Table C4). The number of species identified was highest in Lake C4 (73), and lowest in Control Lake (56). Six major taxonomic groups were represented in the samples.

The importance of each major taxonomic group differed between the two lakes (Figure 3.13). Chrysophyta (golden-brown algae) exhibited the greatest importance in terms of percent biovolume in Control Lake, while Chlorophyta (green algae) was most important in Lake C4. In terms of percent density, Cyanophyta (cyanobacteria) were most important in both lakes.

In terms of density, Chlorophyta (green algae) were well represented by the species *Sphaerocystis schroeteri*, while Chrysophyta (golden-brown algae) were represented by *Dinobryon sociale* and *Chrysophyta rodhei*. *Aphanothece clathrata* was the dominant Cyanophyta (cyanobacteria) species.

3.2.2.3 Primary Production

Biomass (chlorophyll *a)* of phytoplankton can be used as an indicator of primary production. Samples of phytoplankton were collected three times during the open water period in Lake C4 in an attempt to measure the full range of algal biomass during the open water period. The difference in phytoplankton chlorophyll *a* concentrations for the three samples was 0.06 mg/m^3 (Table 3.4). The peak biomass production in Lake C4 was 0.78 mg/m^3.

The data provide an indication of the potential production that can be achieved by each community. A comparison of chlorophyll *a* concentrations recorded during the present study to other investigations suggested that primary productivity was very low in Lake C4. Ostrofsky and Rigler (1987) documented that mean chlorophyll *a* concentrations for phytoplankton in 49 subarctic lakes varied between 1.5 and 26.8 mg/m^3. In four oligotrophic lakes in the high Arctic, Welch et al. (1989) recorded values of 1.0 to 2.9 mg/m^3.

Recent work completed by Morin et al. (1999), which investigated periphyton production in streams and phytoplankton production in lakes, suggests that the chlorophyll *a* concentrations documented during this study were at the lower spectrum of primary production in freshwater systems.

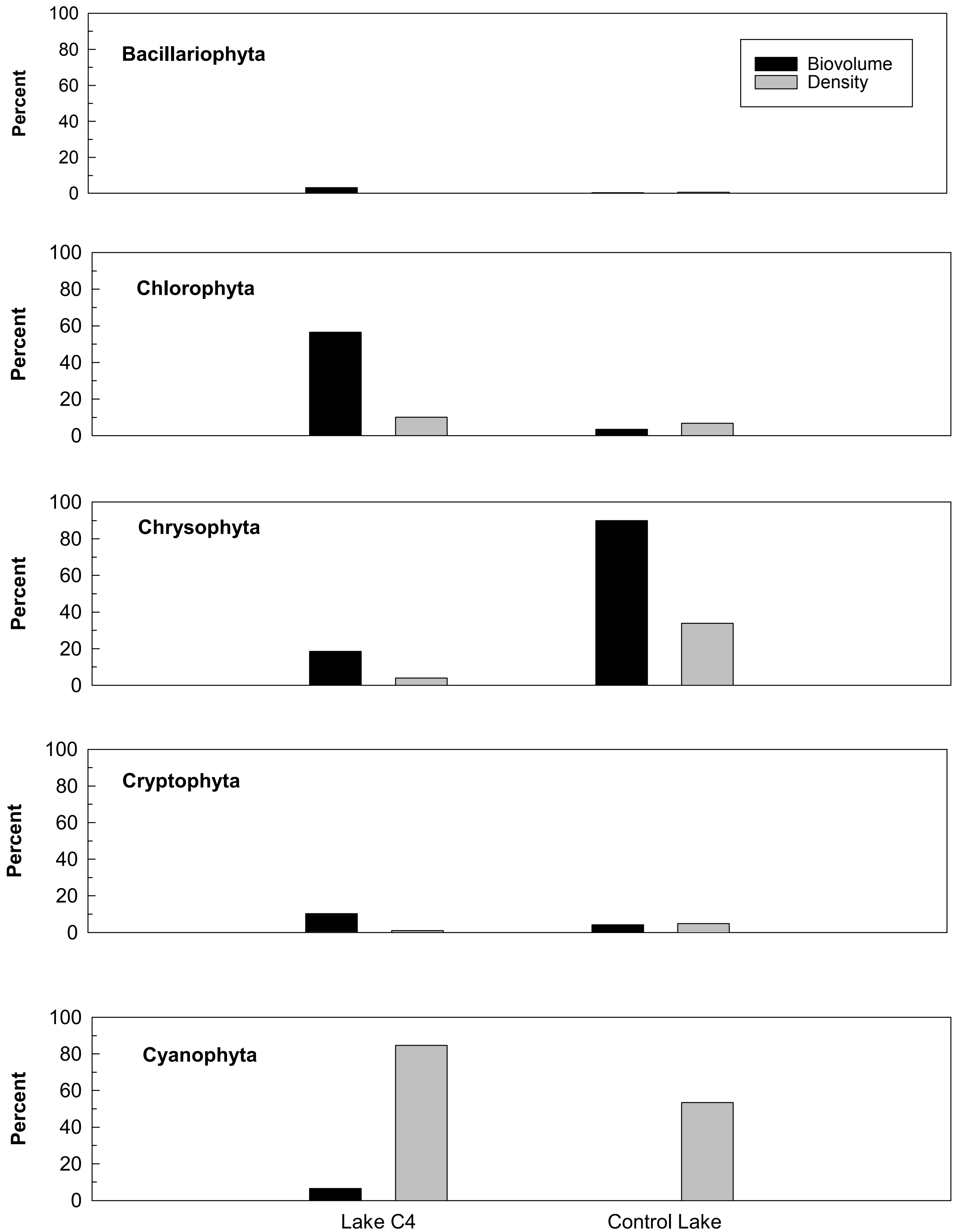


Figure 3.13 Percent biovolume and density of major taxonomic phytoplankton groups in lakes of the Jericho Study Area, 2000.

3.2.2.4 Summary

The phytoplankton assemblages in the lakes of the Jericho Study Area were indicative of oligotrophic waterbodies (using criteria presented in Wetzel 1983). Chlorophyll *a*, biovolume and density values were all low. In general, golden-brown algae (Chrysophyta) and green algae (Chlorophyta) had the greatest biovolumes, and cyanobacteria (Cyanophyta) had the greatest densities. It should be noted that samples were collected in early summer (July). Because phytoplankton communities exhibit seasonal variation, in terms of biomass and community composition, it is likely that the results would vary between seasons.

Nutrient concentrations were low in all surveyed waterbodies and these values were consistent with results of previous work in the Jericho Study Area (RL&L 1995). Chlorophyll *a* results from phytoplankton and periphyton indicated that primary production was also low. Based on these results, the lakes in the Jericho Study Area exhibit an oligotrophic status.

3.2.3 Zooplankton

Zooplankton samples were collected at the two lake sites used to collect phytoplankton (Figure 3.11). Summary information is presented in this section; detailed data are presented in Appendix C, Table C5.

Zooplankton communities are composed of microscopic animals that live in the water column (Pennak 1978; Wetzel 1983). Summary results of zooplankton biomass ($\mu g/m^3$; dry weight) and density ($No./m^3$) are both presented in this section because density alone does not provide an accurate assessment of a taxon's importance. Taxa that are extremely numerous may have a low biomass because of the small size of individual organisms. Conversely, taxa that have large biomass (due to large size of individual organisms) may not be numerically abundant. Zooplankton groups can contribute to lake productivity by influencing the abundance of predators that feed on them (generally other zooplankton and fish) and modifying phytoplankton communities through grazing.

3.2.3.1 Biomass

The estimates of total zooplankton biomass in lakes of the Jericho Study Area were low (Table 3.6). Overall, Lake C4 exhibited the highest biomass (285 767 $\mu g/m^3$), while the biomass of zooplankton was lowest at Control Lake (80 254 $\mu g/m^3$).

Calanoida contributed the most (range 52 to 85%) to zooplankton biomass (Figure 3.14). In general, cyclopoid copepods were second in importance in terms of biomass for Control Lake (41%), while cladocerans were second in importance for Lake C4 (13%). *Leptodiaptomus minutus* and *Leptodiaptomus sicilis* were the dominant calanoid copepod species, while *Daphnia pulex* was the most important cladoceran species (Appendix C, Table C5). The dominant species in the cyclopoid copepod group was *Diacyclops bicuspidatus*.

Table 3.6 Biomass, density, and number of taxa values for zooplankton samples in lakes of the Jericho Study Area, 2000.

Category	Site	
	Lake C4	Control Lake
Density (number/m^3)	6017	3040
Biomass (μg/m^3)	285 767	80 254
Taxa	11	15

3.2.3.2 Density

Zooplankton densities ranged from 3040 to 6017 organisms/m^3 (Control Lake and Lake C4, respectively). Overall, calanoid copepods contributed the most toward total zooplankton density; rotifers were also dominant in Control Lake. Similar to biomass, *Leptodiaptomus minutus* and *Leptodiaptomus sicilis* were the dominant calanoid copepod species. Rotifers were well represented by *Kellicottia longispina*, while cyclopoid copepods were represented by *Diacyclops bicuspidatus*.

3.2.3.3 Summary

Zooplankton in the Jericho Study Area exhibited some variation in community biomass and density. Calanoid copepods were the dominant taxonomic group in terms of biomass and density. Within this group, *Leptodiaptomus minutus* and *Leptodiaptomus sicilis* were the most important species.

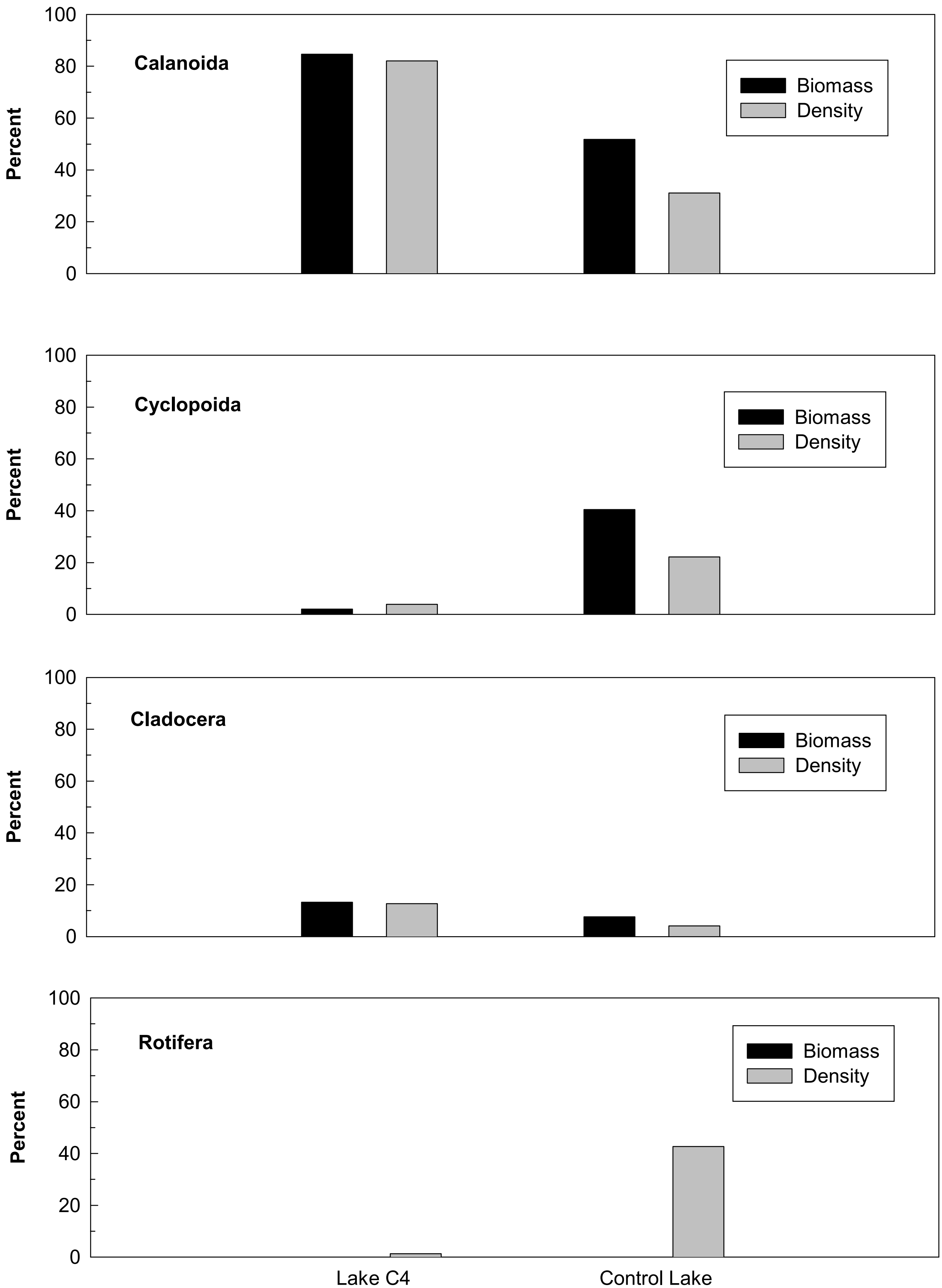


Figure 3.14 Percent biomass and density for major taxonomic zooplankton groups in lakes of the Jericho Study Area, 2000.

3.2.4 Benthic Macroinvertebrates

Benthic (bottom-dwelling) macroinvertebrates are an important link in aquatic food webs. Most are herbivorous, detrivorous, or filter feeders and derive much of their energy from aquatic plants and algae or organic materials. Some species are predacious, generally feeding upon other nonvertebrates. Many fish species, including early life history stages of piscivorous species, feed on benthic macroinvertebrates.

Previous experience in the area indicated that most streams were ephemeral (intermittent flow during open water period) and logistically difficult to sample (large substrates), which limited their potential as sample areas. Therefore, benthic macroinvertebrate sampling during 2000 was restricted to lakes: sites were established on Control Lake and Lake C4. Collections were stratified into littoral and profundal zones to account for potential variation in community structure. The littoral zone (<5.0 m depth) receives larger amounts of light relative to the profundal zone (>5.0 m depth), and therefore, is potentially more productive. Because Lake C4 had a maximum depth of 2.3 m, a profundal sample was not collected. Summary information are presented in Table 3.7; all raw data are summarized in Appendix C, Table C6.

3.2.4.1 Community Structure

The number of taxa at littoral sites totalled 17 in Lake C4 and 14 in Control Lake (Table 3.7). The total number of benthic macroinvertebrates at littoral sites ranged from 6564 organisms/m^2 in Control Lake to 109 566 organism/m^2 in Lake C4. Chironomids and nematodes were the dominant taxa numerically in the littoral zone of both lakes. Lake C4 had the highest chironomid density (41 566 organisms/m^2), while densities in Control Lake were much lower (5174 organisms/m^2 respectively). Other less numerous taxa in the littoral zone included pelecypods, and oligochaetes.

The total number of taxa at the profundal site in Control Lake was much lower than the littoral zone (9 versus 14). As for littoral sites, chironomids were the dominant taxa numerically (376 organisms/m^2). Other less numerous taxa in the profundal zone included nematodes, pelecypods.

3.2.4.2 Summary

In general, densities and number of taxonomic groups of benthic macroinvertebrates were greater in the littoral zones than in the profundal zones of sampled lakes in the Jericho Study Area. This likely reflects the higher productivity of shallow-water habitats because of higher water temperatures and greater light penetration. Taxonomic groups encountered included chironomids, nematodes, pelecypods, oligochaetes, and ostracods. This taxonomic composition was indicative of a homogenous substrate dominated by fine sediments in lake environments. In terms of taxonomic composition, the benthic macroinvertebrate communities were dominated by a few taxa: chironomids and nematodes were numerically abundant.

Table 3.7 Density of benthic macroinvertebrates groups in samples collected at littoral and profundal zones[a] of selected lakes in the Jericho Study Area, 2000.

Taxonomic Group	Lake C4	Control Lake	
	Littoral	Littoral	Profundal
PLATYHELMINTHES			
TURBELLARIA			
MICROTURBELLARIA			
Mesostoma		43	
NEMATODA	37 739	522	87
MOLLUSCA			
PELECYPODA	17 913	174	58
ANNELIDA			
OLIGOCHAETA			
Naididae			
Tubificidae	174	174	
Lumbriculidae	1739	130	
ARTHROPODA			
CRUSTACEA			
COPEPODA			
CALANOIDA	3130	43	58
CYCLOPOIDA	2087	87	43
HARPATICOIDA		43	29
BRANCHIOPODA			
CLADOCERA	4870		
OSTRACODA	174	174	
INSECTA			
DIPTERA			
Chironomidae	41 566	5174	376
TRICHOPTERA			
Limnephilidae	174		
Total No. Taxa/m^2 [b]	**17**	**14**	**9**
Total No. Organisms/m^2	**109 566**	**6564**	**651**
No. Organisms/m^2 (Calanoid & Cyclopoid Copepods and Cladocera excluded)	**99 479**	**6434**	**550**

[a] For definition of littoral and profundal zones, see Section 2.1.2.4.
[b] Based on number of taxa identified; see Appendix C, Table C6.

3.3 FISH

The 2000 fish sampling program was designed to provide information on fish communities in selected waterbodies of the Jericho Study Area. Sampling was conducted during summer and fall in a variety of habitats using several inventory techniques. In lakes, these techniques included gillnetting, backpack electrofishing, minnow traps, and use of a fyke net. In streams, fish were inventoried using backpack electrofishing. The following section provides summary information; all raw data are presented in Appendix D, Tables D1 to D8.

3.3.1 Species Composition and Abundance

3.3.1.1 Lakes

During the 2000 fisheries program, six lakes were sampled in the Jericho Study Area (Carat and Control Lakes, Contwoyto Lake bay, and Lakes C3, C4, and D10). Fish were not recorded in Lake C4. Lake C4 is a small, shallow waterbody (7.2 ha and maximum depth of 2.3 m) situated in the headwaters of Stream C2. As such, Lake C4 provides no potential as habitat for fish residing in the Jericho Study Area. Incidental observations during the field program documented high densities of the Branchiopoda, Anostraca (fairy shrimp) in this waterbody. The presence of fairy shrimp in a waterbody is usually a good indication that predatory fish are absent from the system (Clifford 1991).

In total, 333 fish representing five species were recorded in the remaining five lakes (Table 3.8). Lake trout (130) was the numerically dominant species, followed by round whitefish (82), Arctic char (62), burbot (49), and slimy sculpin (10). The species composition and relative importance of a particular species varied between the lakes sampled. In Lake D10, burbot and slimy sculpin were the only species encountered (87% and 13%, respectively); however, in 1999, slimy sculpin was the only species recorded in Lake D10. In Carat Lake, lake trout dominated the sample (42%), followed by round whitefish (39%) and Arctic char (18%). The species composition and relative importance of fish sampled in Lake C3 and Control Lake were similar to that of Carat Lake. Lake trout dominated the sample (55 and 60%, respectively), followed by lower numbers of round whitefish (26 and 29%, respectively), and Arctic char (18 and 7%, respectively). It is not surprising that the aforementioned lakes were similar since they are interconnected within the same drainage basin. In the Contwoyto Lake bay, Arctic char were the dominant species (74%), followed by lake trout (26%); no round whitefish were captured in the Contwoyto Lake bay.

To assess the relative abundance of fish in each of the sampled lakes, gill net catch data were summarized. These were the only data used for comparative purposes because they were based on a standardized sampling effort in all study area lakes and the majority of fish were captured using this technique (193 of 333 fish).

In summer, a variety of habitats and locations were sampled to assess fish distribution patterns. Lake trout was the most abundant fish species in all lakes except Contwoyto Lake bay (Figure 3.15). CPUE values for lake trout varied from 1.5 fish/100 $m^2 \cdot 12$ h in Contwoyto Lake bay to approximately 8 fish/100 $m^2 \cdot 12$ h in Lake C3 and Control Lake. CPUE values for Arctic char varied from 0.3 fish/100 $m^2 \cdot 12$ h in Carat Lake to 3.6 fish/100 $m^2 \cdot 12$ h in Contwoyto Lake.

Table 3.8 Species composition of fish sampled from lakes in the Jericho Study Area, 2000 (all sampling methods and periods combined).

Species	Carat Lake		Lake C3		Lake D10		Control Lake		Contwoyto Lake bay		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Arctic char	23	18.0	13	17.6			3	6.7	23	74.2	62	18.6
Burbot			1	1.4	48 [a]	87.3					49	14.7
Lake trout	54	42.2	41	55.4			27	60.0	8	25.8	130	39.0
Round whitefish	50	39.1	19	25.7			13	28.9			82	24.6
Slimy sculpin	1	0.8			0.29	12.7	2	4.4			10	3.0
Total	**128**	**100.0**	**74**	**100.0**	**55**	**100.0**	**45**	**100.0**	**31**	**100.0**	**333**	**100.0**

[a] Backpack electrofishing and fyke net.

During gill netting efforts in Lake D10, no fish were captured. Gill net efforts totalled 62.1 h in 1999 and 33.1 h in 2000 (including overnight sets). Although fish were not captured during gill netting, burbot and slimy sculpin were captured using backpack electrofishing and the fyke net. Of the burbot captured, the majority were young-of-the-year and one was a juvenile. As well, young-of-the-year burbot were captured in the pond located at the west end of Lake D10. A pond located immediately north of Lake D10 was also sampled for fish using backpack electrofishing; in total, two slimy sculpin were captured. Both these ponds are very small waterbody (1 ha); however, they likely do not freeze to the bottom because the maximum depth for both ponds is 7.0 m.

In fall, sampling was conducted in four lakes (Carat, Control, and Contwoyto Lakes, and Lake C3) in an attempt to identify concentrations of spawning fish. Lake trout was the dominant species present in Lake C3 and Control Lake, while Arctic char was the dominant species in Contwoyto Lake, and round whitefish in Carat Lake (Figure 3.15). CPUE values for lake trout varied from 1.0 fish/100 $m^2 \cdot 12$ h in Contwoyto Lake bay to approximately 2.3 fish/100 $m^2 \cdot 12$ h in Lake C3. CPUE values for Arctic char varied from 0.5 fish/100 $m^2 \cdot 12$ h in Control Lake and Lake C3 to 3.9 fish/100 $m^2 \cdot 12$ h in Carat Lake.

3.3.1.2 Streams

During the 2000 fisheries program, four streams were sampled in the Jericho Study Area (Streams C1, C2, C3, and D1). Fish were not recorded in Stream D1; however, three slimy sculpin were captured at the confluence with Contwoyto Lake. Stream D1 consisted entirely of a boulder garden, with subsurface water flow throughout the majority of the sampled area (only a 20 m stretch of open water in the mid section). The boulder garden presents a barrier to fish passage; therefore, this waterbody provides little potential as habitat for fish residing in the Jericho Study Area.

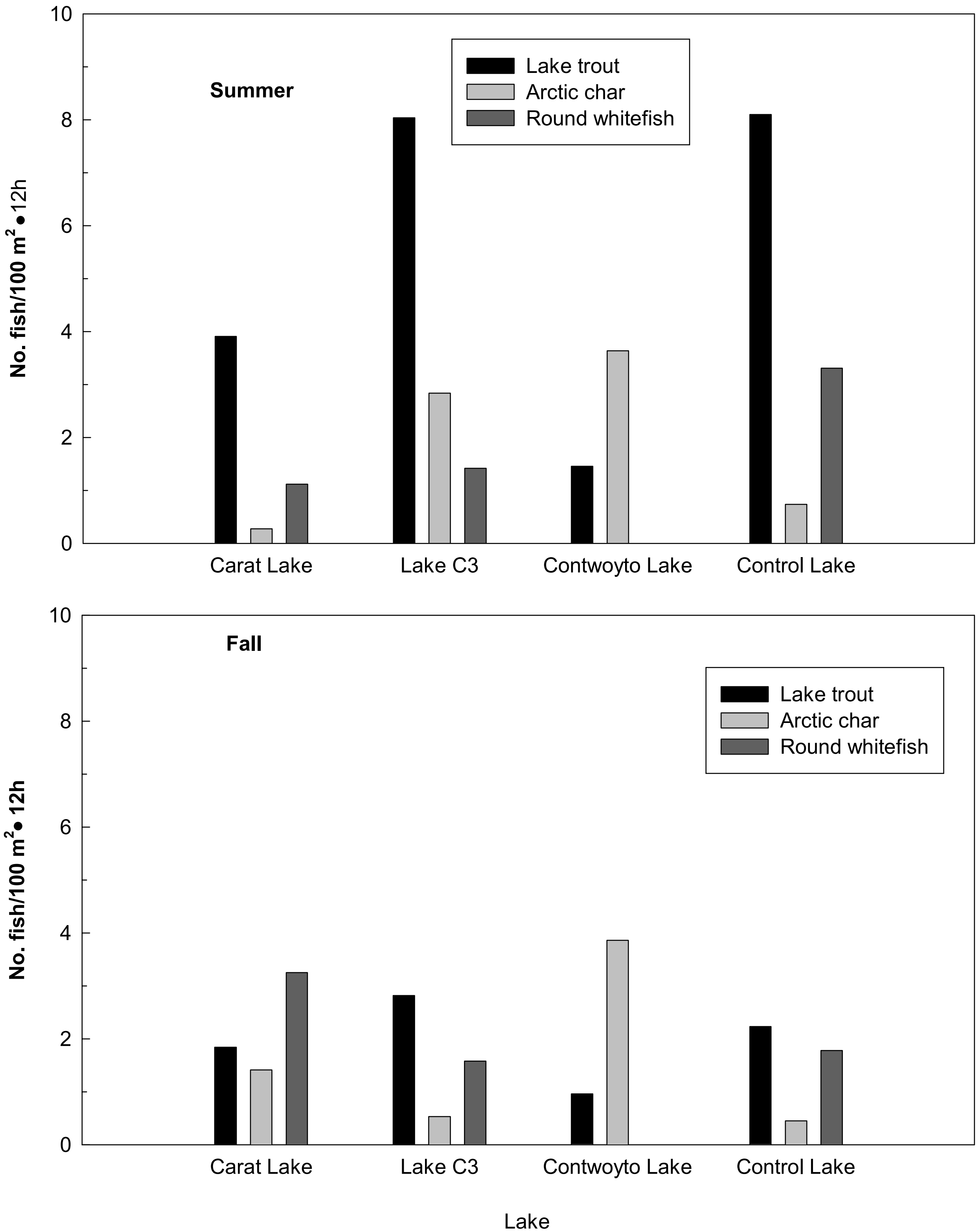


Figure 3.15 Average catch-per-unit-effort values (fish/100 m^2●12h) for fish captured during gill net sampling in lakes during summer and fall within the Jericho Study Area, 2000.

In the remainder of streams sampled, a total of 83 fish representing four species were enumerated (Table 3.9). Slimy sculpin dominated the sample (56), followed by Arctic char (17), lake trout (9), and burbot (1). The number of fish and species encountered varied depending on the sample area. Stream C3 had the highest number of fish encountered, followed by Stream C1 (48 and 25, respectively). Three species of fish were present in both these streams. In Stream C2, 10 fish were encountered (one Arctic char and nine slimy sculpin), representing two species of fish.

Table 3.9 Species composition of fish sampled from streams in the Jericho Study Area, 2000 (all sampling methods and periods combined).

Species	Stream C1		Stream C2		Stream C3		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Arctic char	6	24.0	1	10.0	10	20.8	17	20.5
Burbot					1	2.1	1	1.2
Lake trout	9	36.0					9	10.8
Slimy sculpin	10	40.0	9	90.0	37	77.1	56	67.5
Total	**25**	**100.0**	**10**	**100.0**	**48**	**100.0**	**83**	**100**

On a percentage basis, the relative contribution of each species differed among streams. In Stream C1, lake trout (36%) and slimy sculpin (40%) were the two dominant species, followed by Arctic char (24%). In Stream C3, slimy sculpin exhibited the highest relative contribution (77%), followed by Arctic char (21%), and burbot (2%). Slimy sculpin dominated (90%) in Stream C2.

Based on backpack electrofishing data, the relative abundance of fish was low in all sampled streams (Figure 3.16). Rates did not exceed 2 fish/min of sampling, with the exception of 2.2 fish/min for slimy sculpin in Stream C2. The low CPUE results were not unexpected since all sampled streams were small systems that are used by lake resident populations on an opportunistic basis.

3.3.2 Estimates of Fish Density

Attempts to estimate fish densities in waterbodies that could be potentially impacted by the proposed development (i.e., Lakes C4 and D10, and Streams C2, C3, and D1) was not possible due to the low numbers of fish encountered in theses waterbodies.

3.3.3 Biological Characteristics

An objective of the 2000 fisheries program was to describe the biological characteristics of fish species encountered in the Jericho Study Area. Characteristics described in this section include the following: length-frequency distributions, length-weight relationships, and condition factors. Raw data are presented in Appendix D, Table D7.

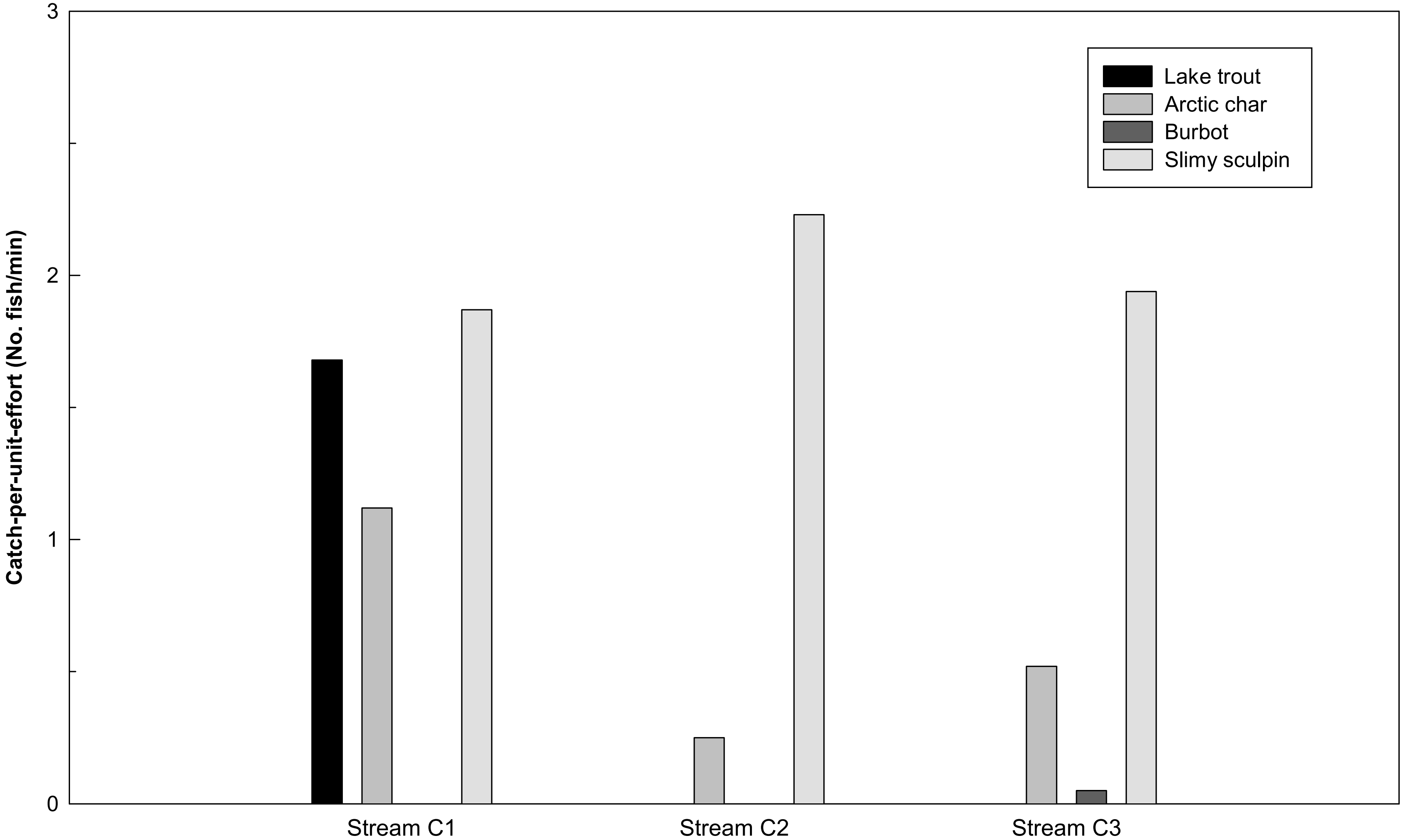


Figure 3.16 Relative abundance (no. fish/min) of fish encountered in streams during synoptic surveys using backpack electrofishing, Jericho Study Area, 2000 (all seasons combined).

3.3.3.1 Lake trout

In Carat Lake, captured lake trout ranged in fork length from 64 to 1000 mm; however, few individuals were encountered that were greater than 500 mm in length (Appendix D, Table D7). Based on combined data for all fish sampling techniques (gill net and fyke net were the primary methods), the length-frequency distribution of lake trout in Carat Lake exhibited a bimodal distribution with smaller fish predominating (52% were <200 mm in fork length; Figure 3.17). The bimodal grouping occurred between 60 and 180 mm, and between 300 and 540 mm.

In Lake C3, lake trout ranged in fork length from 66 to 747 mm, with a mean of 356 mm. Unlike the bimodal distribution exhibited in Carat Lake, five different size groupings were evident in Lake C3 (Figure 3.18). The dominant size group was between 360 and 440 mm, representing 34% of the sample.

In Control Lake, lake trout ranged in fork length from 196 to 680 mm, with a mean of 427 mm (Appendix D, Table D7). Similar to Contwoyto Lake bay, the length-frequency distribution of lake trout in Control Lake exhibited a unimodal distribution with the grouping occurring between 300 and 480 mm (Figure 3.19).

In Contwoyto Lake bay, captured lake trout ranged in fork length from 484 to 585 mm (Appendix D, Table D7). The length-frequency distribution of lake trout in Contwoyto Lake bay exhibited a unimodal distribution with large fish predominating (Figure 3.20). The unimodal grouping occurred between 480 and 580 mm.

Length-weight regression equations and mean condition factors for lake trout sampled from lakes in the Jericho Study Area are presented in Table 3.10. The results are typical of unexploited subarctic lake populations.

Table 3.10 Length-weight regression equations and mean condition factors for lake trout sampled during summer and fall from lakes in the Jericho Study Area, 2000.

Lake	Length-weight Relationship		Condition Factor	Sample Size
	Regression Equation[a]	r^2 Value		
Carat Lake	Weight = $7.3 \cdot 10^{-6} \cdot$ Fork Length$^{3.0646}$	0.995	1.05	52
Lake C3	Weight = $4.8 \cdot 10^{-6} \cdot$ Fork Length$^{3.1217}$	0.995	0.98	37
Control Lake	Weight = $5.6 \cdot 10^{-5} \cdot$ Fork Length$^{2.7294}$	0.988	1.09	23
Contwoyto Lake bay	Weight = $6.8 \cdot 10^{-6} \cdot$ Fork Length$^{3.0697}$	0.863	1.06	8

[a] Weight in grams; fork length in millimetres.

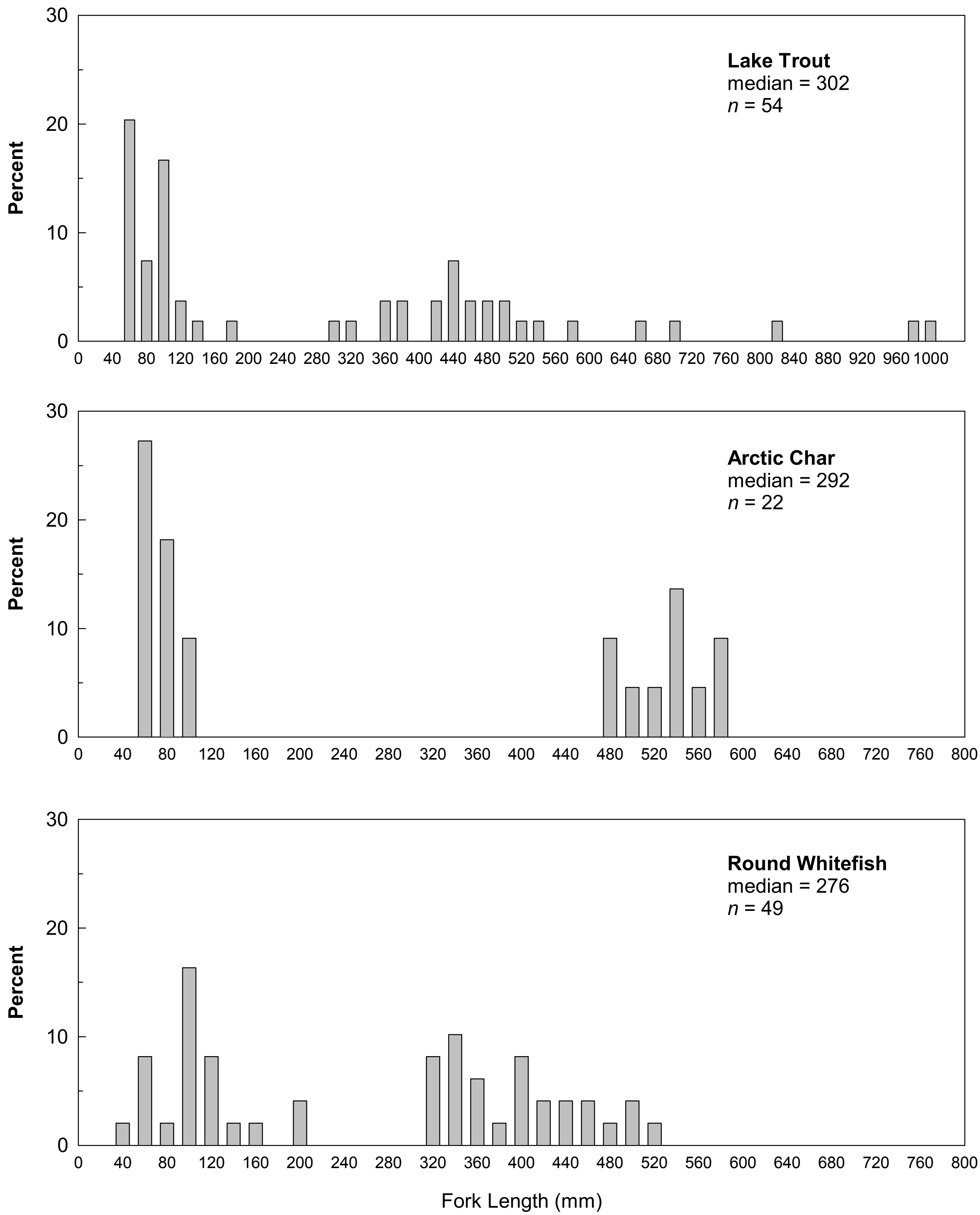


Figure 3.17 Length-frequency distribution of lake trout, Arctic char, and round whitefish in Carat Lake, Jericho Study Area, 2000 (all seasons and methods combined).

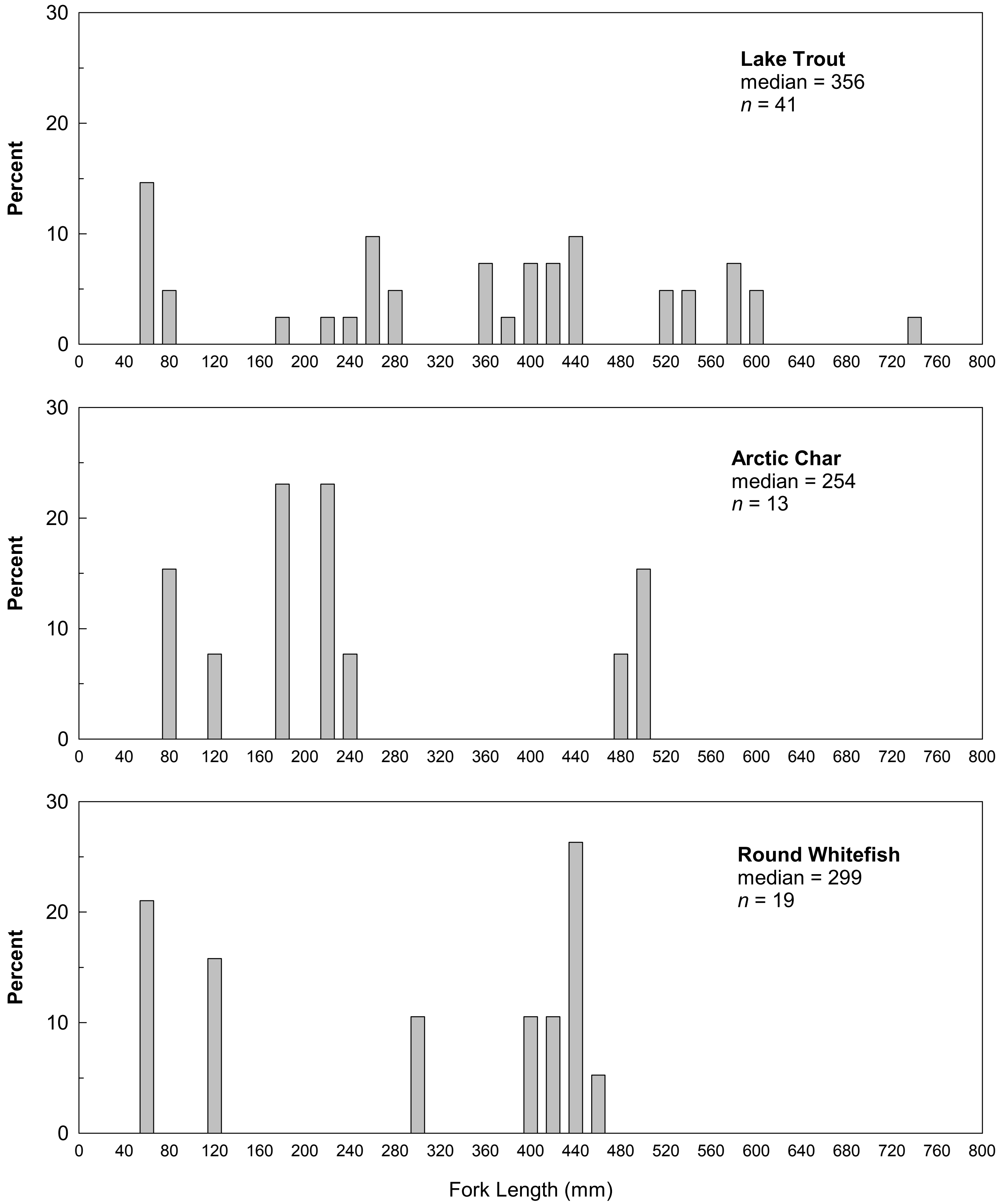


Figure 3.18 Length-frequency distribution of lake trout, Arctic char, and round whitefish in Lake C3, Jericho Study Area, 2000 (all seasons and methods combined).

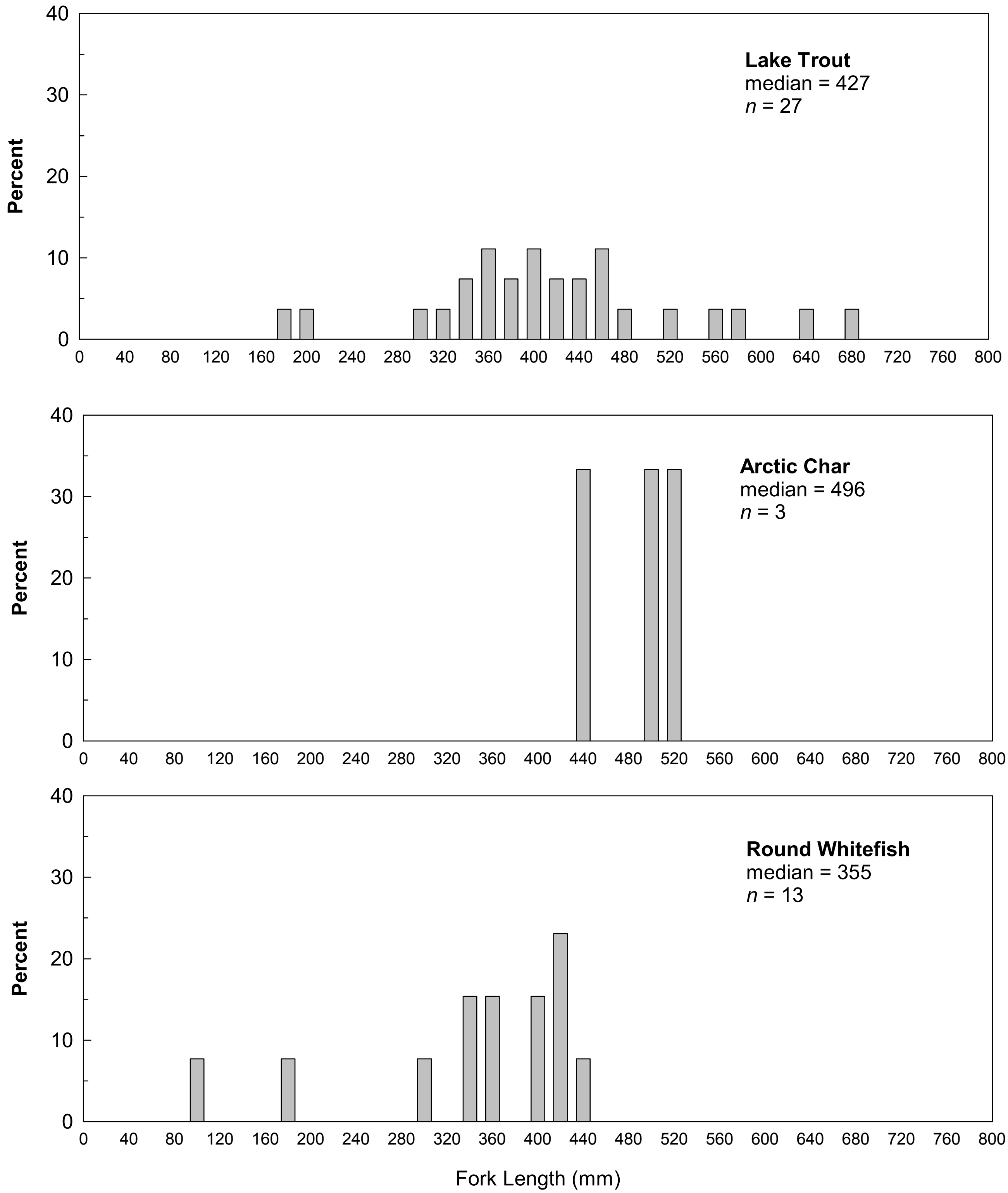
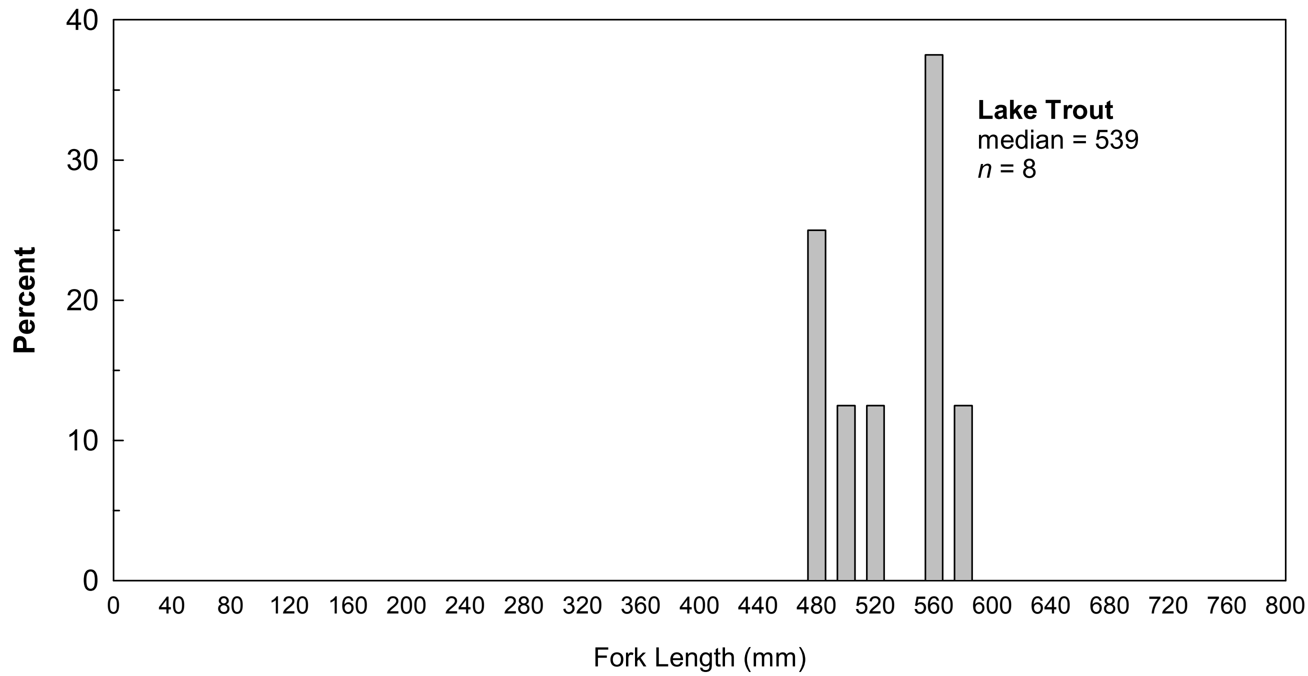


Figure 3.19 Length-frequency distribution of lake trout, Arctic char, and round whitefish in Control Lake, Jericho Study Area, 2000 (all seasons and methods combined).



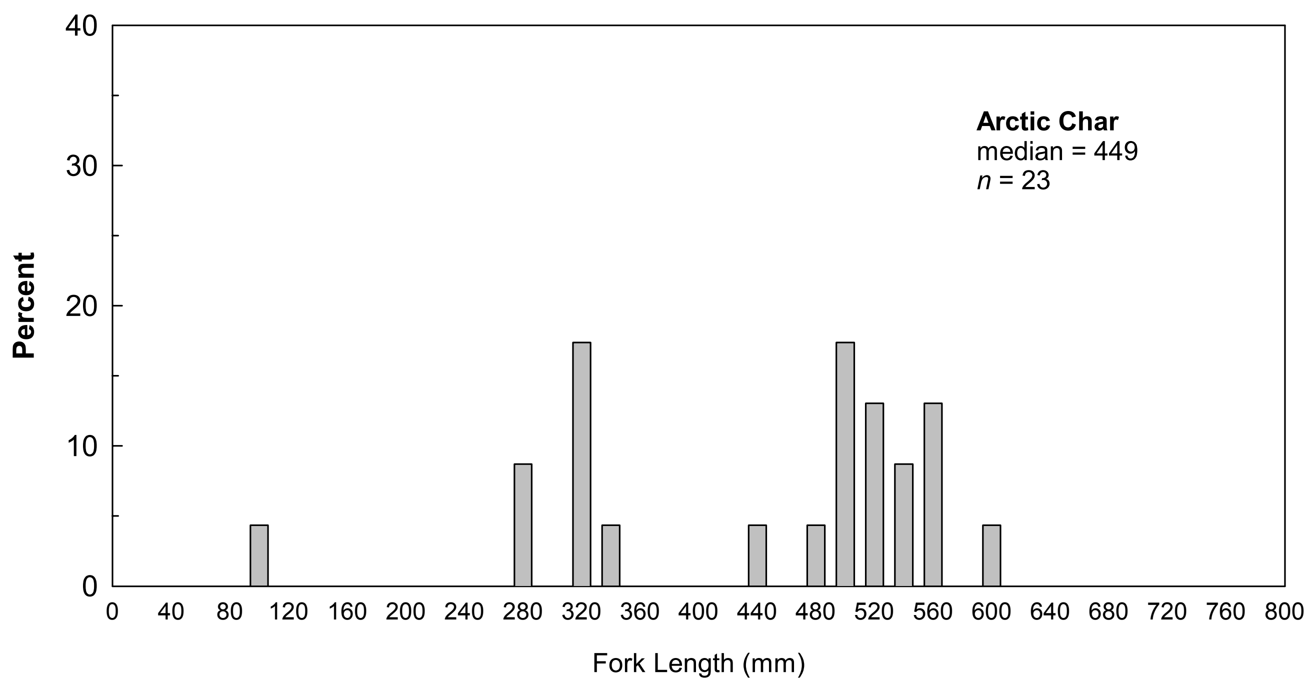


Figure 3.20 Length-frequency distribution of lake trout, Arctic char, and round whitefish in Contwoyto Lake bay, Jericho Study Area, 2000 (all seasons and methods combined).

3.3.3.2 Arctic char

In Carat Lake, captured Arctic char ranged in fork length from 66 to 583 mm (Figure 3.17; Appendix D, Table D7). Based on combined data for all fish sampling techniques (gill net and fyke net were the primary methods), the length-frequency distribution of Arctic char in Carat Lake exhibited a bimodal distribution with smaller fish predominating (55% were <120 mm in fork length; Figure 3.17). The bimodal grouping occurred between 60 and 100 mm and between 480 and 580 mm.

In Lakes C3 and Control, only a small number of Arctic char were captured (n=13 and 3, respectively); thus, patterns in size distribution were not evident (Figures 3.18 and 3.19). Fish in the sample from Lake C3 ranged in length from 81 to 508 mm ($\bar{x}$=254 mm), and Arctic char in Control Lake ranged from 450 to 533 mm ($\bar{x}$=496 mm).

In Contwoyto Lake, captured Arctic char ranged in fork length from 101 to 609 mm (Figure 3.20; Appendix D, Table D7). The length-frequency distribution exhibited a bimodal distribution with larger fish predominating. The bimodal grouping occurred between 280 and 340 mm and between 480 and 600 mm.

Length-weight regression equations and mean condition factors for Arctic char sampled from lakes within the Jericho Study Area are presented in Table 3.11. The results are typical of unexploited subarctic lake populations.

Table 3.11 Length-weight regression equations and mean condition factors for Arctic char sampled during summer and fall from lakes within the Jericho Study Area, 2000.

Lake	**Length-weight Relationship**		**Condition Factor**	**Sample Size**
	Regression Equation[a]	**r^2 Value**		
Carat Lake	Weight = $5.8 \cdot 10^{-6} \cdot$ Fork Length$^{3.0934}$	0.993	0.98	22
Lake C3	Weight = $3.2 \cdot 10^{-6} \cdot$ Fork Length$^{3.2212}$	0.954	1.14	12
Control Lake [b]	-	-	0.82	2
Contwoyto Lake bay	Weight = $8.1 \cdot 10^{-6} \cdot$ Fork Length$^{3.0398}$	0.996	1.03	23

[a] Weight in grams; fork length in millimetres.
[b] The sample size was too small to compute a length-weight regression equation.

3.3.3.3 Round whitefish

In Carat Lake, sampled round whitefish ranged in fork length from 56 to 522 mm, with a mean of 276 mm (Figure 3.17; Appendix D, Table D7). The length-frequency distribution exhibited a bimodal distribution, with groupings occurring between 40 and 160 mm and between 320 and 520 mm.

In Lakes C3 and Control, only a small number of round whitefish were captured (n=19 and 13, respectively); thus, patterns in size distribution were not evident (Figures 3.18 and 3.19). Fish in the sample from Lake C3 ranged in length from 62 to 476 mm ($\bar{x}$=299 mm), and round whitefish in Control Lake ranged from 111 to 441 mm ($\bar{x}$=355 mm). No round whitefish were captured in Contwoyto Lake during the summer and fall sessions.

Length-weight regression equations and mean condition factors for round whitefish sampled from lakes in the Jericho Study Area are presented in Table 3.12.

Table 3.12 Length-weight regression equations and mean condition factors for round whitefish sampled during summer and fall from lakes within the Jericho Study Area, 2000.

Lake	Length-weight Relationship		Condition Factor	Sample Size
	Regression Equation[a]	r^2 Value		
Carat Lake	Weight = $1.8 \cdot 10^{-6} \cdot$ Fork Length$^{3.3095}$	0.998	1.04	43
Lake C3	Weight = $1.2 \cdot 10^{-5} \cdot$ Fork Length$^{2.9959}$	0.994	1.14	16
Control Lake	Weight = $8.0 \cdot 10^{-4} \cdot$ Fork Length$^{2.2898}$	0.919	1.42	10

[a] Weight in grams; fork length in millimetres.

3.3.4 Feeding Habits

Stomach contents of three species (lake trout, Arctic char, and round whitefish) were analysed to assess feeding habits (all seasons combined). Data were collected from fish that succumbed during capture. The information is presented as frequency of occurrence and percent composition of food items by volume. The raw data used for these analyses can be found in Appendix D, Table D8.

The diet of lake trout consisted principally of zooplankton (47% occurrence) (Figure 3.21). Other food items consumed included fish (23%), dipterans (20%), trichopterans (4%), and coleopterans (4%). The diet of Arctic char (n=1) was dominated by zooplankton (100% occurrence). Round whitefish consumed a variety of food items, which included trichopterans, dipterans, zooplankton, pelecypods, and fish eggs. The dominant food consumed was trichopterans (39% occurrence), followed by dipterans (29%), and zooplankton (22%).

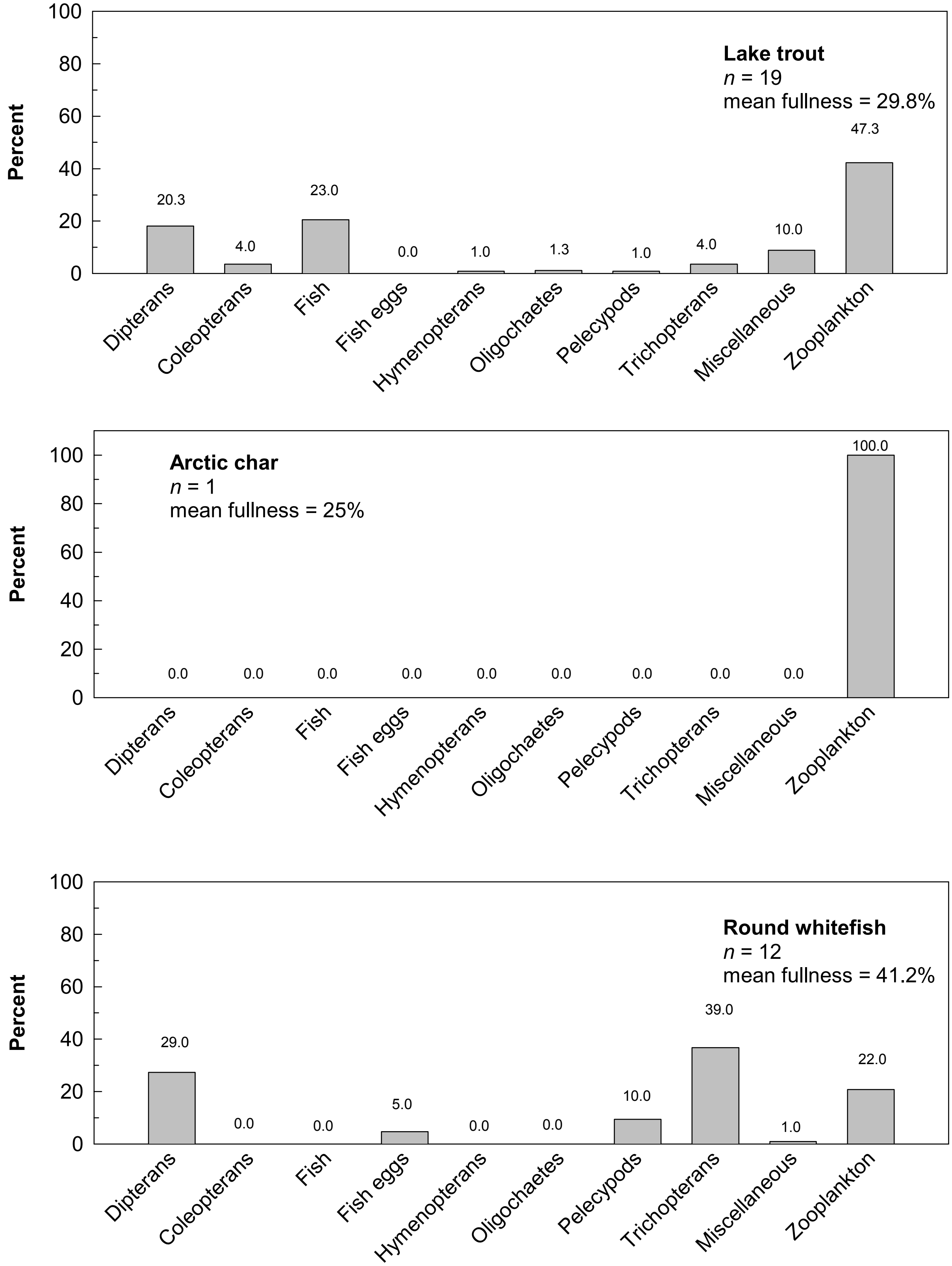


Figure 3.21 Percent frequency of occurrence of food items encountered in stomachs of lake trout, Arctic char and round whitefish captured from lakes in the Jericho Study Area, 2000.

3.3.5 Fish Movements

The Jericho Study Area contains several lakes that are interconnected by larger streams with discharges >0.5 m^3/s during the open water period (Tahera Corporation, unpubl. data). As such, the potential exists for fish to undertake movements between waterbodies. To assess fish movement patterns, a tagging program was initiated in 1995 and continued during the present study. Lake trout and Arctic char in good physical condition were tagged and released in four waterbodies (Carat, Control and Contwoyto Lakes, and Lake C3). All lakes except Control Lake have had fish tagged in previous years.

During the present study, 18 lake trout and ten Arctic char were tagged and released in Carat Lake. Three marked fish were recaptured (one Arctic char and two lake trout; Table 3.13). The Arctic char was recaptured the same day that it was originally captured. Of the lake trout, one was marked in September 1999 and was subsequently recaptured in September 2000. This fish was recaptured in 2000 at the same location it was tagged in 1999. The sexual maturity of this fish could not be determined in 1999; however in 2000, it was determined that it was a ripe female. The second lake trout recaptured was originally tagged in Jericho Lake in 1996 and was recaptured in Carat Lake in 2000.

In Lake C3, 24 lake trout and two Arctic char were tagged and released during the present study; none of these fish were recaptured in 2000. However, three lake trout originally marked in 1999 were recaptured in 2000 (Table 3.13).

In Contwoyto Lake, six lake trout and 16 Arctic char were tagged and released in 2000. None of these fish were recaptured; however a lake trout originally tagged in 1996 was recaptured near the same location in 2000 (Table 3.13).

Previous tagging programs have not been conducted in Control Lake. No fish were recaptured from the 15 lake trout and two Arctic char tagged.

These limited results make it difficult to assess movement patterns of fish in the Jericho Study Area. The results indicate that movement between Carat Lake and Jericho Lake can occur. Movement between systems such as Carat Lake and Lake C3, and Lake C3 and Control Lake are likely limited; the connection between these lakes are shallow and dominated by large boulder substrates. These characteristics would hamper, but not prevent, movement of large adult fish between these lakes during all but high flow periods.

Table 3.13 Tag data for fish recaptured in the Jericho Study Area, 2000.

Species	Tag Number	Tag Colour	Capture Status	Location	Date
Arctic char	4937	White	Originally tagged	Carat Lake	36776
			Recaptured	Carat Lake	36776
Lake trout	3581	White	Originally tagged	Carat Lake	36403
			Recaptured	Carat Lake	36776
Lake trout	4893	Orange	Originally tagged	Jericho Lake	35311
			Recaptured	Carat Lake	36776
Lake trout	3342	White	Originally tagged	Lake C3	36368
			Recaptured	Lake C3	36731
Lake trout	3593	White	Originally tagged	Lake C3	36405
			Recaptured	Lake C3	36774
Lake trout	3594	White	Originally tagged	Lake C3	36405
			Recaptured	Lake C3	36774
Lake trout	89	White	Originally tagged	Contwoyto Lake bay	35276
			Recaptured	Contwoyto Lake bay	36730

[a] See Appendix A for capture code information.

3.3.6 Fall Spawning

Gill net sampling was undertaken during fall in an attempt to identify sites used for spawning by lake trout, Arctic char, and round whitefish. Sampling was conducted in Carat Lake, Lake C3, Control Lake and Contwoyto Lake. In Carat Lake, sampling was concentrated in the southeastern basin near the mouth of Streams C1 and C2. In Lake C3, sampling was distributed within the southern basin where Stream C3 enters the lake. Sampling in Control Lake was concentrated in the mid sections of the lake. Sampling was attempted in Contwoyto Lake bay, but strong winds and high waves during the fall program required early termination of this sampling component (Figure 3.22).

In total, 46 fish were captured in the southeast area of Carat Lake during the fall (Table 3.14; Appendix D, Table D9); these included lake trout (13), Arctic char (10), and round whitefish (23). Of those captured, two lake trout were ripe males and one was a ripe female. Six Arctic char were ripe males and one was a gravid female. Of the 23 round whitefish captured, one was a ripe male and three were gravid females.

In Lake C3, 28 fish were captured during the fall spawning survey (Table 3.14; Appendix D, Table D9); these included lake trout, Arctic char, and round whitefish. Of the 16 captured lake trout, seven were males in prespawning condition and nine were adult non-spawners. Of the three Arctic char recorded, one was a female in prespawning condition, while two were ripe male fish. None of the nine round whitefish captured were in spawning condition.

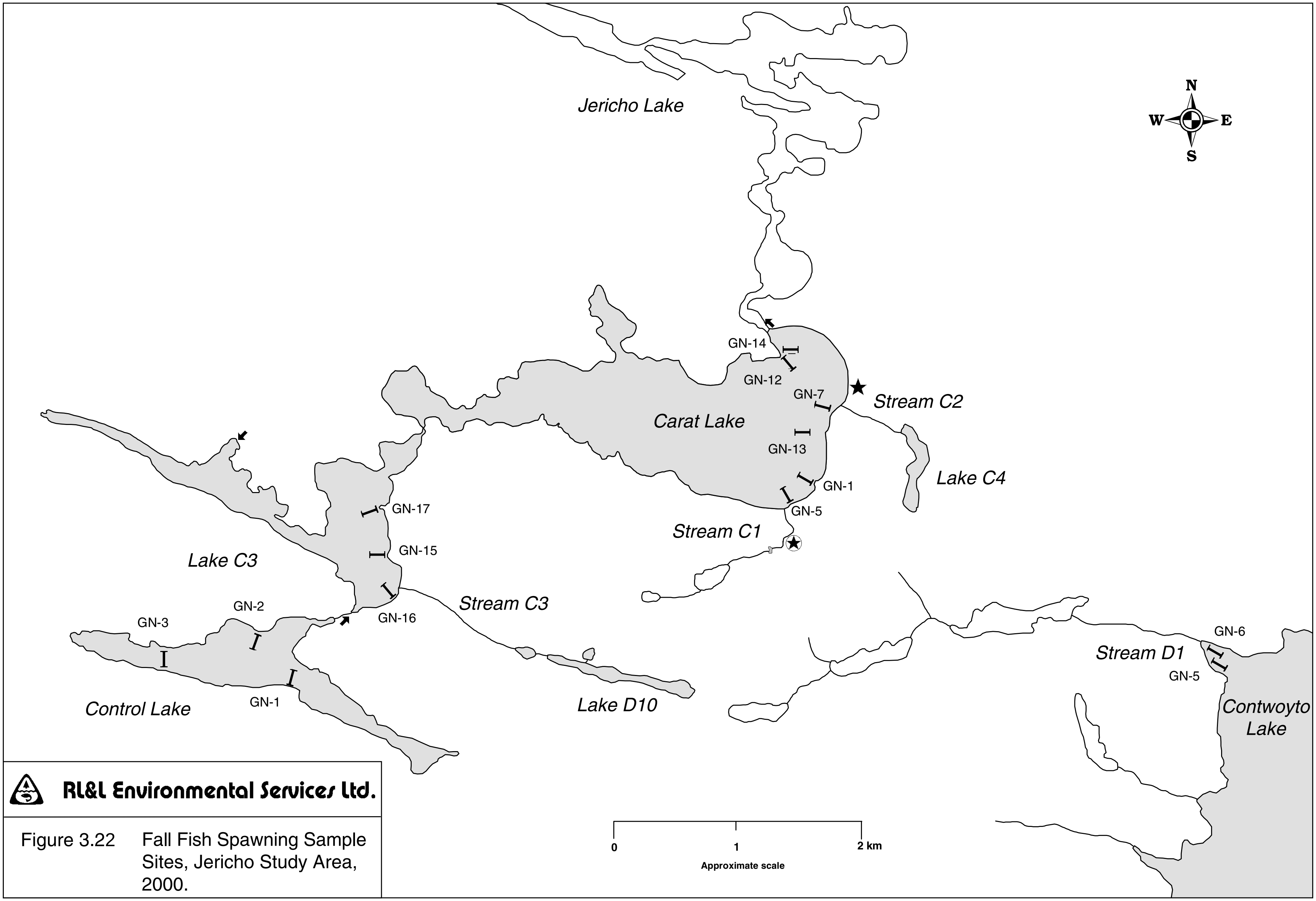


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Figure 3.22 Fall Fish Spawning Sample Sites, Jericho Study Area, 2000.

In Contwoyto Lake, a total of ten fish were captured (eight Arctic char and two lake trout), and none were in spawning condition. In Control Lake, ten fish were captured during the fall spawning survey (Table 3.14; Appendix D, Table D9); these included lake trout (5), Arctic char (1), and round whitefish (4). Of the lake trout captured, two were ripe males and three were adult non-spawners. The Arctic char encountered in Control Lake was a ripe male. None of the four round whitefish captured were in spawning condition.

Table 3.14 Number of fish encountered and catch-per-unit-effort values during fall spawning surveys in the Jericho Study Area, 2000.

Waterbody	**Sample** Time (h)	**Species**	**Sexual** Maturity	**Count**	**CPUE (fish/100 m^2·12 h)**
Carat Lake	38.1	Lake trout	Ripe	3	0.4
			Immature	2	0.3
			Nonspawner	8	1.1
		Arctic char	Ripe	6	0.8
			Nonspawner	4	0.6
		Round whitefish	Ripe	1	0.1
			Gravid	3	0.4
			Nonspawner	19	2.7
		Total		**46**	
Lake C3	30.6	Lake trout	Gravid	7	1.2
			Nonspawner	9	1.6
		Arctic char	Ripe	2	0.4
			Gravid	1	0.2
		Round whitefish	Nonspawner	9	1.6
		Total		**28**	
Contwoyto Lake	11.2	Lake trout	Nonspawner	2	1
		Arctic char	Immature	1	0.5
			Nonspawner	7	3.4
		Total		**10**	
Control Lake	12.1	Lake trout	Ripe	2	0.9
			Nonspawner	3	1.3
		Arctic char	Ripe	1	0.4
		Round whitefish	Nonspawner	4	1.8
		Total		**10**	

3.3.7 Fish Production

The results presented for sampled lakes clearly documented that they are oligotrophic. As such, the potential for fish production in these waterbodies would also be low. Given their relatively small size, annual biomass production would be minimal. Although the present study documented low numbers of fish in Lakes C3 and D10, it would be useful to provide an estimate of their potential productive capacity. An estimate of fish yield was derived using a formula developed for north temperate climatic regions by Hanson and Leggett (1982), which is based on a relationship between total phosphorous and mean lake depth.

$$\textit{Annual Fish Yield (kg/ha)} = 0.071TP + 0.165Z - 1.164$$

Where TP = total phosphorous (μg/L)
Z = mean water depth (m)

Using this formula, the potential annual fish yield (kg/ha) was 0.79 kg/ha in Lake D10 and 1.11 kg/ha in Lake C3. This information indicates that potential fish production was severely limited in these waterbodies. It should also be noted that these values may be biassed upward due to a number of environmental differences between subarctic lakes and north temperate waterbodies. Lower nutrient levels, a colder water temperature regime, and a shorter open water period would significantly lower the potential yield in these lakes compared to those in north temperate areas.

3.3.8 Summary

Most sampled lakes in the Jericho Study Area supported populations of lake trout, Arctic char and round whitefish. Lake trout was the predominant species with Arctic char and round whitefish being less numerous. Notable exceptions were Lake C4, which contained no fish, and Lake D10 which supported burbot and slimy sculpin.

Several fish species were encountered in sampled streams. Arctic char, lake trout, and slimy sculpin were the most numerous, followed by much lower numbers of burbot. Overall, fish abundance was very low.

The feeding habits of fish in the Jericho Study Area were related to species-specific food preferences and the most abundant food items available. Zooplankton was the dominant food group identified in the stomachs of lake trout and Arctic char. Lake trout did consume other items as well (i.e., dipterans and fish). Round whitefish consumed a variety of food items, with trichopterans dominating followed by dipterans and zooplankton. Fish eggs were also consumed during the fall period.

Limited recapture data for tagged fish made it difficult to assess movement patterns of fish; however, characteristics of the watercourse between Carat Lake and Lake C3, and Lake C3 and Control Lake indicated that large numbers of fish likely do not undertake movements between these waterbodies. However, movement between Jericho and Carat Lakes has been undertaken by a lake trout between the years of 1996 and 2000. As well, a lake trout originally tagged in Contwoyto Lake during 1996 was recaptured near the same location in 2000, suggesting that some lake trout may remain relatively more stationary within very large lake systems then previously believed.

Lake trout and Arctic char in prespawning and spawning condition were present in all lakes sampled, with most of the captured fish being males. Only one ripe female (lake trout) was captured during the present study. A gravid female Arctic char was encountered in Lake C3. No spawning females were captured in Control or Contwoyto Lakes. The low numbers of females in spawning condition suggests two things. Sampling may have been undertaken prior to the peak spawning period and/or the numbers of spawning fish were very low.

3.4 HABITAT AND HABITAT USE

This study component was designed to describe aquatic habitat in lakes and streams in the Jericho Study Area and to assess its value to fish. The 2000 program was a continuation of work undertaken in 1995, 1996, and 1999 (RL&L 1995, 1997, 2000). This section provides information for waterbodies not previously investigated or waterbodies that warranted data updates. Raw data collected during the present study are provided in Appendix E, Tables E1 and E2.

3.4.1 Lakes

The shoreline habitat characteristics of Lake C4 and Control Lake were inventoried during summer. Surveys were designed to provide a general assessment of the shoreline characteristics of each lake and to identify critical habitats that were potentially important to fish (high quality spawning and rearing sites).

Surveys indicated that the shoreline of Lake C4 consisted entirely of zones exhibiting low slopes (Table 3.15). Control Lake was dominated by zones exhibiting moderate slopes (55% by length). Control Lake also contained areas of low slope (37% by length) and a small percentage of high sloping shoreline (9%). Much of the shoreline habitat in the surveyed lakes consisted of rock substrates and cobble-boulder substrates were the predominant type (100% in Lake C4 and 70% in Control Lake). In Control Lake, sand represented 30% of the substrate composition (12% in low slope and 18% in moderate slope).

Spawning habitats required by lake dwelling species, such as lake trout, Arctic char, and round whitefish, are characterized by the presence of clean gravel to boulder-sized substrate in areas sufficiently deep to avoid freezing (Scott and Crossman 1973). Areas with clean boulder-sized substrate were widely distributed in both the surveyed waterbodies, which suggests that potential spawning habitat was not limited.

In contrast, shoreline surveys documented a paucity of high quality rearing habitat in all lakes. High quality rearing habitat suitable for lake dwelling fish species is characterized by shallow-water zones exhibiting low slopes and fine substrates that support growth of aquatic macrophytes (Randall et al. 1996). Although areas supporting dense growths of aquatic macrophytes are not a common feature in subarctic lakes, when they occur, they provide important shelter (i.e., protection from predators and source of food) for younger age-classes of fish. In addition, they provide habitat for forage fish species. Shallow water areas with fine substrates were present, but, submergent aquatic macrophytes were rare in most lakes in the Jericho Study Area. Only Lake C4 contained an abundance of submergent macrophytes. Emergent species including sedges (*Carex* spp.) and aquatic grasses (*Glyceria* spp.) were present only in one waterbody (Lake D10), but these were restricted to the lake margins. As such, areas exhibiting high quality rearing habitat were severely limited in all surveyed lakes.

3.4.2 Streams

Investigations of streams were undertaken during summer to provide a detailed description of stream characteristics and to assess their overall potential as fish habitat. Streams chosen for investigation included Streams C2, C3, and D1. All are very small, ephemeral watercourses that have limited value to fish; however, because there is the potential to be affected by the Jericho Diamond Project, surveys were undertaken on each system.

3.4.2.1 Stream C2

Stream C2 is located on the east shore of Carat Lake in the immediate vicinity of the exploration camp and drains Lake C4 (Figure 3.2). This stream exhibits minimal flow during dry periods and freezes to the bottom during winter. Due to the small size of this stream, barriers to fish passage exist within 100 m of the confluence with Carat Lake. Fish habitat was dominated by RUN and RIFFLE habitat (Table 3.16).

Fish were present in Stream C2 during the 2000 sampling program, but were restricted to the lowermost 50 m section. In Stream C2, a juvenile Arctic char (1) was recorded, as well as slimy sculpin (9). Although fish were present, the small size of the stream severely limited its value as fish habitat (Table 3.17).

Table 3.15 Summary of lakeshore habitat characteristics recorded for sampled waterbodies within the Jericho Study Area, 2000.

Habitat Zone[a]		**Lake C4**		**Control Lake**	
Slope	**Substrate**	**Length (m)**	**Percent**	**Length (m)**	**Percent**
Low	Fines			1003	12.1
	Cobble-Boulder	1700	100	2045	24.6
	Low Slope Total	**1700**	**100**	**3048**	**36.7**
Moderate	Fines			1481	17.8
	Cobble-Boulder			3068	36.9
	Moderate Slope Total			**4549**	**54.7**
High	Fines				
	Cobble-Boulder			720	8.7
	High Slope Total			**720**	**8.7**
	Overall Total	**1700**	**100**	**8317**	**100**

[a] For definition of habitat zones see Appendix A.

Table 3.16 Summary of habitat types identified during summer in inventoried streams in the Jericho Study Area, 2000.

Stream	Reach	Surveyed Length (m)	Habitat Type (%)[a]						
			Pool	Run	Riffle	Flat	Dispersed	Boulder Garden	Pond
C2	1	58	40	60					
	2	148	20	80					
	3	96			100				
	4	84			100				
	5	148				20	60	20	
C3[b]	1	110			90		10		
	2	215	10	10	80				
	3	113					100		
	4	198					50	50	
	5	276						100	
	6	139				50	50		
D1	1	1079						100	

[a] For definitions of habitat types see Appendix A.
[b] Characteristics measured during summer 1999.

Table 3.17 Fish habitat quality ratings for sampled streams within the Jericho Study Area, 2000.

Stream	Species	Rating of Habitat Quality		
		Spawning	Rearing	Adult Feeding
Stream C1	Arctic char	Nil	Low	Nil
	Lake trout	Nil	Low	Nil
	Arctic Grayling	Nil	Low	Nil
	Burbot	Nil	Low	Nil
Stream C2	Arctic char	Nil	Low	Nil
	Lake trout	Nil	Low	Nil
	Arctic Grayling	Nil	Low	Nil
	Burbot	Nil	Low	Nil
Stream C3	Arctic char	Nil	Low	Nil
	Lake trout	Nil	Low	Nil
	Arctic Grayling	Nil	Nil	Nil
	Burbot	Nil	Low	Nil
Stream D1	Arctic char	Nil	Nil	Nil
	Lake trout	Nil	Nil	Nil
	Arctic Grayling	Nil	Nil	Nil
	Burbot	Nil	Nil	Nil

3.4.2.2 Stream C3

Stream C3 is located at the west end of Lake D10 and flows in a westerly direction; it connects Lake D10 to Lake C3. The stream exhibits subsurface flow in several locations and it freezes to the bottom during winter. Due its small size, a barrier to fish passage (dispersed flow) exists within 300 m of its confluence with Lake C3. Stream C3 can be divided into six distinct reaches based on habitat type; however, useable fish habitat is restricted to Reaches 1 and 2. Reach 1 is dominated by RIFFLE habitat, while Reach 2 contains POOL, RUN, and RIFFLE habitats.

Fish were present in Stream C3, but were restricted to the two lowermost reaches (most upstream distribution was 233 m). Recorded fish included ten juvenile Arctic char, one burbot, and 37 slimy sculpin. Although fish were present, its small size limits its value as fish habitat.

3.4.2.3 Stream D1

Stream D1 connects Lynne Lake to Contwoyto Lake. This system has no potential as fish habitat. Stream D1 exhibited subsurface flow through a boulder garden over most of it's length (>95%), contributing to an impassible fish barrier. As a consequence, Stream D1 received a habitat quality rating of nil for all categories (Table 3.17).

3.4.3 Summary

The shoreline areas of surveyed lakes were dominated by low to moderate slope areas and by cobble-boulder substrates. These shoreline characteristics provided an abundance of potential spawning areas for species such as lake trout, Arctic char, and round whitefish. Therefore, potential spawning areas were not limited in any of the surveyed lakes. The same shoreline characteristics that provided an abundance of spawning habitat also provided some rearing habitat for fish. Although rearing habitat was available, no high quality areas were identified.

Surveyed streams provided limited habitat for fish populations originating from study area lakes. The primary reasons for low quality fish habitat were small size and poorly defined channels that contained barriers to fish passage.

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APPENDIX A
METHODOLOGY

APPENDIX A

STREAM HABITAT CLASSIFICATION SYSTEM

Provides a qualitative assessment of the physical characteristics of a stream and its potential as fish habitat.

Riffle - Portion of channel with increased velocity relative to Run and Pool habitat types; broken water surface due to effects of submerged or exposed bed materials; shallow (less than 25 cm). Limited value as habitat for larger juveniles and adults (i.e., feeding), but may be used extensively by young-of-the-year and small juveniles.

RF - Typical riffle habitat type; provides limited cover for all life stages.

RF/BG - Riffle habitat type with abundance of large cobble and boulder substrates. Limited cover for juveniles and adults; but, may be used extensively by young-of-the-year fish.

Rapids (RA) - Portion of channel with highest velocity relative to other habitat types. Deep (>25 cm); often formed by channel constriction. Substrate extremely coarse; dominated by large cobble and boulder substrates. Habitat provided for juveniles and adults in pocket eddies associated with substrate.

Run - Portion of channel characterized by moderate to high current velocity relative to Pool and Flat habitats; water surface largely unbroken. Potentially high habitat value for all life stages. Can be differentiated into five types based on depth and cover.

R1 - Maximum depth exceeding 1.5 m; average depth 1.0 m. High cover at all flow conditions. Highest quality habitat for larger juveniles and adults; limited value for young-of-the-year-fish.

R2/BG - Maximum depth reaching 1.0 m and generally exceeding 0.75 m; presence of large cobble or boulder substrates in channel. High cover at all flows. Moderate to high quality habitat for larger juveniles and adults.

R2 - Maximum depth reaching 1.0 m and generally exceeding 0.75 m. High cover during most flows, but not during base flows. Moderate quality habitat for juveniles and adults; limited value for young-of-the-year-fish.

R3/BG - Maximum depth of 0.75 m, but averaging <0.50 m; presence of large cobble or boulder substrates in channel. Moderate cover at all flows. Moderate quality habitat for juveniles and adults; but, the value to young-of-the-year-fish is potentially high.

R3 - Maximum depth of 0.75 m, but averaging <0.50 m. Low cover at all flows. Lowest quality habitat for juveniles and adults; but, the value to young-of-the-year-fish is potentially high.

Flat - Area of channel characterized by low current velocities (relative to RF and Run cover types); near-laminar (i.e., non-turbulent) flow. Depositional area dominated sand/silt substrates. Differentiated from Pool habitat type by high channel uniformity and lack of direct association with riffle/run complex. Potential habitat value for all life stages is moderate to high. Can be differentiated into five types based on depth and cover.

F1 - Maximum depth exceeding 1.5 m; average depth 1.0 m or greater. High cover at all flows. Highest quality habitat for larger juveniles and adults; limited value for young-of-the-year-fish.

F2/BG - Maximum depth reaching 1.0 m and generally exceeding 0.75 m; presence of large cobble or boulder substrates in channel. High cover at all flows. Moderate to high quality habitat for larger juveniles and adults.

F2 - Maximum depth exceeding 1.0 m; generally exceeding 0.75 m. High cover during most flows, but not during base flows. Moderate quality habitat for juveniles and adults; limited value for young-of-the-year-fish.

F3/BG - Maximum depth of 0.75 m, but averaging $<$0.50 m; presence of large cobble or boulder substrates in channel. Moderate cover at all flows. Moderate quality habitat for juveniles and adults; but, the value to young-of-the-year-fish is potentially high.

F3 - Maximum depth of 0.75 m, averaging less than 0.50 m. Low cover at all flows. Lowest quality habitat for juveniles and adults; but, the value to young-of-the-year-fish is potentially high.

Pool - Discrete portion of channel featuring increased depth and reduced velocity (downstream oriented) relative to Riffle and Run habitat types. Normally featuring Riffle/Run associations. Principal habitat value for all life stages is cover. When in close association with Riffle/Run habitats, value can be very high. Can be differentiated into three types based on depth.

P1 - Maximum depth exceeding 1.5 m; average depth 1.0 m or greater; high cover at all flow conditions. Often intergrades with deep-slow type of R1. Highest quality habitat for larger juveniles and adults; limited value for young-of-the-year-fish.

P2 - Maximum depth reaching or exceeding 1.0 m, generally exceeding 0.75 m. High cover at all but base flows. Moderate quality habitat for juveniles and adults; limited value for young-of-the-year-fish.

P3 - Maximum depth of 0.75 m, averaging $<$0.50 m. Low instream cover; includes small pocket eddies. Lowest quality habitat for all life stages.

Dispersed (DIS) - Portion of stream exhibiting no defined channel. Water depth rarely exceeding 0.25 m and often dispersed over boulder fields. Very limited value as fish habitat.

Habitat Features - Includes the following instream features:

Chutes (CH) - Area of channel constriction; generally resulting in channel deepening and increased velocity. Associated habitat types are Pool, Run, and Rapid.

Ledges (LG) - Areas of bedrock intrusion into the channel; often creates Chutes and Pool habitat.

Falls (FAL) - Area of channel exhibiting rapid vertical decent over boulder and bedrock. Often a barrier to fish passage.

Cascade (CAS) - Area of channel exhibiting rapid decent over boulder and bedrock, but, with no well defined vertical decent (i.e., falls). Often a barrier to fish passage.

Outlet/Inlet (Out) - Confluence of stream and lake; can be the outlet or inlet.

Channel Type - Includes the following categories:

Single (C1) - Entire water flow of stream through one active channel.
Multiple (C2) - Water flow of stream through more than one active channel.
Dispersed (C3) - No defined channel.

Bank Type - Includes the following categories:

Well-defined (D1) - Well-defined boundary at water-bank interface of active stream channel.
Ill-defined (D2) - Poorly defined boundary at water-bank interface of active stream channel.

LAKE SHORELINE HABITAT CLASSIFICATION SYSTEM

Provides a qualitative assessment of the physical characteristics of the littoral zone (zone of visible light penetration to bottom) and its potential as critical fish habitat (spawning and rearing).

Slope - The slope of the visible portion of the lake bottom adjacent to the shoreline. The lower the slope, the greater the amount of shallow water (littoral zone) available for use by smaller juveniles and young-of-the-year fish. Visual estimation of slope using three categories.

Low - 0 to 10%
Moderate - 11 to 30%
High - >30%

Substrate - The dominant substrate in the visible portion of the lake bottom adjacent to the shoreline. The presence of rock (cobbles, boulders) indicates potential as a spawning habitat; presence of fines (organics, clay, silt, sand, gravel) indicates the potential as rearing habitat (enhances growth of macrophytes); presence of bedrock indicates limited value as fish habitat. Visual estimation of the percent cover by each substrate size and then grouping into three categories based on the following criteria:

Fines - >40% of bottom consists of organics, clays, silts, or gravel substrates.
Rock - >60% of bottom consists of cobbles or boulders.
Bedrock - > 40% of bottom consists of bedrock.

SUBSTRATE CLASSIFICATION SYSTEM

Modified Wentworth classification for substrate particle sizes

CLASSIFICATION	PARTICLE SIZE RANGE (mm)
Bedrock	-
Boulder	>256
Cobble	32 - 256
Gravel	1 - 32
Sand	0.0625 - 0.2-1
Silt	0.0039-0.0625
Clay	<0.0039
Organics	-

APPENDIX B
PHYSICAL CHARACTERISTICS

Appendix B Table B1. Information for sites sampled in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Site Type	Zone	Easting	Northing
Carat Lake						
	FNLCA01	FN-1	Fyke Net	12W	478301	7320041
	FNLCA02	FN-2	Fyke Net	12W	478642	7320823
	GNLCA01	GN-1	Gill Net	12W	478336	7320292
	GNLCA03	GN-3	Gill Net	12W	478420	7320200
	GNLCA05	GN-5	Gill Net	12W	478126	7320120
	GNLCA07	GN-7	Gill Net	12W	478490	7320780
	GNLCA08	GN-8	Gill Net	12W	477360	7320210
	GNLCA09	GN-9	Gill Net	12W	477890	7320030
	GNLCA10	GN-10	Gill Net	12W	478221	7320636
	GNLCA11	GN-11	Gill Net	12W	477435	7320656
	GNLCA12	GN-12	Gill Net	12W	478248	7321137
	GNLCA13	GN-13	Gill Net	12W	478379	7320356
	GNLCA14	GN-14	Gill Net	12W	478268	7321288
	GTLCA01		Gee Trap	12W	478630	7320820
	GTLCA02		Gee Trap	12W	478490	7320290
	GTLCA03		Gee Trap	12W	478340	7320100
	GTLCA04		Gee Trap	12W	477390	7320220
	LMLCA01	LM-1	Limnology	12W	476953	7320910
	LMLCA02	LM-2	Limnology	12W	476951	7320911
Control Lake						
	BELLCN01	BEL-1	Benthos	12W	475378	7317982
	BEPLCN01	BEP-1	Benthos	12W	474071	7318742
	EFLCN01		Backpack Electrofisher	12W	474570	7319060
	GNLCN01	GN-1	Gill Net	12W	474215	7318615
	GNLCN02	GN-2	Gill Net	12W	473947	7318976
	GNLCN03	GN-3	Gill Net	12W	473215	7318850
	GTLCN01		Gee Trap	12W	474251	7318933
	GTLCN02		Gee Trap	12W	474124	7318989
	GTLCN03		Gee Trap	12W	474444	7318635
	GTLCN04		Gee Trap	12W	474481	7318331
	LMLCN01	LM-4	Limnology	12W	474071	7318741
	PELCN01	PE-1	Periphyton	12W	474314	7318418
	PHLCN01	PL-1	Phytoplankton	12W	474071	7318741
	WCLCN01	WC-1	Water Chemistry	12W	473956	7318790
	WCLCN02	WC-1	Water Chemistry	12W	473956	7318790
	ZOLCN01	PL-1	Zooplankton	12W	474071	7318741
Contwoyto Lake						
	GNLCW01	GN-1	Gill Net	12W	483260	7320020
	GNLCW02	GN-2	Gill Net	12W	483100	7321180
	GNLCW03	GN-3	Gill Net	12W	483260	7320020
	GNLCW04	GN-4	Gill Net	12W	483370	7321080

Appendix B Table B1. Information for sites sampled in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Site Type	Zone	Easting	Northing
Contwoyto Lake						
	GNLCW05	GN-5	Gill Net	12W	481570	7318810
	GNLCW06	GN-6	Gill Net	12W	481590	7318870
	GTLCW01		Gee Trap	12W	482990	7321280
	GTLCW02		Gee Trap	12W	483650	7321320
	GTLCW03		Gee Trap	12W	483280	7319970
	GTLCW04		Gee Trap	12W	483470	7320850
	GTLCW05		Gee Trap	12W	483300	7320500
	GTLCW06		Gee Trap	12W	483430	7320790
Lake above LD10						
	EFLD1101		Backpack Electrofisher	12W	476580	7318760
Lake C1						
	LMLC0101		Limnology	12W	477533	7319411
Lake C3						
	EFLC0301		Backpack Electrofisher	12W	475102	7319325
	FNLCO301	FN-3	Fyke Net	12W	475070	7319238
	GNLC0311	GN-11	Gill Net	12W	475000	7319389
	GNLC0312	GN-12	Gill Net	12W	474808	7319419
	GNLC0313	GN-13	Gill Net	12W	475019	7319488
	GNLC0314	GN-14	Gill Net	12W	474910	7319550
	GNLC0315	GN-15	Gill Net	12W	474159	7319411
	GNLC0316	GN-16	Gill Net	12W	474970	7319333
	GNLC0317	GN-17	Gill Net	12W	474812	7320040
	GTLC0301		Gee Trap	12W	475002	7319515
	GTLC0302		Gee Trap	12W	475083	7319366
	GTLC0303		Gee Trap	12W	474770	7319162
	GTLC0304		Gee Trap	12W	474745	7319300
	LMLC0301	LM-3	Limnology	12W	474940	7319374
Lake C4						
	BELLC0401	BEL-2	Benthos	12W	479287	7320472
	EFLC0401		Backpack Electrofisher	12W	479140	7320600
	EFLC0402		Backpack Electrofisher	12W	479330	7320450
	GNLC0401	GN-1	Gill Net	12W	479287	7320472
	GNLC0401	GN-1	Gill Net	12W	479287	7320472
	GTLC0401		Gee Trap	12W	479203	7320031
	GTLC0402		Gee Trap	12W	479238	7320183
	GTLC0403		Gee Trap	12W	479349	7320385
	GTLC0404		Gee Trap	12W	479169	7320601
	LMLC0401	LM-7	Limnology	12W	479287	7320472
	LMLC0402	LM-7	Limnology	12W	479287	7320472
	PELC0401	PE-2	Periphyton	12W	479184	7320137
	PHLC0401	PL-2	Phytoplankton	12W	479287	7320472

Appendix B Table B1. Information for sites sampled in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Site Type	Zone	Easting	Northing
Lake C4						
	WCLC0401	WC-2	Water Chemistry	12W	479287	7320472
	ZOLCO401	PL-2	Zooplankton	12W	479287	7320472
Lake D10						
	EFLD1001		Backpack Electrofisher	12W	477460	7318500
	FNLD1001	FN-4	Fyke Net	12W	476745	7318565
	GNLD1006	GN-6	Gill Net	12W	477350	7318465
	GNLD1007	GN-7	Gill Net	12W	476406	7318714
	GTLD1001		Gee Trap	12W	477144	7318535
	GTLD1002		Gee Trap	12W	477240	7318568
	GTLD1003		Gee Trap	12W	476512	7318692
	GTLD1004		Gee Trap	12W	476347	7318780
	LMLD1001	LM-6	Limnology	12W	477354	7318505
	LMLD1002	LM-5	Limnology	12W	476521	7318705
Pond LD10						
	EFPD1001		Backpack Electrofisher	12W	476190	7318785
Stream C1						
	EFTC0101		Backpack Electrofisher	12W	478190	7319950
	WTTC0101	WT-1	Thermograph	12W	478198	7319964
Stream C2						
	EFTC0201		Backpack Electrofisher	12W	478637	7320786
	PETC0201	PE-3	Periphyton	12W	478667	7320817
	SHTC0201		Habitat	12W	478637	7320786
	SHTC0202		Habitat	12W	478689	7320762
	SHTC0203		Habitat	12W	478819	7320694
	SHTC0204		Habitat	12W	478909	7320667
	SHTC0205		Habitat	12W	478987	7320635
	WCTC0201	WC-3	Water Chemistry	12W	478667	7320817
	WTTC0201	WT-2	Thermograph	12W	478667	7320817
Stream C3						
	EFTC0301		Backpack Electrofisher	12W	475101	7319323
	EFTC0302		Backpack Electrofisher	12W	475208	7319309
	EFTC0303		Backpack Electrofisher	12W	475407	7319227
	EFTC0304		Backpack Electrofisher	12W	475497	7319161
	SHTC0301		Habitat	12W	475101	7319323
	SHTC0302		Habitat	12W	475208	7319309
	SHTC0303		Habitat	12W	475407	7319227
	SHTC0304		Habitat	12W	475497	7319161
	SHTC0305		Habitat	12W	475646	7319030
	SHTC0306		Habitat	12W	475899	7318878
	SHTC0307		Habitat	12W	476030	7318836
	SHTC0308		Habitat	12W	476194	7318792

Appendix B Table B1. Information for sites sampled in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Site Type	Zone	Easting	Northing
Stream C3						
	WTTC0301	WT-3	Thermograph	12W	478177	7319978
Stream D1						
	EFTD0101		Backpack Electrofisher	12W	481530	7318890
	PETD0101	PE-4	Periphyton	12W	480497	7319078
	PETD0102	PE-4	Periphyton	12W	480881	7318999
	WCTD0101	WC-4	Water Chemistry	12W	480881	7318999

Appendix B Table B2. Data used to generate bathymetric isobaths in the west arm of Lake C3, Jericho Study Area, 2000.

Waterbody	Transect Number	Depth (m)	Zone	Easting	Northing
Lake C3					
	1	10.6	12W	474518	7319632
	1	11.3	12W	474447	7319657
	2	11.3	12W	474447	7319657
	2	12.0	12W	474412	7319669
	2	13.6	12W	474393	7319675
	3	13.6	12W	474393	7319675
	3	14.0	12W	474386	7319678
	3	14.0	12W	474376	7319682
	3	12.0	12W	474354	7319690
	3	11.8	12W	474351	7319691
	4	11.8	12W	474351	7319691
	4	12.0	12W	474333	7319700
	4	11.1	12W	474294	7319719
	5	11.1	12W	474294	7319719
	5	10.0	12W	474249	7319747
	5	9.8	12W	474247	7319748
	6	9.8	12W	474247	7319748
	6	8.0	12W	474233	7319757
	6	6.5	12W	474212	7319770
	7	6.5	12W	474212	7319770
	7	4.0	12W	474197	7319779
	7	2.0	12W	474188	7319784
	7	1.7	12W	474172	7319794
	8	1.7	12W	474172	7319794
	8	1.0	12W	474111	7319826
	9	1.0	12W	474111	7319826
	9	0.9	12W	474072	7319854
	10	0.9	12W	474072	7319854
	10	1.3	12W	474037	7319882
	11	1.3	12W	474037	7319882
	11	1.0	12W	474009	7319899
	12	1.0	12W	474009	7319899
	12	2.0	12W	473978	7319916
	12	3.5	12W	473954	7319928
	13	3.5	12W	473954	7319928
	13	2.2	12W	473897	7319953
	14	2.2	12W	473897	7319953
	14	2.0	12W	473886	7319958
	14	4.0	12W	473869	7319964
	14	5.1	12W	473863	7319967
	15	5.1	12W	473863	7319967
	15	6.0	12W	473838	7319975
	15	8.0	12W	473825	7319980
	15	9.7	12W	473780	7319995

Appendix B Table B2. Data used to generate bathymetric isobaths in the west arm of Lake C3, Jericho Study Area, 2000.

Waterbody	Transect Number	Depth (m)	Zone	Easting	Northing
Lake C3					
	16	9.7	12W	473780	7319995
	16	8.9	12W	473729	7320021
	17	8.9	12W	473729	7320021
	17	8.7	12W	473681	7320052
	18	8.7	12W	473681	7320052
	18	8.0	12W	473666	7320061
	18	6.0	12W	473637	7320076
	18	5.3	12W	473600	7320097
	19	5.3	12W	473600	7320097
	19	6.0	12W	473574	7320114
	19	6.0	12W	473532	7320140
	19	4.3	12W	473520	7320148
	20	4.3	12W	473520	7320148
	20	4.0	12W	473517	7320150
	20	4.7	12W	473486	7320175
	21	4.7	12W	473486	7320175
	21	5.2	12W	473427	7320205
	22	5.2	12W	473427	7320205
	22	6.0	12W	473418	7320209
	22	7.6	12W	473378	7320229
	23	7.6	12W	473378	7320229
	23	8.0	12W	473375	7320231
	23	10.0	12W	473328	7320259
	23	10.3	12W	473315	7320267
	24	10.3	12W	473315	7320267
	24	11.0	12W	473252	7320301
	25	11.0	12W	473252	7320301
	25	11.5	12W	473166	7320348
	26	11.5	12W	473166	7320348
	26	10.5	12W	473098	7320391
	27	10.5	12W	473098	7320391
	27	10.0	12W	473087	7320400
	27	8.0	12W	473047	7320430
	27	7.4	12W	473039	7320436
	28	7.4	12W	473039	7320436
	28	6.0	12W	473013	7320450
	28	4.7	12W	472996	7320460
	29	4.7	12W	472996	7320460
	29	4.0	12W	472988	7320464
	29	2.0	12W	472979	7320468
	29	1.2	12W	472955	7320479
	30	1.2	12W	472955	7320479
	30	1.0	12W	472860	7320530
	31	1.0	12W	472860	7320530

Appendix B Table B2. Data used to generate bathymetric isobaths in the west arm of Lake C3, Jericho Study Area, 2000.

Waterbody	Transect Number	Depth (m)	Zone	Easting	Northing
Lake C3					
	31	4.0	12W	472801	7320557
	31	4.5	12W	472797	7320559
	32	4.5	12W	472797	7320559
	32	4.0	12W	472760	7320576
	32	2.6	12W	472748	7320581
	33	2.6	12W	472748	7320581
	33	2.0	12W	472745	7320582
	33	1.1	12W	472683	7320606
	34	1.1	12W	472683	7320606
	34	1.3	12W	472578	7320631
	35	1.3	12W	472578	7320631
	35	2.0	12W	472492	7320649
	35	2.2	12W	472479	7320652
	36	2.2	12W	472479	7320652
	36	2.0	12W	472462	7320656
	36	0.8	12W	472414	7320668
	38	0.8	12W	472532	7320618
	38	2.0	12W	472537	7320642
	38	2.0	12W	472538	7320649
	38	0.5	12W	472544	7320678
	39	1.5	12W	472625	7320599
	39	2.0	12W	472626	7320608
	39	4.0	12W	472627	7320612
	39	4.0	12W	472627	7320615
	39	2.0	12W	472627	7320619
	39	0.6	12W	472631	7320648
	40	0.6	12W	472747	7320547
	40	2.0	12W	472759	7320572
	40	4.0	12W	472760	7320575
	40	6.0	12W	472761	7320576
	40	6.0	12W	472762	7320580
	40	4.0	12W	472767	7320591
	40	2.0	12W	472769	7320593
	40	1.1	12W	472774	7320605
	41	0.5	12W	472878	7320474
	41	1.1	12W	472910	7320503
	42	0.8	12W	473111	7320354
	42	2.0	12W	473122	7320374
	42	4.0	12W	473123	7320376
	42	6.0	12W	473124	7320378
	42	8.0	12W	473125	7320381
	42	10.0	12W	473128	7320387
	42	10.0	12W	473133	7320396
	42	8.0	12W	473135	7320400

Appendix B Table B2. Data used to generate bathymetric isobaths in the west arm of Lake C3, Jericho Study Area, 2000.

Waterbody	Transect Number	Depth (m)	Zone	Easting	Northing
Lake C3					
	42	6.0	12W	473137	7320403
	42	4.0	12W	473138	7320405
	42	2.0	12W	473139	7320407
	42	1.0	12W	473142	7320413
	43	1.0	12W	473412	7320138
	43	2.0	12W	473518	7320235
	43	4.0	12W	473535	7320250
	43	6.0	12W	473558	7320271
	43	6.0	12W	473638	7320344
	43	4.0	12W	473651	7320357
	43	2.0	12W	473657	7320361
	43	1.1	12W	473778	7320472
	44	1.3	12W	473851	7320160
	44	2.0	12W	473679	7320302
	44	4.0	12W	473676	7320304
	44	6.0	12W	473666	7320313
	44	6.0	12W	473639	7320336
	44	4.0	12W	473630	7320343
	44	2.0	12W	473622	7320349
	44	1.5	12W	473608	7320361
	45	0.7	12W	473910	7319901
	45	2.0	12W	473935	7319931
	45	4.0	12W	473939	7319934
	45	4.0	12W	473944	7319941
	45	2.0	12W	473950	7319948
	45	1.0	12W	474067	7320084
	46	1.0	12W	474168	7319742
	46	2.0	12W	474182	7319763
	46	4.0	12W	474183	7319765
	46	6.0	12W	474185	7319768
	46	8.0	12W	474189	7319774
	46	8.0	12W	474193	7319780
	46	6.0	12W	474194	7319782
	46	4.0	12W	474196	7319784
	46	2.0	12W	474197	7319786
	46	1.0	12W	474211	7319807

Appendix B Table B3. Temperature and dissolved oxygen profile data from sampled lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Method	Depth Sampled (m)	DO (mg/L)	Temp (C)
Carat Lake							
	LMLCA01	LM-1	28-Jul-00	OxyGuard			
					0.0	9.7	16.8
					1.0	9.7	16.7
					2.0	9.7	16.7
					3.0	9.7	16.6
					4.0	9.7	16.6
					5.0	9.9	16.3
					6.0	9.9	16.2
					7.0	10.5	14.9
					8.0	10.8	13.7
					9.0	10.9	12.8
					10.0	11.2	11.8
					11.0	11.8	9.5
					12.0	12.0	7.4
					13.0	12.0	6.7
					14.0	12.0	6.1
					15.0	11.9	5.9
					16.0	11.9	5.8
					17.0	11.7	5.8
					18.0	11.7	5.8
					19.0	11.6	5.7
					20.0	11.6	5.7
					21.0	11.6	5.6
					22.0	11.6	5.6
					23.0	11.5	5.5
					24.0	11.5	5.5
					25.0	11.5	5.5
					26.0	11.3	5.4
					26.5	11.3	5.4
	LMLCA02	LM-2	28-Jul-00	OxyGuard			
					0.0	9.8	16.1
					1.0	9.7	16.1
					2.0	9.6	16.0
					3.0	9.7	16.0
					4.0	9.7	16.0
					5.0	9.7	16.0
					6.0	9.9	15.5
					7.0	10.3	14.6
					8.0	10.6	13.3

Appendix B Table B3. Temperature and dissolved oxygen profile data from sampled lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Method	Depth Sampled (m)	DO (mg/L)	Temp (C)
Carat Lake							
	LMLCA02	LM-2	28-Jul-00	OxyGuard			
					9.0	11.5	9.4
					10.0	11.6	8.7
					11.0	11.8	8.3
					12.0	11.8	7.3
					13.0	11.7	6.9
					14.0	11.7	6.5
					15.0	11.6	6.2
					16.0	11.5	6.1
					17.0	11.5	5.9
					18.0	11.9	5.8
					19.0	11.7	5.8
					20.0	11.7	5.7
					21.0	11.6	5.6
					22.0	11.5	5.6
					23.0	11.6	5.5
					23.5	11.5	5.5
Control Lake							
	LMLCN01	LM-4	27-Jul-00	OxyGuard			
					0.0	9.4	17.4
					1.0	9.4	17.3
					2.0	9.4	17.3
					3.0	9.5	17.2
					4.0	9.5	17.0
					5.0	9.5	16.4
					6.0	10.3	15.0
					7.0	11.0	12.3
					8.0	11.5	10.8
					9.0	11.5	8.9
					10.0	12.1	9.1
					11.0	11.5	7.6
					12.0	11.9	7.6
					13.0	11.3	6.9
					14.0	11.8	6.9
					15.0	11.2	6.5
					16.0	11.7	6.2
					17.0	11.2	6.1
					18.0	11.6	5.9
					19.0	11.2	5.9

Appendix B Table B3. Temperature and dissolved oxygen profile data from sampled lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Method	Depth Sampled (m)	DO (mg/L)	Temp (C)
Control Lake							
	LMLCN01	LM-4	27-Jul-00	OxyGuard			
					20.0	11.5	5.8
					21.0	11.2	5.8
					22.0	11.5	5.7
					23.0	11.2	5.7
					24.0	11.4	5.6
					25.0	11.2	5.6
					26.0	11.4	5.5
					27.0	11.3	5.5
					28.0	11.3	5.5
					29.0	9.8	5.5
					30.0	9.4	5.4
					31.0	9.2	5.4
Lake C1							
	LMLC0101		27-Jul-00	OxyGuard			
					0.0	9.2	18.5
					1.0	9.1	18.4
					2.0	9.1	18.4
					3.0	9.1	18.0
					4.0	9.5	16.3
					5.0	10.3	12.9
					6.0	11.3	8.1
					7.0	11.1	6.2
					8.0	10.7	5.0
					9.0	8.8	4.6
Lake C3							
	LMLC0301	LM-3	27-Jul-00	OxyGuard			
					0.0	9.2	17.6
					1.0	9.2	17.5
					2.0	9.2	17.5
					3.0	9.2	17.4
					4.0	9.1	17.3
					5.0	9.3	17.0
					6.0	9.3	16.1
					7.0	10.3	12.9
					8.0	11.0	10.5
					9.0	11.1	8.9
					10.0	10.7	8.1

Appendix B Table B3. Temperature and dissolved oxygen profile data from sampled lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Method	Depth Sampled (m)	DO (mg/L)	Temp (C)
Lake C3							
	LMLC0301	LM-3	27-Jul-00	OxyGuard			
					11.0	10.2	7.8
					12.0	10.0	7.6
					13.0	9.4	7.4
Lake C4							
	LMLC0401	LM-7	22-Jul-00	OxyGuard			
					0.0	9.4	17.4
					0.5	9.4	17.4
					1.0	9.5	17.3
					1.5	9.5	17.1
					2.0	9.5	17.1
	LMLC0402	LM-7	29-Jul-00	OxyGuard			
					0.0	8.3	20.3
					0.5	8.3	20.1
					1.0	8.7	20.1
					1.5	8.6	20.0
					2.0	9.1	19.8
Lake D10							
	LMLD1001	LM-6	29-Jul-00	OxyGuard			
					0.0	8.6	19.6
					0.5	7.9	19.6
					1.0	7.8	19.5
					1.5	8.2	19.4
					2.0	8.2	19.4
					2.5	8.2	19.2
					3.0	8.2	19.2
					3.5	8.2	19.1
					4.0	8.3	19.0
					4.5	8.2	18.9
					5.0	8.2	18.8
					5.5	8.1	18.5
					6.0	8.2	17.9
					6.5	1.5	17.6
	LMLD1002	LM-5	29-Jul-00	OxyGuard			
					0.0	8.6	20.5
					0.5	8.6	20.0
					1.0	8.8	19.4

Appendix B Table B3. Temperature and dissolved oxygen profile data from sampled lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Method	Depth Sampled (m)	DO (mg/L)	Temp (C)
Lake D10							
	LMLD1002	LM-5	29-Jul-00	OxyGuard			
					1.5	8.3	19.3
					2.0	8.5	19.2
					2.5	8.3	19.1
					3.0	8.4	19.1
					3.5	8.4	19.0
					4.0	8.4	19.0
					4.5	8.4	19.0
					5.0	8.6	18.9
					5.5	8.5	18.9
					6.0	8.4	17.7

Appendix B Table B4. Channel characteristics measured during stream surveys in the Jericho Study Area, 2000.

Waterbody	Reach	Date	Slope (°)	Length (m)	Wetted Width (m)	Max. Depth (m)	Channel Type	Bank Type	Substrate Type[1] (%)						
									OM	SI	SA	GR	CO	BO	BE
Stream C2															
	1	26-Jul-00	4	58											
					0.1	0.01	Single	Defined	0	5	0	70	20	5	0
					0.18	0.01	Single	Defined	100	0	0	0	0	0	0
					0.47	0.03	Single	Defined	50	5	0	10	35	0	0
					0.61	0.1	Single	Defined	0	5	0	50	35	10	0
					0.69	0.3	Single	Defined	0	10	0	20	5	65	0
	2	27-Jul-00	2	148											
					0	0	Multiple	Defined	0	0	0	0	5	95	0
					0	0	Multiple	Defined	0	0	0	0	10	90	0
					0	0	Multiple	Defined	0	0	0	5	15	80	0
					0.4	0.07	Multiple	Defined	10	0	0	15	5	70	0
	3	27-Jul-00	6	96											
					0	0	Multiple	Defined	0	0	0	20	30	50	0
					0	0	Multiple	Defined	0	0	0	5	15	80	0
					0.65	0.08	Multiple	Defined	0	0	0	5	20	75	0
	4	26-Jul-00	2	84											
					0	0	Single	Defined	0	0	40	0	0	60	0
					0	0	Subsurface	Ill-defined	0	0	0	0	0	100	0
					0	0	Subsurface	Defined	0	0	0	0	0	100	0
					0	0	Single	Defined	0	0	0	5	5	90	0

Appendix B Table B4. Channel characteristics measured during stream surveys in the Jericho Study Area, 2000.

Waterbody	Reach	Date	Slope (°)	Length (m)	Wetted Width (m)	Max. Depth (m)	Channel Type	Bank Type	Substrate Type[1] (%)						
									OM	SI	SA	GR	CO	BO	BE
Stream C2															
	5	27-Jul-00	1	148											
					0	0	Single	Defined	0	0	0	0	0	100	0
					0	0	Subsurface	Defined	0	0	0	0	0	0	0
					1	0.18	Double	Defined	5	0	5	0	0	90	0
					26	0.15	Dispersed	Ill-defined	100	0	0	0	0	0	0
Stream C3															
	1	29-Jul-99	2	110											
					0.45	0.11	Multiple	Defined	50	0	0	0	50	0	0
					0.7	0.15	Multiple	Ill-defined	20	0	0	80	0	0	0
					0.8000000	0.04	Multiple	Ill-defined	0	0	0	25	25	50	0
					0.9	0.06	Multiple	Ill-defined	0	0	20	20	60	0	0
					1	0.07	Multiple	Ill-defined	60	0	30	10	0	0	0
					1	0.1	Multiple	Ill-defined	20	0	0	0	0	80	0
					1	0.06	Multiple	Defined	80	0	10	10	0	0	0
	2	29-Jul-99	4	215											
					0.25	0.18	Single	Defined	0	0	0	0	50	50	0
					0.3000000	0.05	Single	Defined	100	0	0	0	0	0	0
					0.5500000	0.17	Single	Defined	0	0	0	10	20	70	0
					0.6000000		Single	Defined	0	0	0	90	0	10	0

Appendix B Table B4. Channel characteristics measured during stream surveys in the Jericho Study Area, 2000.

Waterbody	Reach	Date	Slope (°)	Length (m)	Wetted Width (m)	Max. Depth (m)	Channel Type	Bank Type	Substrate Type[1] (%) OM	SI	SA	GR	CO	BO	BE
Stream C3															
	2	29-Jul-99	4	215											
					0.6000000	0.13	Single	Defined	0	0	0	80	10	10	0
					0.65	0.07	Single	Ill-defined	80	0	0	20	0	0	0
					0.65	0.09	Double	Defined	0	0	0	50	0	50	0
					0.8000000	0.07	Single	Defined	0	0	0	60	40	0	0
	3	28-Jul-99	2	113											
					0.32	0.22	Double	Defined	0	0	0	100	0	0	0
					3.5	0.09	Dispersed	Ill-defined	100	0	0	0	0	0	0
					4	0.19	Dispersed	Ill-defined	100	0	0	0	0	0	0
					6	0.21	Dispersed	Ill-defined	100	0	0	0	0	0	0
					7.5	0.09	Dispersed	Ill-defined	100	0	0	0	0	0	0
	4	31-Jul-99	3	198											
					0.4000000	0.22	Single	Ill-defined	50			50			
					0.5	0.11	Single	Defined			10		30	60	
					0.5	0	Double	Defined	100						
					0.75	0.06	Single	Defined						100	
					0.8000000	0.21	Multiple	Ill-defined	90	0	0	0	0	10	0
					1.5	0.22	Single	Ill-defined	50				50		
	5	31-Jul-99	3	276											

Appendix B Table B4. Channel characteristics measured during stream surveys in the Jericho Study Area, 2000.

Waterbody	Reach	Date	Slope (°)	Length (m)	Wetted Width (m)	Max. Depth (m)	Channel Type	Bank Type	Substrate Type[1] (%) OM	SI	SA	GR	CO	BO	BE
Stream C3															
	6	31-Jul-99	1	139											
					6	0.24	Dispersed	Defined	60					40	
					11	0.17	Dispersed	Ill-defined	40					60	
					12	0.14	Dispersed	Ill-defined	90					10	
					13	0.2	Dispersed	Ill-defined	100						
					15	0.26	Dispersed	Ill-defined	80					20	

[1] See Appendix A for definitions

Appendix B Table B5. Results for constituents analyzed in water samples collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Analytical Test	Value	
Control Lake						
	WCLCN01	WC-1	29-Jul-00			
				Alkalinity, Total	7	mg/L
				Ammonia-N	0.009	mg/L
				Bicarbonate (HCO3)	8	mg/L
				Calcium (Ca)	1.02	mg/L
				Carbonate (CO3)	<5	mg/L
				Chloride (Cl)	<1	mg/L
				Conductivity (EC)	16.1	uS/cm
				Hardness	5	mg/L
				Hydroxide	<5	mg/L
				Magnesium (Mg)	0.55	mg/L
				Nitrate+Nitrite-N	<0.006	mg/L
				Nitrate-N	<0.006	mg/L
				Orthophosphate (PO4-P)	<0.001	mg/L
				pH	6.6	pH
				Phosphorus, Dissolved	0.002	mg/L
				Phosphorus, Total	0.003	mg/L
				Potassium (K)	0.30	mg/L
				Sodium (Na)	0.5	mg/L
				Sulfate (SO4)	1.77	mg/L
				TDS (Calculated)	8	mg/L
				Total Carbon	4.2	mg/L
				Total Inorganic Carbon	1.1	mg/L
				Total Kjeldahl Nitrogen	0.18	mg/L
				Total Organic Carbon	2.8	mg/L
				Total Suspended Solids	<3	mg/L
				Turbidity	0.23	NTU
	WCLCN01 (Duplicate sample)	WC-1	29-Jul-00			
				Alkalinity, Total	6	mg/L
				Ammonia-N	0.008	mg/L
				Bicarbonate (HCO3)	8	mg/L
				Calcium (Ca)	1.02	mg/L
				Carbonate (CO3)	<5	mg/L
				Chloride (Cl)	<1	mg/L
				Conductivity (EC)	16.4	uS/cm
				Hardness	5	mg/L
				Hydroxide	<5	mg/L
				Magnesium (Mg)	0.55	mg/L
				Nitrate+Nitrite-N	<0.006	mg/L
				Nitrate-N	<0.006	mg/L

Appendix B Table B5. Results for constituents analyzed in water samples collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Analytical Test	Value	
Control Lake						
	WCLCN01 (Duplicate sample)	WC-1	29-Jul-00			
				Orthophosphate (PO4-P)	<0.001	mg/L
				pH	6.7	pH
				Phosphorus, Dissolved	0.002	mg/L
				Phosphorus, Total	0.004	mg/L
				Potassium (K)	0.30	mg/L
				Sodium (Na)	0.5	mg/L
				Sulfate (SO4)	1.79	mg/L
				TDS (Calculated)	8	mg/L
				Total Carbon	4.0	mg/L
				Total Inorganic Carbon	2.2	mg/L
				Total Kjeldahl Nitrogen	0.19	mg/L
				Total Organic Carbon	3.4	mg/L
				Total Suspended Solids	3	mg/L
				Turbidity	0.15	NTU
Lake C4						
	WCLC0401	WC-2	29-Jul-00			
				Alkalinity, Total	12	mg/L
				Ammonia-N	0.019	mg/L
				Bicarbonate (HCO3)	15	mg/L
				Calcium (Ca)	2.13	mg/L
				Carbonate (CO3)	<5	mg/L
				Chloride (Cl)	<1	mg/L
				Conductivity (EC)	25.2	uS/cm
				Hardness	9	mg/L
				Hydroxide	<5	mg/L
				Magnesium (Mg)	0.88	mg/L
				Nitrate+Nitrite-N	<0.006	mg/L
				Nitrate-N	<0.006	mg/L
				Orthophosphate (PO4-P)	<0.001	mg/L
				pH	7.0	pH
				Phosphorus, Dissolved	0.003	mg/L
				Phosphorus, Total	0.004	mg/L
				Potassium (K)	0.39	mg/L
				Sodium (Na)	0.6	mg/L
				Sulfate (SO4)	0.97	mg/L
				TDS (Calculated)	12	mg/L
				Total Carbon	8.3	mg/L
				Total Inorganic Carbon	3.3	mg/L
				Total Kjeldahl Nitrogen	0.77	mg/L

Appendix B Table B5. Results for constituents analyzed in water samples collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Analytical Test	Value	
Lake C4						
	WCLC0401	WC-2	29-Jul-00			
				Total Organic Carbon	5.8	mg/L
				Total Suspended Solids	<3	mg/L
				Turbidity	0.27	NTU
Stream C2						
	WCTC0201	WC-3	29-Jul-00			
				Alkalinity, Total	16	mg/L
				Ammonia-N	0.013	mg/L
				Bicarbonate (HCO3)	20	mg/L
				Calcium (Ca)	2.94	mg/L
				Carbonate (CO3)	<5	mg/L
				Chloride (Cl)	<1	mg/L
				Conductivity (EC)	31.3	uS/cm
				Hardness	12	mg/L
				Hydroxide	<5	mg/L
				Magnesium (Mg)	1.07	mg/L
				Nitrate+Nitrite-N	<0.006	mg/L
				Nitrate-N	<0.006	mg/L
				Orthophosphate (PO4-P)	<0.001	mg/L
				pH	6.5	pH
				Phosphorus, Dissolved	0.002	mg/L
				Phosphorus, Total	0.003	mg/L
				Potassium (K)	0.20	mg/L
				Sodium (Na)	0.7	mg/L
				Sulfate (SO4)	1.11	mg/L
				TDS (Calculated)	16	mg/L
				Total Carbon	10.7	mg/L
				Total Inorganic Carbon	3.3	mg/L
				Total Kjeldahl Nitrogen	0.42	mg/L
				Total Organic Carbon	5.9	mg/L
				Total Suspended Solids	3	mg/L
				Turbidity	0.31	NTU
Stream D1						
	WCTD0101	WC-4	29-Jul-00			
				Alkalinity, Total	8	mg/L
				Ammonia-N	0.011	mg/L
				Bicarbonate (HCO3)	10	mg/L
				Calcium (Ca)	1.49	mg/L
				Carbonate (CO3)	<5	mg/L

Appendix B Table B5. Results for constituents analyzed in water samples collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Analytical Test	Value	
Stream D1						
	WCTD0101	WC-4	29-Jul-00			
				Chloride (Cl)	<1	mg/L
				Conductivity (EC)	19.0	uS/cm
				Hardness	6	mg/L
				Hydroxide	<5	mg/L
				Magnesium (Mg)	0.67	mg/L
				Nitrate+Nitrite-N	0.078	mg/L
				Nitrate-N	0.078	mg/L
				Orthophosphate (PO4-P)	<0.001	mg/L
				pH	6.7	pH
				Phosphorus, Dissolved	0.004	mg/L
				Phosphorus, Total	0.006	mg/L
				Potassium (K)	0.25	mg/L
				Sodium (Na)	0.4	mg/L
				Sulfate (SO4)	1.19	mg/L
				TDS (Calculated)	9	mg/L
				Total Carbon	4.7	mg/L
				Total Inorganic Carbon	1.1	mg/L
				Total Kjeldahl Nitrogen	0.19	mg/L
				Total Organic Carbon	3.0	mg/L
				Total Suspended Solids	6	mg/L
				Turbidity	0.12	NTU

Appendix B Table B6. Daily water temperatures recorded in selected streams of the Jericho Study Area, 2000.

Stream	Date	Minimum (C)	Maximum (C)	Mean (C)
Stream C1				
	23-Jul-00	10.9	17.7	13.4
	24-Jul-00	10.8	19.9	14.3
	25-Jul-00	10.2	19.5	14.1
	26-Jul-00	10.5	21	15.4
	27-Jul-00	11.8	21.6	16.0
	28-Jul-00	11.7	21.4	16.0
	29-Jul-00	12.9	22.1	16.9
	30-Jul-00	13.5	20.3	16.3
	31-Jul-00	10.9	18.6	14.7
	01-Aug-00	8.1	20.2	13.8
	02-Aug-00	9.9	21	14.8
	03-Aug-00	12.1	20.3	15.5
	04-Aug-00	13	21.1	15.8
	05-Aug-00	10.8	21.1	15.7
	06-Aug-00	12.7	20	15.3
	07-Aug-00	11.5	19.2	14.8
	08-Aug-00	6.8	11.1	9.3
	09-Aug-00	5.3	12.3	8.0
	10-Aug-00	3.8	15.2	9.0
	11-Aug-00	4.7	16.8	10.2
	12-Aug-00	6.1	18.6	11.5
	13-Aug-00	6.4	14.6	10.0
	14-Aug-00	6.1	11.5	8.1
	15-Aug-00	5.5	9.3	6.9
	16-Aug-00	4.6	7.4	6.0
	17-Aug-00	4.6	12.1	7.7
	18-Aug-00	3.4	11.8	7.3
	19-Aug-00	7.1	10.9	8.9
	20-Aug-00	7.8	13.2	10.2
	21-Aug-00	7.1	14	10.0
	22-Aug-00	4.3	14.6	8.9
	23-Aug-00	7.3	13.8	9.7
	24-Aug-00	5.8	11.1	8.6
	25-Aug-00	2.8	7.4	5.1
	26-Aug-00	1.7	11.2	5.7
	27-Aug-00	2.5	10.1	5.5
	28-Aug-00	1.7	6.7	4.1
	29-Aug-00	1.9	4.7	3.1
	30-Aug-00	1.4	7	3.6
	31-Aug-00	1.3	4.3	2.3

Appendix B Table B6. Daily water temperatures recorded in selected streams of the Jericho Study Area, 2000.

Stream	Date	Minimum (C)	Maximum (C)	Mean (C)
Stream C1				
	01-Sep-00	0	5	2.3
	02-Sep-00	0.2	8.4	3.5
	03-Sep-00	0.4	9.6	4.3
	04-Sep-00	0.8	10.1	4.9
	05-Sep-00	4.4	10.1	6.6
	06-Sep-00	4.6	8.3	6.1
	07-Sep-00	3.1	9.5	5.5
	08-Sep-00	2.5	6.8	4.4
	09-Sep-00	4	9.2	6.3
	10-Sep-00	0	6.1	3.8
	11-Sep-00	0	0.4	0.0
Stream C2				
	23-Jul-00	10.5	16.2	12.5
	24-Jul-00	9.9	15.5	12.1
	25-Jul-00	9.2	13.9	11.2
	26-Jul-00	9.5	14.5	11.7
	27-Jul-00	10.2	14.8	12.2
	28-Jul-00	10.2	15.4	12.4
	29-Jul-00	10.8	15.9	13.0
	30-Jul-00	11.7	15.2	13.3
	31-Jul-00	10.5	14.6	12.4
	01-Aug-00	8.3	13.9	10.9
	02-Aug-00	9.6	14.3	11.7
	03-Aug-00	10.8	14.9	12.4
	04-Aug-00	11.7	15.7	13.1
	05-Aug-00	10.2	15.4	12.6
	06-Aug-00	11.4	14.9	12.9
	07-Aug-00	11.1	16.8	13.3
	08-Aug-00	7.5	11.4	9.5
	09-Aug-00	6.1	10.1	7.9
	10-Aug-00	4.4	10.9	7.7
	11-Aug-00	4.9	11.7	8.2
	12-Aug-00	6.2	12	9.0
	13-Aug-00	5.9	11.4	8.5
	14-Aug-00	5.6	10.1	7.5
	15-Aug-00	5.2	7.8	6.1
	16-Aug-00	3.7	6.2	5.1
	17-Aug-00	3.8	10.3	6.7
	18-Aug-00	3.4	9.8	6.5
	19-Aug-00	6.4	9.9	7.9
	20-Aug-00	6.8	11.8	8.7

Appendix B Table B6. Daily water temperatures recorded in selected streams of the Jericho Study Area, 2000.

Stream	Date	Minimum (C)	Maximum (C)	Mean (C)
Stream C2				
	21-Aug-00	6.1	11.2	8.3
	22-Aug-00	3.7	11.5	7.2
	23-Aug-00	6.4	11.1	8.3
	24-Aug-00	5.2	9	7.3
	25-Aug-00	3.1	6.8	5.0
	26-Aug-00	2.2	8.7	5.0
	27-Aug-00	2.5	8.1	4.6
	28-Aug-00	1.9	5.5	3.6
	29-Aug-00	2	4.1	2.9
	30-Aug-00	1.6	5.2	3.0
	31-Aug-00	1.6	3.7	2.3
	01-Sep-00	0.5	4.1	2.1
	02-Sep-00	0.7	6.4	3.0
	03-Sep-00	0.7	7	3.4
	04-Sep-00	1.3	7.5	4.0
	05-Sep-00	3.8	7.7	5.4
	06-Sep-00	4	6.8	5.1
	07-Sep-00	2.6	6.4	4.4
	08-Sep-00	2.2	5.8	3.7
	09-Sep-00	3.7	7.3	5.1
	10-Sep-00	0	4.7	3.2
	11-Sep-00	0	0.2	0.0
Stream C3				
	23-Jul-00	10.2	14.5	11.7
	24-Jul-00	10.3	14.6	11.9
	25-Jul-00	9.8	15.4	12.2
	26-Jul-00	10.3	16.3	13.3
	27-Jul-00	11.2	17.2	13.9
	28-Jul-00	11.4	17.1	14.1
	29-Jul-00	12	18.1	15.0
	30-Jul-00	12.7	16.9	14.7
	31-Jul-00	11.1	16	13.5
	01-Aug-00	9.5	16	12.7
	02-Aug-00	10.1	17.8	13.6
	03-Aug-00	11.7	17.7	14.1
	04-Aug-00	12.3	16.9	14.0
	05-Aug-00	10.8	17.4	14.0
	06-Aug-00	12.1	16.5	13.9
	07-Aug-00	11.5	17.1	13.6
	08-Aug-00	8.1	11.4	10.1
	09-Aug-00	7	11.1	8.6

Appendix B Table B6. Daily water temperatures recorded in selected streams of the Jericho Study Area, 2000.

Stream	Date	Minimum (C)	Maximum (C)	Mean (C)
Stream C3				
	10-Aug-00	5.9	12.3	8.8
	11-Aug-00	6.2	13.2	9.4
	12-Aug-00	7.1	13.9	10.0
	13-Aug-00	7	12.7	9.4
	14-Aug-00	6.5	9.6	7.8
	15-Aug-00	6.1	8	6.7
	16-Aug-00	4.9	6.8	5.8
	17-Aug-00	5	10.3	7.4
	18-Aug-00	4.1	9.9	7.1
	19-Aug-00	7.1	10.2	8.6
	20-Aug-00	7.8	11.8	9.6
	21-Aug-00	7.7	11.8	9.5
	22-Aug-00	5.3	12	8.5
	23-Aug-00	7.5	12.3	9.4
	24-Aug-00	6.5	10.1	8.6
	25-Aug-00	3.8	7.1	5.5
	26-Aug-00	2.3	9.6	5.6
	27-Aug-00	3.2	8.7	5.6
	28-Aug-00	2.8	6.1	4.4
	29-Aug-00	2.6	4.6	3.6
	30-Aug-00	2	5.9	3.7
	31-Aug-00	2.2	4	2.8
	01-Sep-00	0.7	4.4	2.5
	02-Sep-00	0.8	7	3.6
	03-Sep-00	1.3	7.7	4.3
	04-Sep-00	2.2	8.3	5.0
	05-Sep-00	4.9	8.6	6.5
	06-Sep-00	5	7.7	6.2
	07-Sep-00	4	7.3	5.5
	08-Sep-00	2.9	6.4	4.4
	09-Sep-00	4.4	8.3	6.2
	10-Sep-00	0.5	6.4	4.4
	11-Sep-00	0.2	0.8	0.4

APPENDIX C
NONVERTEBRATES

Appendix C Table C1. Periphyton sample parameters, chlorophyll *a* and ash free dry mass (AFDM) data collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Area	Replicate	Volume Filtered (mL)	Chlorophyll *a* (µg/cm²)	AFDM (mg/cm²)
Control Lake								
	PELCN01	PE-1	24-Jul-00	20.0	5	9	0.90	35.52
Lake C4								
	PELC0401	PE-2	22-Jul-00	20.0	5	13	2.45	78.16
	PELC0401	PE-2	29-Jul-00	20.0	5	8	2.46	0.00
Stream C2								
	PETC0201	PE-3	22-Jul-00	20.0	5	8	16.81	0.00
	PETC0201	PE-3	25-Jul-00	20.0	5	15	3.35	0.00
	PETC0201	PE-3	29-Jul-00	20.0	5	9	9.39	0.00
Stream D1								
	PETD0101	PE-4	22-Jul-00	20.0	5	11	0.60	37.64
	PETD0101	PE-4	26-Jul-00	20.0	5	12	2.21	0.00
	PETD0101	PE-4	29-Jul-00	20.0	5	12	3.09	0.00
	PETD0102	PE-4	29-Jul-00	20.0	5	11	10.34	0.00

Appendix C Table C2. Periphyton species and density data collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/cm^2)	Presence
Control Lake	PELCN01	PE-1				
			BACILLARIOPHYTA			
				Achnanthes flexella	1335	
				Achnanthes minutissima	137545	
				Anomoeoneis vitrea	0	P
				Caloneis ventricosa	0	P
				Cyclotella ocellata	0	P
				Cymbella hebridica	668	
				Cymbella lunata	0	P
				Cymbella minuta	6377	
				Cymbella parva	0	P
				Cymbella prostrata	445	
				Cymbella sp.	0	P
				Eunotia exigua	445	
				Eunotia maior	0	P
				Eunotia praerupta	3826	
				Eunotia praerupta v. bidens	0	P
				Fragilaria sp.	0	P
				Frustulia vulgaris	12914	
				Gomphonema angustatum	0	P
				Melosira sp.	1335	
				Navicula bacillum	0	P
				Navicula cryptocephala	3826	
				Navicula tripunctata	0	P
				Nitzschia amphibia	2551	
				Nitzschia angustata	0	P
				Nitzschia filiformis	1947	
				Nitzschia sp.	17435	
				Pinnularia divergens v. elliptica	0	P
				Pinnularia mesolepta	0	P
				Pinnularia sp.	0	P
				Pinnularia viridis	0	P

Appendix C Table C2. Periphyton species and density data collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/cm^2)	Presence
Control Lake	PELCN01	PE-1				
			BACILLARIOPHYTA			
				Stauroneis anceps	0	P
				Stephanodiscus astraea	0	P
				Surirella sp.	0	P
				Synedra sp	14986	
				Tabellaria fenestrata	0	P
				Tabellaria flocculosa	77165	
			CHLOROPHYTA			
				Ankistrodesmus falcatus	0	P
				Binuclearia sp.	5102	
				Coeloastrum printzii	1335	
				Cosmarium capitulum v. groenlandicum	0	P
				Cosmarium holmiense v. intermedium	0	P
				Cosmarium impressulum v.suborthogonum	0	P
				Cosmarium norimbergense	0	P
				Cosmarium rectangulum	0	P
				Cosmarium septentrionale	779	
				Cylindrocystis brebissonii	178	
				Elakatothrix sp.	0	P
				Euastrum bidentatum	0	P
				Euastrum dubium v. maius	0	P
				Euastrum elegans	0	P
				Euastrum verrucosum	0	P
				Gloeocystis schroeteri	0	P
				Hyalotheca sp.	0	P
				Mougeotia sp. a	1669	
				Oocystis pusilla	5102	
				Penium sp.	0	P
				Scenedesmus incrassatulus	0	P
				Sphaerozosma granulatum.	2670	
				Staurastrum borgeanum	0	P

Appendix C Table C2. Periphyton species and density data collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/cm^2)	Presence
Control Lake	PELCN01	PE-1				
			CHLOROPHYTA			
				Staurastrum cuspidatum	0	P
				Staurastrum gladiosum	0	P
				Staurastrum sp. b	0	P
				Staurastrum sp. c	0	P
				Staurastrum sp. d	0	P
				Tetraedron arthrodesmiforme	1275	
				Tetraedron minimum	445	
				Trochiscia granulata	445	
				Unidentified filament	4451	
			CHRYSOPHYTA			
				Chrysostephanosphaera globulifera		P
				Dinobryon sertularia v.protuberans	4451	
				Dinobryon sociale	890	
				Ishtmochloron trispinatum	1113	
				Ochromonas sp.	1275	
				Pseudokephyrion angulosum	890	
				Stichogloea doederleinii	0	P
				Unidentified statospore	5102	
			CYANOPHYTA			
				Agmenellum quadruplicatum	7121	
				Agmenellum thermale	0	P
				Anabaena sp.	4005	
				Anacystis montana	55483	
				Aphanothece clathrata	153055	
				Dactylococcopsis linearis	3826	
				Dichothrix gypsophila	28928	
				Gloeocapsa fenestrata	24234	
				Gomphosphaeria naegelianum	274153	
				Nostoc commune	0	P
				Oscillatoria sp.	0	P

Appendix C Table C2. Periphyton species and density data collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/cm^2)	Presence
Control Lake	PELCN01	PE-1				
			CYANOPHYTA			
				Oscillatoria tenuis	29336	
				Schizothrix calcicola	587985	
				Stigonema mamillosum	0	P
				Synechocystis sp.	7653	
			PYRROPHYTA			
				Gymnodinium uberrimum	0	P
				Peridinium sp.	1275	
				Unidentified cyst	890	
			EUGLENOPHYTA			
				Trachelomonas sp.	445	
Lake C4	PELC0401	PE-2				
			BACILLARIOPHYTA			
				Achnanthes flexella	305	
				Achnanthes minutissima	16912	
				Caloneis ventricosa	4451	
				Cyclotella antiqua	890	
				Cymbella cymbiformis	0	P
				Cymbella hebridica	17508	
				Cymbella lunata	0	P
				Cymbella minuta	445	
				Cymbella parva v. cymbiformis	0	P
				Cymbella prostrata	890	
				Diatoma hiemale	7343	
				Eunotia exigua	0	P
				Eunotia hexaglyphis	0	P
				Eunotia praerupta	4228	
				Eunotia praerupta v. bidens	840	
				Frustulia vulgaris	1647	
				Gomphonema angustatum	1806	
				Gomphonema auminatun v. coronata	0	P

Appendix C Table C2. Periphyton species and density data collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/cm^2)	Presence
Lake C4	PELC0401	PE-2				
			BACILLARIOPHYTA			
				Navicula cryptocephala	2670	
				Nitzschia amphibia	0	P
				Pinnularia mesolepta	0	P
				Synedra sp	1558	
				Tabellaria fenestrata	0	P
				Tabellaria flocculosa	3449	
				Unidentified pennate diatom	890	
				Unidentified pennate diatom	18247	
				Unidentified pennate diatom	890	
			CHLOROPHYTA			
				Characium sp.	0	P
				Closterium sp. a	0	P
				Closterium sp. b	0	P
				Coeloastrum printzii	890	
				Cosmarium biculatum	0	P
				Cosmarium granatum	0	P
				Cosmarium holmiense v. intermedium	0	P
				Cosmarium impressulum v.suborthogonum	0	P
				Cosmarium norimbergense	0	P
				Cosmarium phaseolus v. phaseolus	305	
				Cosmarium rectangulum	0	P
				Cylindrocystis brebissonii	611	
				Elakatothrix sp.	890	
				Euastrum bidentatum	0	P
				Euastrum dubium v. maius	305	
				Euastrum elegans	0	P
				Gloeocystis schroeteri	5341	
				Mougeotia sp. a	1780	
				Oocystis pusilla	5341	
				Scenedesmus acuminatus	611	

Appendix C Table C2. Periphyton species and density data collected from waterbodies in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/cm^2)	Presence
Lake C4	PELC0401	PE-2				
			CHLOROPHYTA			
				Scenedesmus denticulatis	7121	
				Scenedesmus incrassatulus	1221	
				Sphaerozosma granulatum.	0	P
				Staurastrum cuspidatum	0	P
				Staurastrum sp. a	0	P
				Trochiscia granulata	305	
				Unidentified filament	7415	
			CYANOPHYTA			
				Agmenellum quadruplicatum	28483	
				Agmenellum thermale	89901	
				Anabaena sp.	78329	
				Anacystis cyanea	525162	
				Anacystis dimidiata	7121	
				Aphanocapsa elachista	937281	
				Aphanothece clathrata	299966	
				Desmonema wrangelii	0	P
				Dichothrix gypsophila	8245	
				Fischerella sp.	133516	
				Gomphosphaeria naegelianum	49469	
				Nostoc commune	79219	
				Oscillatoria sp.	14352	
				Schizothrix calcicola	1419719	
				Stigonema mamillosum	0	P
				Synechocystis sp.	163779	

Appendix C Table C3. Phytoplankton sample parameters and chlorophyll *a* data collected from lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Date	Secchi Depth (m)	Depth Sampled (m)	Composite	Volume Filtered for Chlorophyll a Analysis (mL)	Chlorophyll a (mg/m^2)
Control Lake								
	PHLCN01							
		PL-1	24-Jul-00	7.00	14.00	3	500	0.90
Lake C4								
	PHLC0401							
		PL-2	22-Jul-00	2.30	1.50	20	500	0.78
		PL-2	25-Jul-00	2.30	1.50	20	500	0.74
		PL-2	29-Jul-00	2.30	1.50	20	500	0.72

Appendix C Table C4. Phytoplankton species, density, and biovolume data collected from lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/mL)	Biovolume ($\mu m^3 x 10^3$/mL)	Presence
Control Lake	PHLCN01	PL-1					
			BACILLARIOPHYTA				
				Achnanthes minutissima	7	1.180	
				Amphipleura pellucida	0	0.000	P
				Cocconeis placentula v.euglypta	0	0.000	P
				Cyclotella glomerata	0	0.000	P
				Cyclotella ocellata	18	5.360	
				Cymbella affinis	0	0.000	P
				Cymbella cistula v. gibbosa	0	0.000	P
				Eunotia spa.	0	0.000	P
				Frustulia sp.	0	0.000	P
				Gomphonema spa	0	0.000	P
				Melosira spa	0	0.000	P
				Nitzschia sp.	0	0.000	P
				Stephanodiscus astraea	0	0.000	P
				Synedra sp.	0	0.000	P
				Synedra ulna	0	0.000	P
				Tabellaria flocculosa	0	0.000	P
			CHLOROPHYTA				
				Ankistrodesmus falcatus v. spiralis	69	5.740	
				Arthrodesmus triangularis	2	0.860	
				Botryococcus sp.	0	0.000	P
				Characium sp.	0	0.000	P
				Chlamydomonas sagittula	0	0.000	P
				Chlamydomonas sp. a	12	22.550	
				Elakatothrix gelatinosa	49	0.691	
				Monoraphidium sp.	47	1.330	
				Oocystis pusilla	12	3.600	
				Sphaerocystis schroeteri	52	17.200	
				Spondylosium planum	7	4.534	
				Tetraedron arthrodesmiforme	15	0.385	
				Unidentified filament	2	0.250	
			CHRYSOPHYTA				
				Bitrichia longispina	0	0.000	P
				Chromulina sp.	2	0.050	
				Chrysoikos skujai	2	0.580	
				Dinobryon bavaricum	8	8.950	
				Dinobryon sertularia v.protuberans	11	21.620	
				Dinobryon sociale	1162	1349.245	

Appendix C Table C4. Phytoplankton species, density, and biovolume data collected from lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/mL)	Biovolume ($\mu m^3 x10^3$/mL)	Presence
Control Lake	PHLCN01	PL-1					
			CHRYSOPHYTA				
				Dinobryon tabellariae	2	3.260	
				Kephyrion sp.	3	1.960	
				Mallomonas sp.	11	14.370	
				Ochromonas spa	5	6.980	
				Ochromonas spb.	13	3.360	
				Stichogloea doederleinii	68	30.530	
				Synura sp.	42	19.000	
			CRYPTOPHYTA				
				Cryptomonas erosa	3	8.980	
				Cryptomonas ovata	0	0.000	P
				Cryptomonas reflexa	31	29.730	
				Katablepharis ovalis	78	11.540	
				Rhodomonas minuta	78	17.330	
			CYANOPHYTA				
				Agmenellum quadruplicatum	0	0.000	P
				Anabaena sp.	0	0.000	P
				Aphanocapsa elachista	917	2.660	
				Aphanocapsa elachista v. planctoni	20	0.206	
				Aphanothece clathrata	1162	1.127	
				Gomphosphaeria naegelianum	0	0.000	P
			PYRROPHYTA				
				Glenodinium sp.	10	4.680	
				Gymnodinium uberrimum	0	0.000	P
				Peridinium sp.	2	22.340	
Lake C4	PHLC0401	PL-2					
			BACILLARIOPHYTA				
				Achnanthes minutissima	5	0.924	
				Caloneis ventricosa	0	0.000	P
				Cocconeis pediculus	0	0.000	P
				Cyclotella antiqua	0	0.000	P
				Cyclotella glomerata	0	0.000	P
				Cyclotella ocellata	0	0.000	P
				Cymbella affinis	0	0.000	P
				Cymbella minuta	0	0.000	P
				Cymbella rupicola	0	0.000	P
				Cymbella tumida	0	0.000	P

Appendix C Table C4. Phytoplankton species, density, and biovolume data collected from lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/mL)	Biovolume ($\mu m^3 x 10^3$/mL)	Presence
Lake C4	PHLC0401	PL-2					
			BACILLARIOPHYTA				
				Diatoma elongatum	7	3.613	
				Eunotia spa.	0	0.000	P
				Eunotia spb	0	0.000	P
				Eunotia spc	0	0.000	P
				Eunotia spd	0	0.000	P
				Fragilaria pinnata	0	0.000	P
				Frustulia sp.	0	0.000	P
				Gomphonema gracile	0	0.000	P
				Gomphonema olivaceum	0	0.000	P
				Gomphonema spa	0	0.000	P
				Gomphonema spb	1	4.284	
				Melosira spa	5	0.956	
				Melosira spb	5	0.956	
				Navicula pupula	0	0.000	P
				Navicula tripunctata	0	0.000	P
				Nitzschia amphibia.	0	0.000	P
				Nitzschia sp.	0	0.000	P
				Stephanodiscus astraea	0	0.000	P
				Synedra acus	0	0.000	P
				Synedra sp.	1	0.578	
				Synedra ulna	0	0.000	P
				Tabellaria fenestrata	0	0.000	P
				Tabellaria flocculosa	0	0.000	P
				Unidentified diatom	4	0.996	
			CHLOROPHYTA				
				Ankistrodesmus convolutus	0	0.000	P
				Aphanothece microspora	5	0.201	
				Characium sp.	2	0.447	
				Chlamydomonas sp. a	14	73.808	
				Chlorogonium sp.	12	2.398	
				Closterium actum	0	0.000	P
				Cosmarium sp.	0	0.000	P
				Crucigenia rectangularis	203	61.394	
				Elakatothrix gelatinosa	21	0.844	
				Euastrum elegans	1	5.589	
				Oocystis pusilla	104	18.498	
				Oocystis solitaria	24	11.100	

Appendix C Table C4. Phytoplankton species, density, and biovolume data collected from lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Taxonomic Group	Taxa	Density (cells/mL)	Biovolume ($\mu m^3 x 10^3$/mL)	Presence
Lake C4	PHLC0401	PL-2					
			CHLOROPHYTA				
				Pandorina morum	0	0.000	P
				Scenedesmus incrassatulus	0	0.000	P
				Sphaerocystis schroeteri	412	30.191	
				Spondylosium planum	1	0.242	
				Tetraedron minimum	0	0.000	P
				Unidentified filament	21	9.581	
			CHRYSOPHYTA				
				Bitrichia longispina	5	0.559	
				Chromulina vagans	0	0.000	P
				Chrysosphaerella rodhei	306	62.729	
				Dinobryon sertularia	0	0.000	P
				Dinobryon sertularia v.protuberans	0	0.000	P
				Dinobryon sociale	0	0.000	P
				Mallomonas sp.	6	6.715	
			CRYPTOPHYTA				
				Cryptomonas ovata	2	4.527	
				Cryptomonas reflexa	18	22.598	
				Katablepharis ovalis	54	10.250	
				Rhodomonas minuta	5	1.510	
			CYANOPHYTA				
				Agmenellum quadruplicatum	414	2.523	
				Anabaena planctonica	0	0.000	P
				Anabaena sp.	0	0.000	P
				Aphanocapsa elachista v. planctoni	1327	16.858	
				Aphanothece clathrata	4978	3.347	
				Gomphosphaeria naegelianum	80	0.930	
				Lyngbya limnetica	28	0.693	
			PYRROPHYTA				
				Glenodinium sp.	9	6.073	
				Gymnodinium sp.	1	12.809	
				Peridinium sp.	0	0.000	P

Appendix C Table C5. Zooplankton sample parameters, density, and biomass data collected from lakes in summer in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Sampling Date	Composite	Depth (m)	Secchi Depth (m)	Taxonomic Group	Taxa	Density (No./m^3)	Biomass (µg/m^3)
Control Lake	ZOLCN01	PL-1								
			24-Jul-00	5	14.00	7.00				
							CALANOIDA			
								Calanoid copepodid	38	1841
								Calanoid nauplii	97	38
								Epishura lacustris	263	12885
								Heterocope sp.	13	614
								Leptodiaptomus minutus	525	25771
								Leptodiaptomus sicilis	8	409
							CLADOCERA			
								Holopedium gibberum	125	6136
							CYCLOPOIDA			
								Cyclopoid copepodid	46	2250
								Cyclopoid nauplii	11	0
								Diacyclops bicuspidatus	617	30270
							ROTIFERA			
								Conochillus unicornis	173	7
								Kellicottia longispina	918	29
								Keratella cochlearis	151	3
								Monostyla lunaris	11	0
								Polyathra dolichoptera	43	1
Lake C4	ZOLCO401	PL-2								
			22-Jul-00	5	1.50	2.30				
							CALANOIDA			
								Calanoid copepodid	153	7520
								Epishura lacustris	613	30080
								Heterocope sp.	31	1504
								Leptodiaptomus minutus	2699	132353
								Leptodiaptomus sicilis	1441	70689
							CLADOCERA			
								Daphnia pulex	736	36096

Appendix C Table C5. Zooplankton sample parameters, density, and biomass data collected from lakes in summer in the Jericho Study Area, 2000.

Waterbody	Site Label	Map Label	Sampling Date	Composite	Depth (m)	Secchi Depth (m)	Taxonomic Group	Taxa	Density (No./m^3)	Biomass (µg/m^3)
Lake C4	ZOLCO401	PL-2								
							CLADOCERA			
								Holopedium gibberum	31	1504
							CYCLOPOIDA			
								Cyclopoid nauplii	114	2
								Diacyclops bicuspidatus	123	6016
							ROTIFERA			
								Kellicottia longispina	38	1
								Keratella cochlearis	38	1

Appendix C Table C6. Benthic macroinvertebrate sample parameters, species, and density data collected from littoral and profundal zones of lakes in the Jericho Study Area, 2000.

Waterbody	Site	Map Label	Date	Taxonomic Group			Depth (m)	Area (m^2)	Total Number	Density (No/m^2)
Control Lake	BELLCN01	BEL-1	24-Jul-00							
				Copepoda						
					Calanoida					
							1.50	0.023	1	43
					Cyclopoida					
							1.50	0.023	2	87
					Harpacticoida					
							1.50	0.023	1	43
				Diptera						
					Chironomidae					
						Tanytarsini	1.50	0.023	37	1609
						Chironomini	1.50	0.023	13	565
						Tanypodinae	1.50	0.023	23	1000
							1.50	0.023	11	478
						Orthocladiinae	1.50	0.023	33	1435
					Chironomidae (p)					
							1.50	0.023	2	87
				Microturbellaria						
					Mesostoma					
							1.50	0.023	1	43
				Mollusca						
					Pelecypoda					
						Sphaeriidae	1.50	0.023	4	174
				Nematoda						

Appendix C Table C6. Benthic macroinvertebrate sample parameters, species, and density data collected from littoral and profundal zones of lakes in the Jericho Study Area, 2000.

Waterbody	Site	Map Label	Date	Taxonomic Group	Depth (m)	Area (m^2)	Total Number	Density (No/m^2)
Control Lake	BELLCN01	BEL-1	24-Jul-00					
				Nematoda				
					1.50	0.023	12	522
				Oligochaeta				
				Lumbriculidae				
					1.50	0.023	3	130
				Naididae				
					1.50	0.023	4	174
				Ostracoda				
					1.50	0.023	4	174
				Copepoda				
				Calanoida				
					27.50	0.023	4	58
				Cyclopoida				
					27.50	0.023	3	43
				Harpacticoida				
					27.50	0.023	2	29
				Diptera				
				Chironomidae				
				Orthocladiinae	27.50	0.023	11	159
					27.50	0.023	2	29
				Chironomini	27.50	0.023	7	101
				Tanytarsini	27.50	0.023	4	58

Appendix C Table C6. Benthic macroinvertebrate sample parameters, species, and density data collected from littoral and profundal zones of lakes in the Jericho Study Area, 2000.

Waterbody	Site	Map Label	Date	Taxonomic Group	Depth (m)	Area (m^2)	Total Number	Density (No/m^2)
Control Lake	BELLCN01	BEL-1	24-Jul-00					
				Diptera				
				Chironomidae (p)				
					27.50	0.023	2	29
				Mollusca				
				Pelecypoda				
				Sphaeriidae	27.50	0.023	4	58
				Nematoda				
					27.50	0.023	6	87
Lake C4	BELLC0401	BEL-2	22-Jul-00					
				Cladocera				
				Chydoridae				
					2.30	0.023	2	348
				Daphnidae				
					2.30	0.023	26	4522
				Copepoda				
				Calanoida				
					2.30	0.023	18	3130
				Cyclopoida				
					2.30	0.023	12	2087
				Diptera				
				Chironomidae				
					2.30	0.023	46	8000
				Tanypodinae	2.30	0.023	27	4696
				Tanytarsini	2.30	0.023	60	10435

Appendix C Table C6. Benthic macroinvertebrate sample parameters, species, and density data collected from littoral and profundal zones of lakes in the Jericho Study Area, 2000.

Waterbody	Site	Map Label	Date	Taxonomic Group				Depth (m)	Area (m^2)	Total Number	Density (No/m^2)
Lake C4	BELLC0401	BEL-2	22-Jul-00								
				Diptera							
					Chironomidae						
						Chironomini		2.30	0.023	62	10783
						Orthocladiinae		2.30	0.023	42	7304
					Chironomidae (p)						
								2.30	0.023	2	348
				Mollusca							
					Pelecypoda						
						Sphaeriidae		2.30	0.023	30	5217
						Sphaeriidae	*Pisidium*	2.30	0.023	33	5739
						Sphaeriidae	*Sphaerium*	2.30	0.023	40	6957
				Nematoda							
								2.30	0.023	217	37739
				Oligochaeta							
					Lumbriculidae						
								2.30	0.023	10	1739
					Tubificidae						
								2.30	0.023	1	174
				Ostracoda							
								2.30	0.023	1	174
				Trichoptera							
					Limnephilidae						

Appendix C Table C6. Benthic macroinvertebrate sample parameters, species, and density data collected from littoral and profundal zones of lakes in the Jericho Study Area, 2000.

Waterbody	Site	Map Label	Date	Taxonomic Group			Depth (m)	Area (m^2)	Total Number	Density (No/m^2)
Lake C4	BELLC0401	BEL-2	22-Jul-00							
				Trichoptera						
					Limnephilidae					
						Grensia	2.30	0.023	1	174

APPENDIX D
FISH

Appendix D Table D1. Fish species encountered in sampled waterbodies in the Jericho Study Area, 2000.

Family	Common Name	Scientific Name	Code
Cottidae			
	Slimy sculpin	*Cottus cognatus*	SLSC
Gadidae			
	Burbot	*Lota lota*	BURB
Salmonidae			
	Arctic char	*Salvelinus alpinus*	ARCH
	Lake trout	*Salvelinus namaycush*	LKTR
	Round whitefish	*Prosopium cylindraceum*	RNWH

Appendix D Table D2. Gill net sampling effort in lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Set Date	Set Time	Pull Date	Pull Time	Set Orientation	Minimum Depth (m)	Maximum Depth (m)	Dominant Substrate	Depth Position	Water Temperature (C)
Carat Lake											
	GNLCA01										
		08-Sep-00	9:35	08-Sep-00	12:15	Perpendicular	2.5	5	Boulder	Bottom	7.0
		08-Sep-00	12:15	08-Sep-00	14:30	Perpendicular	2.5	5	Boulder	Bottom	7.0
		08-Sep-00	14:30	08-Sep-00	16:50	Perpendicular	2.5	5	Boulder	Bottom	7.0
	GNLCA03										
		23-Jul-00	11:00	23-Jul-00	11:30	Perpendicular	4	8.5	Boulder	Bottom	13.0
		23-Jul-00	11:30	22-Jul-00	13:30	Perpendicular	4	8.5	Boulder	Bottom	13.0
	GNLCA05										
		12-Sep-00	9:50	12-Sep-00	12:15	Perpendicular	2	7	Boulder	Bottom	6.0
		12-Sep-00	12:15	12-Sep-00	14:55	Perpendicular	2	7	Boulder	Bottom	6.0
		12-Sep-00	14:55	12-Sep-00	16:45	Perpendicular	2	7	Boulder	Bottom	6.0
	GNLCA07										
		23-Jul-00	9:30	23-Jul-00	11:00	Perpendicular	4	5	Sand	Bottom	13.0
		12-Sep-00	12:00	12-Sep-00	14:45	Perpendicular	2.5	3	Boulder	Bottom	6.0
		12-Sep-00	14:45	12-Sep-00	17:00	Perpendicular	2.5	3	Boulder	Bottom	6.0
		12-Sep-00	9:40	12-Sep-00	12:00	Perpendicular	2.5	3	Boulder	Bottom	6.0
	GNLCA08										
		23-Jul-00	13:00	23-Jul-00	14:32	Perpendicular	4	7.5	Cobble/Boulder	Bottom	15.0
		23-Jul-00	11:35	23-Jul-00	13:00	Perpendicular	4	7.5	Cobble/Boulder	Bottom	13.0
		23-Jul-00	10:00	23-Jul-00	11:35	Perpendicular	4	7.5	Cobble/Boulder	Bottom	13.0
	GNLCA09										
		23-Jul-00	13:45	23-Jul-00	15:00	Perpendicular	4	6	Boulder	Bottom	

Appendix D Table D2. Gill net sampling effort in lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Set Date	Set Time	Pull Date	Pull Time	Set Orientation	Minimum Depth (m)	Maximum Depth (m)	Dominant Substrate	Depth Position	Water Temperature (C)
Carat Lake											
	GNLCA10										
		28-Jul-00	15:09	28-Jul-00	17:00	Perpendicular	8	15.5	Boulder	Bottom	16.0
		28-Jul-00	11:50	28-Jul-00	13:30	Perpendicular	8	15.5	Boulder	Bottom	16.0
		28-Jul-00	13:30	28-Jul-00	15:09	Perpendicular	8	15.5	Boulder	Bottom	16.0
	GNLCA11										
		28-Jul-00	13:42	28-Jul-00	15:30	Perpendicular	6	14	Boulder	Bottom	16.0
		28-Jul-00	15:30	28-Jul-00	16:30	Perpendicular	6	14	Boulder	Bottom	16.0
		28-Jul-00	12:10	28-Jul-00	13:42	Perpendicular	6	14	Boulder	Bottom	16.0
	GNLCA12										
		08-Sep-00	9:15	08-Sep-00	11:35	Perpendicular	2.5	3.5	Boulder	Bottom	7.0
		08-Sep-00	11:35	08-Sep-00	14:00	Perpendicular	2.5	3.5	Boulder	Bottom	7.0
		08-Sep-00	14:00	08-Sep-00	16:15	Perpendicular	2.5	3.5	Boulder	Bottom	7.0
	GNLCA13										
		12-Sep-00	10:40	12-Sep-00	12:40	Perpendicular	2.5	5	Boulder	Bottom	6.0
		12-Sep-00	15:25	12-Sep-00	17:20	Perpendicular	2.5	5	Boulder	Bottom	6.0
		12-Sep-00	12:40	12-Sep-00	15:25	Perpendicular	2.5	5	Boulder	Bottom	6.0
	GNLCA14										
		12-Sep-00	13:30	12-Sep-00	16:25	Perpendicular	2.5	8	Sand	Bottom	6.0
Control Lake											
	GNLCN01										
		23-Jul-00	15:42	23-Jul-00	16:20	Perpendicular	1.5	14	Boulder	Bottom	15.5
		23-Jul-00	10:10	23-Jul-00	11:15	Perpendicular	1.5	14	Boulder	Bottom	15.5

Appendix D Table D2. Gill net sampling effort in lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Set Date	Set Time	Pull Date	Pull Time	Set Orientation	Minimum Depth (m)	Maximum Depth (m)	Dominant Substrate	Depth Position	Water Temperature (C)
Control Lake											
	GNLCN01										
		23-Jul-00	11:15	23-Jul-00	13:30	Perpendicular	1.5	14	Boulder	Bottom	15.5
		23-Jul-00	9:07	23-Jul-00	10:10	Perpendicular	1.5	14	Boulder	Bottom	15.5
		23-Jul-00	13:30	23-Jul-00	15:42	Perpendicular	1.5	14	Boulder	Bottom	15.5
		09-Sep-00	14:15	09-Sep-00	15:55	Perpendicular	2.5	14	Boulder	Bottom	
		09-Sep-00	12:00	09-Sep-00	14:15	Perpendicular	2.5	14	Boulder	Bottom	
	GNLCN02										
		23-Jul-00	9:26	23-Jul-00	10:25	Perpendicular	2	10	Boulder	Bottom	15.5
		23-Jul-00	10:25	23-Jul-00	11:25	Perpendicular	2	10	Boulder	Bottom	15.5
		23-Jul-00	11:25	23-Jul-00	14:00	Perpendicular	2	10	Boulder	Bottom	15.5
		23-Jul-00	14:00	23-Jul-00	16:50	Perpendicular	2	10	Boulder	Bottom	15.5
		09-Sep-00	9:30	09-Sep-00	11:10	Perpendicular	2.5	12	Boulder	Bottom	
		09-Sep-00	11:10	09-Sep-00	14:00	Perpendicular	2.5	12	Boulder	Bottom	
		09-Sep-00	14:00	09-Sep-00	15:40	Perpendicular	2.5	12	Boulder	Bottom	
	GNLCN03										
		09-Sep-00	9:45	09-Sep-00	11:45	Perpendicular	2.5	23	Boulder	Bottom	
Contwoyto Lake											
	GNLCW01										
		22-Jul-00	12:25	22-Jul-00	15:55	Perpendicular	1.5	3	Boulder	Bottom	6.0
		22-Jul-00	11:00	22-Jul-00	12:25	Perpendicular	1.5	3	Boulder	Bottom	6.0
		22-Jul-00	9:45	22-Jul-00	11:00	Perpendicular	1.5	3	Boulder	Bottom	6.0

Appendix D Table D2. Gill net sampling effort in lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Set Date	Set Time	Pull Date	Pull Time	Set Orientation	Minimum Depth (m)	Maximum Depth (m)	Dominant Substrate	Depth Position	Water Temperature (C)
Contwoyto Lake											
	GNLCW02										
		22-Jul-00	10:00	22-Jul-00	11:30	Perpendicular	1.5	5	Boulder	Bottom	6.0
		22-Jul-00	13:25	22-Jul-00	15:30	Perpendicular	1.5	5	Boulder	Bottom	6.0
		22-Jul-00	11:30	22-Jul-00	13:25	Perpendicular	1.5	5	Boulder	Bottom	6.0
	GNLCW03										
		24-Jul-00	10:00	24-Jul-00	11:41	Perpendicular	4	12	Silt	Bottom	13.5
		24-Jul-00	13:05	24-Jul-00	14:30	Perpendicular	4	12	Silt	Bottom	13.5
		24-Jul-00	11:41	24-Jul-00	13:05	Perpendicular	4	12	Silt	Bottom	13.5
		24-Jul-00	14:30	24-Jul-00	15:20	Perpendicular	4	12	Silt	Bottom	13.5
	GNLCW04										
		24-Jul-00	14:45	24-Jul-00	15:30	Perpendicular	4	24	Boulder	Bottom	13.5
		24-Jul-00	13:15	24-Jul-00	14:45	Perpendicular	4	24	Boulder	Bottom	13.5
		24-Jul-00	12:05	24-Jul-00	13:15	Perpendicular	4	24	Boulder	Bottom	13.5
		24-Jul-00	10:20	24-Jul-00	12:05	Perpendicular	4	24	Boulder	Bottom	13.5
	GNLCW05										
		07-Sep-00	9:00	07-Sep-00	11:00	Perpendicular	2	5	Boulder	Bottom	6.0
		07-Sep-00	11:00	07-Sep-00	14:30	Perpendicular	2	5	Boulder	Bottom	6.0
	GNLCW06										
		07-Sep-00	9:10	07-Sep-00	11:20	Perpendicular	2	6	Boulder	Bottom	6.0
		07-Sep-00	11:20	07-Sep-00	14:50	Perpendicular	2	6	Boulder	Bottom	6.0

Appendix D Table D2. Gill net sampling effort in lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Set Date	Set Time	Pull Date	Pull Time	Set Orientation	Minimum Depth (m)	Maximum Depth (m)	Dominant Substrate	Depth Position	Water Temperature (C)
Lake C3											
	GNLC0311										
		21-Jul-00	15:17	21-Jul-00	17:20	Perpendicular	1.2	5	Boulder	Bottom	16.0
	GNLC0312										
		21-Jul-00	15:35	21-Jul-00	17:00	Perpendicular	1.5	4	Boulder	Bottom	16.0
	GNLC0313										
		25-Jul-00	10:50	25-Jul-00	12:20	Perpendicular	1.5	5	Boulder	Bottom	17.0
		25-Jul-00	12:20	25-Jul-00	14:10	Perpendicular	1.5	5	Boulder	Bottom	17.0
		25-Jul-00	14:10	25-Jul-00	16:05	Perpendicular	1.5	5	Boulder	Bottom	17.0
	GNLC0314										
		25-Jul-00	10:35	25-Jul-00	11:45	Perpendicular	1.5	4	Boulder	Bottom	17.0
		25-Jul-00	11:45	25-Jul-00	13:15	Perpendicular	1.5	4	Boulder	Bottom	17.0
	GNLC0315										
		06-Sep-00	9:10	06-Sep-00	10:20	Perpendicular	2	4	Boulder	Bottom	7.0
		06-Sep-00	10:20	06-Sep-00	12:30	Perpendicular	2	4	Boulder	Bottom	7.0
		06-Sep-00	12:30	06-Sep-00	16:15	Perpendicular	2	4	Boulder	Bottom	7.0
		11-Sep-00	13:45	11-Sep-00	15:30	Perpendicular	4	6	Boulder	Bottom	3.0
		11-Sep-00	9:20	11-Sep-00	11:20	Perpendicular	4	6	Boulder	Bottom	3.0
		11-Sep-00	11:20	11-Sep-00	13:45	Perpendicular	4	6	Boulder	Bottom	3.0
	GNLC0316										
		06-Sep-00	12:45	06-Sep-00	15:30	Perpendicular	2	5	Boulder	Bottom	7.0
		06-Sep-00	10:40	06-Sep-00	12:45	Perpendicular	2	5	Boulder	Bottom	7.0
		06-Sep-00	9:25	06-Sep-00	10:40	Perpendicular	2	5	Boulder	Bottom	7.0

Appendix D Table D2. Gill net sampling effort in lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Set Date	Set Time	Pull Date	Pull Time	Set Orientation	Minimum Depth (m)	Maximum Depth (m)	Dominant Substrate	Depth Position	Water Temperature (C)
Lake C3											
	GNLC0316										
		11-Sep-00	9:35	11-Sep-00	11:30	Perpendicular	2.5	3.5	Boulder	Bottom	3.0
		11-Sep-00	13:30	11-Sep-00	15:45	Perpendicular	2.5	3.5	Boulder	Bottom	3.0
	GNLC0317										
		06-Sep-00	13:15	06-Sep-00	16:00	Perpendicular	2	3.5	Boulder	Bottom	7.0
		11-Sep-00	11:50	11-Sep-00	14:00	Perpendicular	2.5	5	Boulder	Bottom	3.0
		11-Sep-00	14:00	11-Sep-00	16:10	Perpendicular	2.5	5	Boulder	Bottom	3.0
Lake C4											
	GNLC0401										
		22-Jul-00	14:15	22-Jul-00	16:45	Perpendicular	1.5	2.5	Boulder/Organic	Bottom	17.0
		29-Jul-00	10:00	29-Jul-00	12:00	Perpendicular	1.5	2.5	Boulder/Organic	Bottom	19.0
		29-Jul-00	12:00	29-Jul-00	17:00	Perpendicular	1.5	2.5	Boulder/Organic	Bottom	19.0
Lake D10											
	GNLD1006										
		21-Jul-00	15:00	21-Jul-00	17:25	Perpendicular	3.5	4.2	Cobble/Boulder	Bottom	17.0
		21-Jul-00	17:25	22-Jul-00	7:40	Perpendicular	3.5	4.2	Cobble/Boulder	Bottom	16.0
	GNLD1007										
		21-Jul-00	17:15	22-Jul-00	7:56	Perpendicular	2.5	4	Boulder	Bottom	17.0
		21-Jul-00	15:30	21-Jul-00	17:15	Perpendicular	2.5	4	Boulder	Bottom	17.0

Appendix D Table D3. Numbers recorded and catch-per-unit-effort values (CPUE) for fish captured at gill net sites in lakes in the Jericho Study Area, 2000.

Waterbody	Season	Time (h)	Effort ($100m^2 \cdot 12h$)	Species Label	Number of Fish	CPUE ($fish/100m^2 \cdot 12h$)
Carat Lake						
	Fall					
		38.08	7.08			
				LKTR	13	1.84
				RNWH	23	3.25
				ARCH	10	1.41
	Summer					
		19.28	3.58			
				ARCH	1	0.28
				LKTR	14	3.91
				RNWH	4	1.12
Control Lake						
	Fall					
		12.08	2.25			
				ARCH	1	0.45
				LKTR	5	2.23
				RNWH	4	1.78
	Summer					
		14.62	2.72			
				RNWH	9	3.31
				LKTR	22	8.10
				ARCH	2	0.74
Contwoyto Lake						
	Fall					
		11.17	2.07			
				ARCH	8	3.86
				LKTR	2	0.96
	Summer					
		22.17	4.12			
				ARCH	15	3.64
				LKTR	6	1.46
Lake C3						
	Fall					
		30.58	5.68			
				ARCH	3	0.53
				LKTR	16	2.82
				RNWH	9	1.58
	Summer					
		11.38	2.12			
				RNWH	3	1.42
				ARCH	6	2.84
				LKTR	17	8.04

Appendix D Table D4. Minnow trap[a] sampling effort in lakes in the Jericho Study Area, 2000.

Waterbody	Site Label	Set		Pull		Depth (m)	Water
		Date	Time	Date	Time		Temperature (C)
Carat Lake							
	GTLCA01	23-Jul-00	9:10	23-Jul-00	17:27	0.50	13.0
	GTLCA02	23-Jul-00	9:40	23-Jul-00	17:23	0.50	16.0
	GTLCA03	23-Jul-00	9:43	23-Jul-00	17:20	0.50	16.0
	GTLCA04	23-Jul-00	9:47	23-Jul-00	17:17	0.50	16.0
Control Lake							
	GTLCN01	23-Jul-00	9:40	23-Jul-00	17:18	1.50	15.5
	GTLCN02	23-Jul-00	9:55	23-Jul-00	17:22	1.50	15.0
	GTLCN03	23-Jul-00	10:00	23-Jul-00	17:30	1.50	15.0
	GTLCN04	23-Jul-00	10:05	23-Jul-00	17:26	1.50	15.5
Contwoyto Lake							
	GTLCW01	24-Jul-00	9:32	24-Jul-00	15:00	0.70	13.5
	GTLCW02	24-Jul-00	9:40	24-Jul-00	15:10	1.20	13.5
	GTLCW03	24-Jul-00	9:44	24-Jul-00	14:50	0.50	13.5
	GTLCW04	24-Jul-00	9:48	24-Jul-00	14:55	2.50	13.5
	GTLCW05	22-Jul-00	10:30	22-Jul-00	16:00	1.50	6.0
	GTLCW06	22-Jul-00	10:35	22-Jul-00	16:03	1.50	6.0
Lake C3							
	GTLC0301	21-Jul-00	15:51	25-Jul-00	15:30	1.50	16.0
	GTLC0302	21-Jul-00	15:55	25-Jul-00	15:35	1.50	16.0
	GTLC0303	21-Jul-00	15:58	25-Jul-00	15:40	1.00	16.0
	GTLC0304	21-Jul-00	16:00	25-Jul-00	15:45	1.00	16.0
Lake C4							
	GTLC0401	22-Jul-00	10:44	22-Jul-00	17:28	0.30	16.5
	GTLC0402	22-Jul-00	11:00	22-Jul-00	17:15	0.20	16.5
	GTLC0403	22-Jul-00	11:02	22-Jul-00	17:04	0.30	16.5
	GTLC0404	22-Jul-00	11:15	22-Jul-00	16:35	0.50	16.5
Lake D10							
	GTLD1001	21-Jul-00	14:30	22-Jul-00	7:45	0.80	17.0
	GTLD1002	21-Jul-00	14:35	22-Jul-00	7:43	1.10	17.0
	GTLD1003	21-Jul-00	15:10	22-Jul-00	8:03	0.50	17.0
	GTLD1004	21-Jul-00	15:15	22-Jul-00	8:00	0.50	17.0

[a] *No fish captured using this method .*

Appendix D Table D5. Fyke net sampling effort in Carat Lake and Lake C3, Jericho Study Area, 2000.

Waterbody	Site Label	Set Date	Set Time	Pull Date	Pull Time	Soak Time (h)	Species	Number Caught
Carat Lake	FNLCA01							
		21-Jul-00	11:30	22-Jul-00	17:50	30.33		
							Lake trout	4
							Round whitefish	2
							Arctic char	3
		22-Jul-00	17:50	23-Jul-00	16:00	22.17		
							Lake trout	8
							Round whitefish	3
		23-Jul-00	17:00	24-Jul-00	17:10	24.17		
							Arctic char	7
							Lake trout	9
							Round whitefish	13
		24-Jul-00	17:10	25-Jul-00	13:00	19.83		
							Round whitefish	5
							Lake trout	6
							Slimy sculpin	1
							Arctic char	2
Lake C3	FNLCO301							
		25-Jul-00	15:00	26-Jul-00	12:50	21.83		
							Arctic char	3
							Lake trout	8
							Round whitefish	4
		26-Jul-00	12:50	27-Jul-00	10:40	21.83		
							Arctic char	1
							Round whitefish	3
Lake D10	FNLD1001							
		27-Jul-00	11:55	28-Jul-00	11:30	23.58		
							Slimy sculpin	3
		28-Jul-00	11:30	29-Jul-00	16:50	29.33		
							Burbot	1

Appendix D Table D6. Number of fish recorded and catch-per-unit-effort (CPUE) values during backpack electrofishing in waterbodies in the Jericho Study Area, 2000.

Waterbody	Effort (min)	Species	Captured	Observed	CPUE (No. fish/min)
Control Lake					
	6.52				
		Slimy sculpin	1	1	0.31
Lake above LD10					
	7.18				
		Slimy sculpin	2	2	0.56
Lake C3					
	7.07				
		Burbot	1	0	0.14
Lake D10					
	12.13				
		Burbot	16	31	3.87
		Slimy sculpin	1	3	0.33
Pond LD10					
	6.28				
		Burbot	10	6	2.55
		Slimy sculpin	3	4	1.11
Stream C1					
	5.35				
		Arctic char	6	0	1.12
		Lake trout	5	4	1.68
		Slimy sculpin	6	4	1.87
Stream C2					
	4.03				
		Arctic char	1	0	0.25
		Slimy sculpin	4	5	2.23
Stream C3					
	19.12				
		Arctic char	9	1	0.52
		Burbot	1	0	0.05
		Slimy sculpin	23	14	1.94
Stream D1					
	9.10				
		Slimy sculpin	1	2	0.33

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Carat Lake								
	FNLCA01							
		21-Jul-00						
			Arctic char	118	12		0	
			Arctic char	71	4		0	
			Arctic char	67	2		0	
			Lake trout	114	10		0	
			Lake trout	72	4		0	
			Lake trout	73	4		0	
			Lake trout	64	2		0	
			Round whitefish	112	10		0	
			Round whitefish	148	32		0	
		22-Jul-00						
			Lake trout	115	10		0	
			Lake trout	73			0	
			Lake trout	74			0	
			Lake trout	74			0	
			Lake trout	66			0	
			Lake trout	146	25		0	
			Lake trout	118	15		0	
			Lake trout	88	5		0	
			Round whitefish	56			0	
			Round whitefish	327			0	
			Round whitefish	118	15		0	
	FNLCA02							
		23-Jul-00						
			Arctic char	88	6		0	
			Arctic char	100	10		0	
			Arctic char	85	6		0	
			Arctic char	66	2		0	
			Arctic char	97	10		0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Carat Lake								
	FNLCA02							
		23-Jul-00						
			Arctic char	70	4		0	
			Arctic char	92	8		0	
			Lake trout	75			0	
			Lake trout	119	18		0	
			Lake trout	196	74		0	
			Lake trout	100	10		0	
			Lake trout	82	10		0	
			Lake trout	71	4		0	
			Lake trout	133	20		0	
			Lake trout	130	24		0	
			Lake trout	104	10		0	
			Round whitefish	129	18		0	
			Round whitefish	110	12		0	
			Round whitefish	100			0	
			Round whitefish	110	12		0	
			Round whitefish	70			1	
			Round whitefish	130	18		0	
			Round whitefish	125	14		0	
			Round whitefish	70			0	
			Round whitefish	161	34		0	
			Round whitefish	123	16		0	
			Round whitefish	113	10		0	
			Round whitefish	218	94		0	
			Round whitefish	68	2		0	
		24-Jul-00						
			Arctic char	79	2		0	
			Arctic char	78	6		0	
			Lake trout	72			0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Carat Lake								
	FNLCA02							
		24-Jul-00						
			Lake trout	71	4		0	
			Lake trout	107	10		0	
			Lake trout	104	10		0	
			Lake trout	100	8		0	
			Lake trout	80	6		0	
			Round whitefish	68			0	
			Round whitefish	110	10		0	
			Round whitefish	115	12		0	
			Round whitefish	81	4		0	
			Round whitefish	215	88		0	
			Slimy sculpin	77	4		0	
	GNLCA01							
		08-Sep-00						
			Arctic char	571	2155	8	0	3626
			Lake trout	438	1010	97	0	3625
			Lake trout	820	6500	8	2	4893
			Lake trout	368	595	1	1	
			Lake trout	1000	1E+04	18	2	3581
			Round whitefish	465	1390	97	0	
			Round whitefish	354	500	97	0	
			Round whitefish	371	605	97	0	
			Round whitefish	410	875	97	0	
			Round whitefish	419	905	97	0	
			Round whitefish	415	890	17	1	
	GNLCA03							
		23-Jul-00						
			Lake trout	97	15	99	1	
			Lake trout	428	805	1	1	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Carat Lake								
	GNLCA03							
		23-Jul-00						
			Lake trout	465	1040		0	3630
			Round whitefish	522	1720		0	3629
	GNLCA05							
		12-Sep-00						
			Arctic char	515	1745	8	0	3488
			Arctic char	543	1825	8	0	3489
			Arctic char	555	1830	8	0	3650
			Arctic char	495	1065	97	0	3649
			Arctic char				0	
			Lake trout	580	2250	97	0	4723
			Round whitefish	353	480	97	0	
			Round whitefish	409	855	97	0	
			Round whitefish	461	1275	17	0	
			Round whitefish	450	1105	97	0	
			Round whitefish	481	1400	17	1	
			Round whitefish	337	405	97	0	
	GNLCA07							
		12-Sep-00						
			Arctic char	490	1380	97	0	3491
	GNLCA08							
		23-Jul-00						
			Arctic char	530	1330		0	3631
			Lake trout	451	1105	6	1	
			Lake trout	449	1060		0	3632
			Round whitefish	322	345	11	1	
			Round whitefish	399	815	16	1	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Carat Lake								
	GNLCA09							
		23-Jul-00						
			Round whitefish	512	1310	11	1	
	GNLCA10							
		28-Jul-00						
			Lake trout	396	790	6	1	
			Lake trout	480	1185		0	3644
	GNLCA11							
		28-Jul-00						
			Lake trout	456	1060		0	3648
			Lake trout	475	1155		0	3645
			Lake trout	670	3315	6	1	
			Lake trout	495	1400		0	3647
			Lake trout	521	1515		0	3643
			Lake trout	310	275	11	1	
			Lake trout	508	1185		0	3646
	GNLCA12							
		08-Sep-00						
			Arctic char	583	2150	8	0	4937
			Arctic char	583	2150	8	2	4937
			Arctic char	555	1390	97	0	4935
			Lake trout	715	4250	97	0	4936
			Lake trout	395	675	97	0	3624
			Lake trout	334	405	97	0	3628
			Lake trout	549	1640	97	0	3627
			Lake trout	516	1410	6	1	
			Round whitefish	505	1585	97	0	
			Round whitefish	353	505	16	1	
			Round whitefish	438	1055	6	1	
			Round whitefish	351	465	97	0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Carat Lake								
	GNLCA12							
		08-Sep-00						
			Round whitefish	361	485	97	0	
			Round whitefish	358	535	97	0	
			Round whitefish				0	
			Round whitefish	439	1030	97	0	3623
	GNLCA13							
		12-Sep-00						
			Lake trout	364	530	97	0	3490
			Lake trout	985	1E+04	8	0	4724
			Round whitefish	333	420	8	1	
			Round whitefish	370	580	97	0	
			Round whitefish	453	1180	97	0	
	GNLCA14							
		12-Sep-00						
			Lake trout	442	985	1	1	
Control Lake								
	EFLCN01							
		28-Jul-00						
			Slimy sculpin	53			0	
	GNLCN01							
		23-Jul-00						
			Lake trout	431	825		0	3466
			Lake trout	581	2005		0	3470
			Lake trout	411	815		0	
			Lake trout	405	770		0	3465
			Lake trout	300			0	
			Lake trout	206	100	99	1	
			Lake trout	533	1570		0	3472

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Control Lake								
	GNLCN01							
		23-Jul-00						
			Round whitefish	305	285	1	1	
			Round whitefish	348	480		0	
			Round whitefish	191	70		0	
			Round whitefish	429	855	6	1	
		09-Sep-00						
			Lake trout	482		97	0	3499
			Lake trout	428		8	0	3498
			Round whitefish	371		97	0	
			Round whitefish	418		97	0	
	GNLCN02							
		23-Jul-00						
			Arctic char	533	1325		0	3467
			Arctic char	450			0	
			Lake trout	335	525		0	
			Lake trout	448	865	1	1	
			Lake trout	196	105		0	
			Lake trout	398	665		0	3461
			Lake trout	469	1125		0	3462
			Lake trout	359	530		0	3464
			Lake trout	680	2580		0	3469
			Lake trout	376	635		0	3463
			Lake trout	413	695	1	1	
			Lake trout	442	970	6	1	
			Lake trout	650	3135		0	3473
			Lake trout	399	720	6	0	
			Lake trout	378	585		0	
			Lake trout	471	995		0	3468
			Lake trout	361	555		0	3460

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Control Lake								
	GNLCN02							
		23-Jul-00						
			Round whitefish	439	870		0	
			Round whitefish	111	52	99	1	
			Round whitefish	373	550		0	
			Round whitefish	417	745		0	
			Round whitefish	441	900	6	1	
		09-Sep-00						
			Arctic char	506	1000	8	0	3622
			Lake trout	462	950	8	0	3500
			Lake trout	561	1755	97	0	
			Round whitefish	431		97	0	
			Round whitefish	342	805	97	0	
	GNLCN03							
		09-Sep-00						
			Lake trout	350		97	0	
Contwoyto Lake								
	GNLCW01							
		22-Jul-00						
			Arctic char	338	390		0	3453
			Arctic char	459	1090		0	3451
			Lake trout	570	1840		0	3452
	GNLCW02							
		22-Jul-00						
			Arctic char	577	1995		0	3455
			Arctic char	553	1780		0	3459
			Arctic char	505	1470		0	3458
			Lake trout	534	1845		0	3454

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Contwoyto Lake								
	GNLCW03							
		24-Jul-00						
			Arctic char	505	1335		0	
			Arctic char	543	1740		0	3634
			Arctic char	568	1800		0	3633
			Arctic char	609	2030		0	3635
			Lake trout	585	2410		0	3640
			Lake trout	570	1820		0	3641
			Lake trout	490	1225		0	3642
	GNLCW04							
		24-Jul-00						
			Arctic char	520	1320		0	3639
			Arctic char	530	1715		0	
			Arctic char	508	1410	7	0	
			Arctic char	482	1245		0	3638
			Arctic char	504	1300		0	3636
			Arctic char	535	1630		0	3637
			Lake trout	560	1680		1	
	GNLCW06							
		07-Sep-00						
			Arctic char	324	360	97	0	
			Arctic char	293	275	97	0	4940
			Arctic char	568	1895	97	0	4941
			Arctic char	325	340	97	0	
			Arctic char	101	10	98	0	
			Arctic char	299	265	97	0	4938
			Arctic char	332	385	97	0	
			Arctic char	351	355	97	0	4942
			Lake trout	515	1455	97	0	4939
			Lake trout	484	1160	16	1	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Lake above LD10								
	EFLD1101							
		28-Jul-00						
			Slimy sculpin	33			0	
			Slimy sculpin	34			0	
Lake C3								
	EFLC0301							
		28-Jul-00						
			Burbot	25			0	
	FNLCO301							
		25-Jul-00						
			Arctic char	120	16		0	
			Arctic char	81	2		0	
			Arctic char	83			1	
			Lake trout	70			1	
			Lake trout	92	4		0	
			Lake trout	80	4		0	
			Lake trout	74	4		0	
			Lake trout	76	4		0	
			Lake trout	70			1	
			Lake trout	66			1	
			Lake trout	69			1	
			Round whitefish	129	22		0	
			Round whitefish	68			0	
			Round whitefish	131	24		0	
			Round whitefish	68			0	
		26-Jul-00						
			Arctic char	231	252		0	
			Round whitefish	135	20		0	
			Round whitefish	62	4		1	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Lake C3								
	FNLCO301							
		26-Jul-00						
			Round whitefish	73	4		1	
	GNLC0311							
		21-Jul-00						
			Arctic char	222	145		0	
			Arctic char	199	100		0	
			Arctic char	189	80		0	
			Arctic char	229	135		0	
			Arctic char	192	105		0	
			Arctic char	248	160		0	
			Lake trout	403	615		0	
			Lake trout	457	1035		0	
	GNLC0313							
		25-Jul-00						
			Lake trout	747	5000	6	3	233
			Lake trout	521	1390		0	3486
			Lake trout	265	150	11	1	
			Lake trout	379	555	6	1	
			Lake trout	360	540		0	3485
			Lake trout	269	215	11	1	
			Lake trout	281	235		0	3483
	GNLC0314							
		25-Jul-00						
			Lake trout	189	55		0	
			Lake trout	545	1315		2	3342
			Lake trout	266	180		0	3478
			Lake trout	292	230		0	3479
			Lake trout	274	235		0	3480
			Lake trout	248	150		0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Lake C3								
	GNLC0314							
		25-Jul-00						
			Lake trout	233	130		0	3482
			Lake trout	403	680		0	3481
			Round whitefish	312	310	6	1	
			Round whitefish	315	335		0	
			Round whitefish	401	790		0	
	GNLC0315							
		06-Sep-00						
			Lake trout	592	2010	97	0	4945
			Lake trout	446	930	7	0	4950
			Lake trout	429	980	7	0	4949
			Lake trout	596	2000	7	0	4948
			Lake trout	439	855	7	0	4946
			Lake trout	424	880	7	2	3594
			Lake trout	455	855	7	0	4944
			Lake trout	408	725	7	0	4943
			Round whitefish	476	1175	97	0	
		11-Sep-00						
			Arctic char	491	870	8	1	
	GNLC0316							
		06-Sep-00						
			Arctic char	508	1230	17	0	4947
			Lake trout	521	1515	97	0	
			Lake trout	375	475	97	0	
			Round whitefish	440	1190	97	0	
			Round whitefish	440	880	97	0	
			Round whitefish	443	910	97	0	
			Round whitefish	435	1000	97	0	
		11-Sep-00						

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Lake C3								
	GNLC0316							
		11-Sep-00						
			Arctic char	504	1500	8	0	3494
			Lake trout	601	2000	97	0	3496
			Lake trout	548	1685	97	0	3497
			Lake trout	447	900	97	0	3493
	GNLC0317							
		06-Sep-00						
			Lake trout	610	2365	97	2	3593
			Round whitefish	455	1045	97	0	
			Round whitefish	417	940	97	0	
		11-Sep-00						
			Lake trout	389	555	97	0	3495
			Lake trout	581	1800	97	0	3442
			Round whitefish	442	960	97	0	
			Round whitefish	435		97	0	
Lake D10								
	EFLD1001							
		21-Jul-00						
			Burbot	31			0	
			Burbot	34			0	
			Burbot	32			0	
			Burbot	31			0	
			Burbot	81			0	
			Burbot	33			0	
			Burbot	32			0	
			Burbot	30			0	
			Burbot	33			0	
			Burbot	29			0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Lake D10								
	EFLD1001							
		21-Jul-00						
			Burbot	27			0	
			Burbot	25			0	
			Burbot	29			0	
			Burbot	32			0	
			Burbot	32			0	
			Burbot	31			0	
			Slimy sculpin	59			0	
	FNLD1001							
		27-Jul-00						
			Slimy sculpin	58			0	
			Slimy sculpin	85			0	
			Slimy sculpin	76			0	
		28-Jul-00						
			Burbot	88	4		0	
Pond LD10								
	EFPD1001							
		28-Jul-00						
			Burbot	41			0	
			Burbot	43			0	
			Burbot	37			0	
			Burbot	36			0	
			Burbot	39			0	
			Burbot	40			0	
			Burbot	42			0	
			Burbot	32			0	
			Burbot	37			0	
			Burbot	38			0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Pond LD10								
	EFPD1001							
		28-Jul-00						
			Slimy sculpin	46			0	
			Slimy sculpin	43			0	
			Slimy sculpin	57			0	
Stream C1								
	EFTC0101							
		25-Jul-00						
			Arctic char	48			0	
			Arctic char	45			0	
			Arctic char	43			0	
			Arctic char	44			0	
			Arctic char	48			0	
			Arctic char	41			0	
			Lake trout	50			0	
			Lake trout	48			0	
			Lake trout	42			0	
			Lake trout	49			0	
			Lake trout	74			0	
			Slimy sculpin	43			0	
			Slimy sculpin	71			0	
			Slimy sculpin	57			0	
			Slimy sculpin	45			0	
			Slimy sculpin	56			0	
			Slimy sculpin	49			0	
Stream C2								
	EFTC0201							
		26-Jul-00						
			Arctic char	93	14		0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Stream C2								
	EFTC0201							
		26-Jul-00						
			Slimy sculpin	47			0	
			Slimy sculpin	50			0	
			Slimy sculpin	56			0	
			Slimy sculpin	73	4		0	
Stream C3								
	EFTC0301							
		26-Jul-00						
			Arctic char	47			0	
			Arctic char	48			0	
			Arctic char	47			0	
			Arctic char	47			0	
			Arctic char	45			0	
			Arctic char	55			0	
			Burbot	90	4		0	
			Slimy sculpin	40			0	
			Slimy sculpin	54			0	
			Slimy sculpin	60			0	
			Slimy sculpin	63			0	
			Slimy sculpin	45			0	
			Slimy sculpin	71			0	
			Slimy sculpin	57			0	
			Slimy sculpin	72			0	
			Slimy sculpin	62			0	
			Slimy sculpin	51			0	
			Slimy sculpin	58			0	
			Slimy sculpin	49			0	
			Slimy sculpin	48			0	
			Slimy sculpin	67			0	

Appendix D Table D7. Life history data for fish recorded in waterbodies of the Jericho Study Area, 2000.

Waterbody	Site Label	Date	Species	Fork Length (mm)	Weight (g)	Sexual Maturity Code	Capture Code	Tag No.
Stream C3								
	EFTC0301							
		26-Jul-00						
			Slimy sculpin	32			0	
			Slimy sculpin	59			0	
			Slimy sculpin	59			0	
			Slimy sculpin	61			0	
			Slimy sculpin	64			0	
			Slimy sculpin	57			0	
			Slimy sculpin	48			0	
			Slimy sculpin	46			0	
			Slimy sculpin	52			0	
	EFTC0302							
		26-Jul-00						
			Arctic char	94	6		0	
			Arctic char	90	6		0	
			Arctic char	147	22		0	
Stream D1								
	EFTD0101							
		24-Jul-00						
			Slimy sculpin	37			0	

Appendix D Table D8. Stomach contents for fish collected from lakes in the Jericho Study Area, 2000.

Waterbody	Date	Sampling Method	Species	Fork Length (mm)	Weight (g)	Stomach Fullness	Food Item	Food Item Value
Carat Lake								
	23-Jul-00	Gill Net						
			Lake trout	428	805	5		
							Coleoptera	2
							Fish (general)	3
			Lake trout	451	1105	10		
							Sculpin spp.	5
							Chironomid larvae	5
			Round whitefish	322	345	15		
							Trichoptera larvae	10
							Cladocera	2
							Chironomid larvae	3
			Round whitefish	399	815	10		
							Pelecypods	5
							Chironomid larvae	5
			Round whitefish	512	1310	10		
							Trichoptera larvae	10
	28-Jul-00	Gill Net						
			Lake trout	310	275	15		
							Zooplankton	15
			Lake trout	396	790	10		
							Cladocera	1
							Pelecypods	1
							Chironomid larvae	8
			Lake trout	670	3315	15		
							Lake Trout	15
	08-Sep-00	Gill Net						
			Lake trout	368	595	10		
							Zooplankton	10
			Lake trout	516	1410	0		
							Empty	0
			Round whitefish	415	890	10		
							Fish eggs	5
							Zooplankton	5
			Round whitefish	438	1055	10		
							Pelecypods	5
							Zooplankton	5
	12-Sep-00	Gill Net						
			Lake trout	442	985	10		
							Zooplankton	10
			Round whitefish	333	420	10		
							Zooplankton	10

Appendix D Table D8. Stomach contents for fish collected from lakes in the Jericho Study Area, 2000.

Waterbody	Date	Sampling Method	Species	Fork Length (mm)	Weight (g)	Stomach Fullness	Food Item	Food Item Value
Carat Lake								
	12-Sep-00	Gill Net						
			Round whitefish	481	1400	5		
							Chironomid larvae	1
							Trichoptera larvae	4
Control Lake								
	23-Jul-00	Gill Net						
			Lake trout	206	100	5		
							Oligochaetes	1
							Trichoptera larvae	3
							Chironomid larvae	1
			Lake trout	399	720	10		
							Coleoptera	1
							Unidentified Remains	9
			Lake trout	413	695	1		
							Unidentified Remains	1
			Lake trout	442	970	2		
							Coleoptera	1
							Chironomid larvae	1
			Lake trout	448	865	1		
							Trichoptera larvae	1
			Round whitefish	111	52	18		
							Chironomid larvae	16
							Trichoptera larvae	2
			Round whitefish	305	285	10		
							Trichoptera larvae	10
			Round whitefish	429	855	2		
							Chironomid larvae	1
							Trichoptera larvae	1
			Round whitefish	441	900	5		
							Chironomid larvae	3
							Trichoptera larvae	2
Contwoyto Lake								
	24-Jul-00	Gill Net						
			Lake trout	560	1680	5		
							Chironomid larvae	5
	07-Sep-00	Gill Net						
			Lake trout	484	1160	5		
							Hymenoptera	1
							Zooplankton	4

Appendix D Table D8. Stomach contents for fish collected from lakes in the Jericho Study Area, 2000.

Waterbody	Date	Sampling Method	Species	Fork Length (mm)	Weight (g)	Stomach Fullness	Food Item	Food Item Value
Lake C3								
	25-Jul-00	Gill Net						
			Lake trout	265	150	1		
							Oligochaetes	0.33
							Chironomid larvae	0.33
							Zooplankton	0.33
			Lake trout	269	215	1		
							Zooplankton	1
			Lake trout	379	555	6		
							Cladocera	6
			Lake trout	747	5000	0		
							Empty	0
			Round whitefish	312	310	1		
							Unidentified Remains	1
	11-Sep-00	Gill Net						
			Arctic char	491	870	5		
							Zooplankton	5

Appendix D Table D9. Numbers recorded and catch-per-unit-effort values (CPUE) for fish captured during spawning surveys in waterbodies of the Jericho Study Area, 2000.

Waterbody	Soak Time (h)	Effort	Species	Sexual Maturity	Count	CPUE
Carat Lake	38.08	7.08				
			Arctic char	Ripe Male	6	0.85
			Arctic char	Adult Non-Spawner	3	0.42
			Arctic char		1	0.14
			Lake trout	Immature Male	2	0.28
			Lake trout	Mature Male	1	0.14
			Lake trout	Ripe Male	2	0.28
			Lake trout	Ripe Female	1	0.14
			Lake trout	Adult Non-Spawner	7	0.99
			Round whitefish	Adult Non-Spawner	16	2.26
			Round whitefish		1	0.14
			Round whitefish	Mature Male	1	0.14
			Round whitefish	Ripe Male	1	0.14
			Round whitefish	Mature Female	1	0.14
			Round whitefish	Gravid Female	3	0.42
Control Lake	12.08	2.25				
			Arctic char	Ripe Male	1	0.45
			Lake trout	Ripe Male	2	0.89
			Lake trout	Adult Non-Spawner	3	1.34
			Round whitefish	Adult Non-Spawner	4	1.78
Contwoyto Lake	11.17	2.07				
			Arctic char	Adult Non-Spawner	7	3.37
			Arctic char	Juvenile	1	0.48
			Lake trout	Mature Female	1	0.48
			Lake trout	Adult Non-Spawner	1	0.48
Lake C3	30.58	5.68				
			Arctic char	Ripe Male	2	0.35
			Arctic char	Gravid Female	1	0.18
			Lake trout	Gravid Male	7	1.23
			Lake trout	Adult Non-Spawner	9	1.58
			Round whitefish	Adult Non-Spawner	9	1.58