MELVILLE SOUND

440,000m E

430,000m E

7,560,000m N

7,550,000m N

ROBERTS LAKE

LITTLE ROBERTS LAKE

ROBERTS BAY

TAIL LAKE

DORIS LAKE

PELVIC LAKE

OGAMA LAKE

PATCH LAKE

WOLVERINE LAKE

WINDY LAKE

GLENN LAKE

HOPE BAY

KOIGNUK RIVER

WOLVERINE CAMP

WINDY CAMP

Roberts Outflow

Little Roberts Outflow

Tail Outflow

Doris Outflow

Ogama Inflow

Ogama Outflow

Windy Outflow

Glenn Outflow

#25 d/s

#25 u/s

#01 #02 #03 #04 #05 #07 #08 #09 #10 #11 #12 #13 #14 #15 #16 #17 #18 #19 #20 #21 #22 #23 #24 #26 #27 #28

LEGEND

- LAKE AND MARINE HABITAT ASSESSMENTS
- STREAM SECTIONS SURVEYED FOR FISH HABITAT
- × STREAMS WITH POOR HABITAT QUALITY (BASED ON AERIAL SURVEYS IN 1996)
- ⬡ STREAMS SURVEYED FROM THE AIR IN 1997
- #01 STREAM SITE DESIGNATIONS (BASED ON RESCAN 1998)
- WATERFALLS

1.5 0 1.5
SCALE KILOMETRES

NOTE : CONTOUR INTERVAL 20 m

REFERENCE
BASE MAP PROVIDED BY RESCAN, JANUARY 22, 2001

Hope Bay Joint Venture

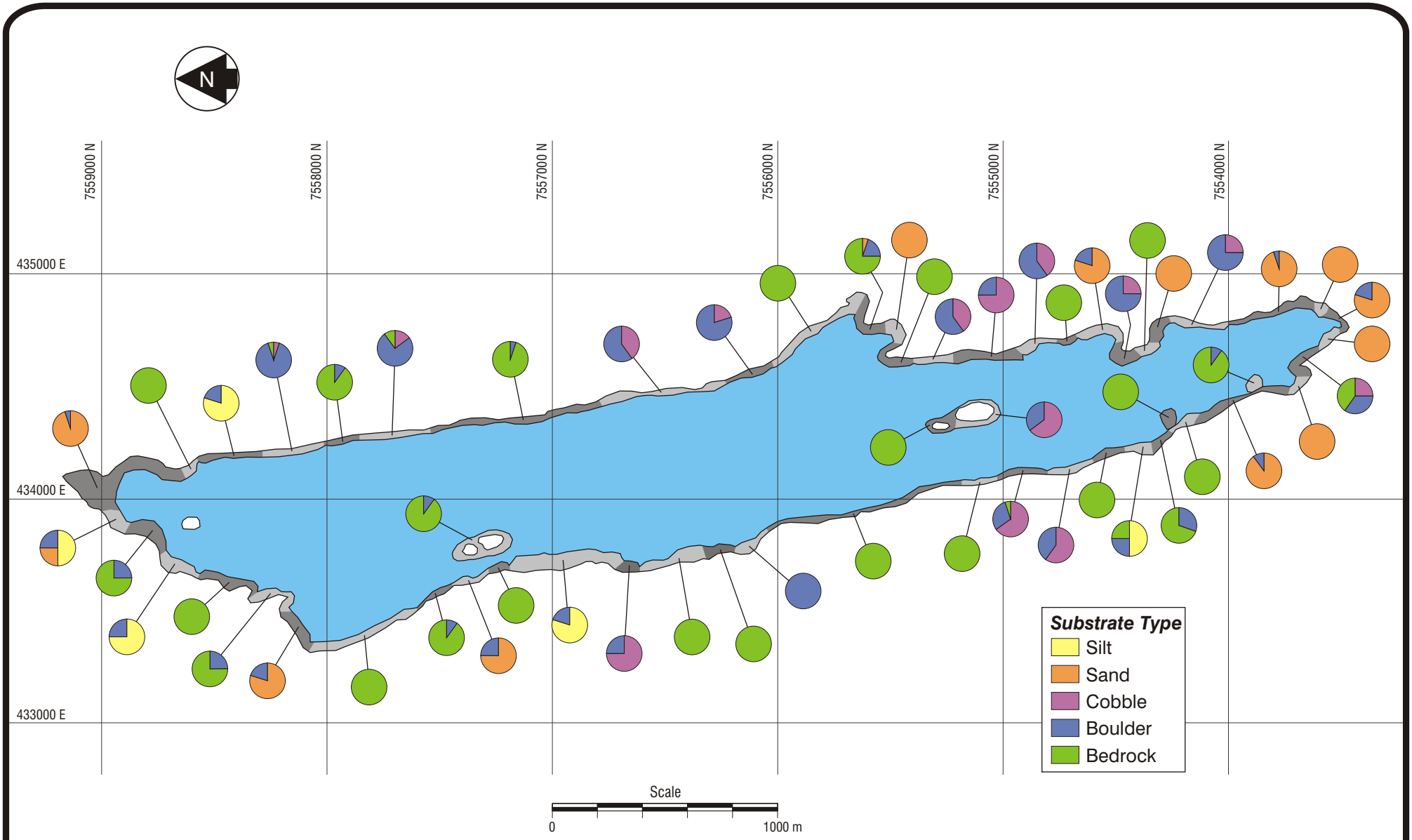
TITLE

FISH HABITAT SAMPLING LOCATIONS IN DORIS HINGE AREA, 1995-2000

Golder Associates
Edmonton, Alberta

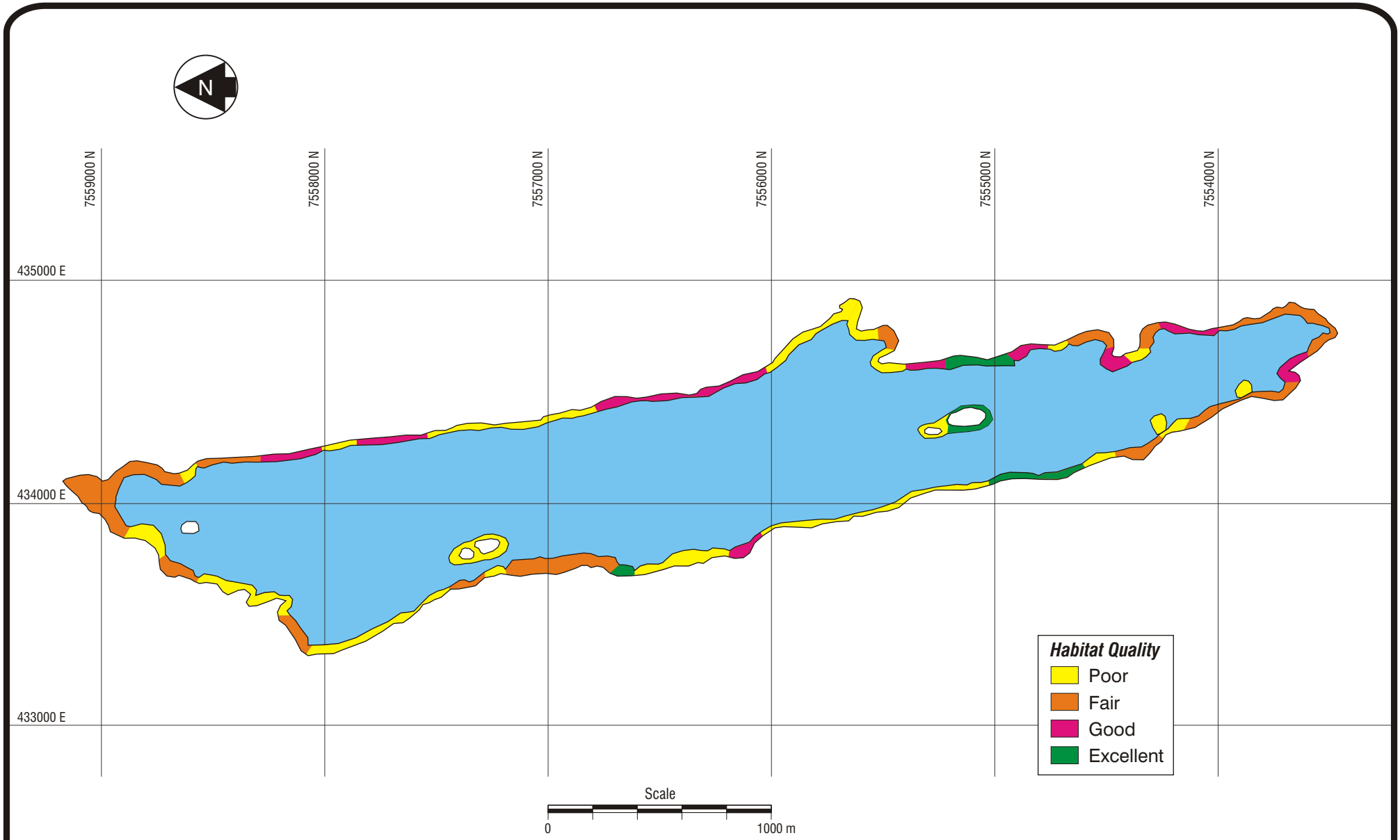
PROJECT No. 022-7009.1000			FILE No.	Fish Habitat Samp	
DESIGN	AH	11/06/02	SCALE	AS SHOWN	REV. 1
CADD	PSR	17/10/02	FIGURE: 8.1		
CHECK	JP	17/10/02			
REVIEW					

R:\CAD\7000\022-7009\ Drawing file: Fish Habitat Sampling Locations.dwg Oct 17, 2002 - 4:12pm



Doris Lake Habitat Assessment (Substrate Type), 2000

FIGURE 8.2



Doris Lake Habitat Assessment (Habitat Quality), 2000

FIGURE 8.3

shoreline and bedrock the western littoral areas, fish habitat was ranked as generally fair and poor in these areas, respectively. The northern tip of the lake was also rated as fair habitat, because both sand and silt dominated littoral areas.

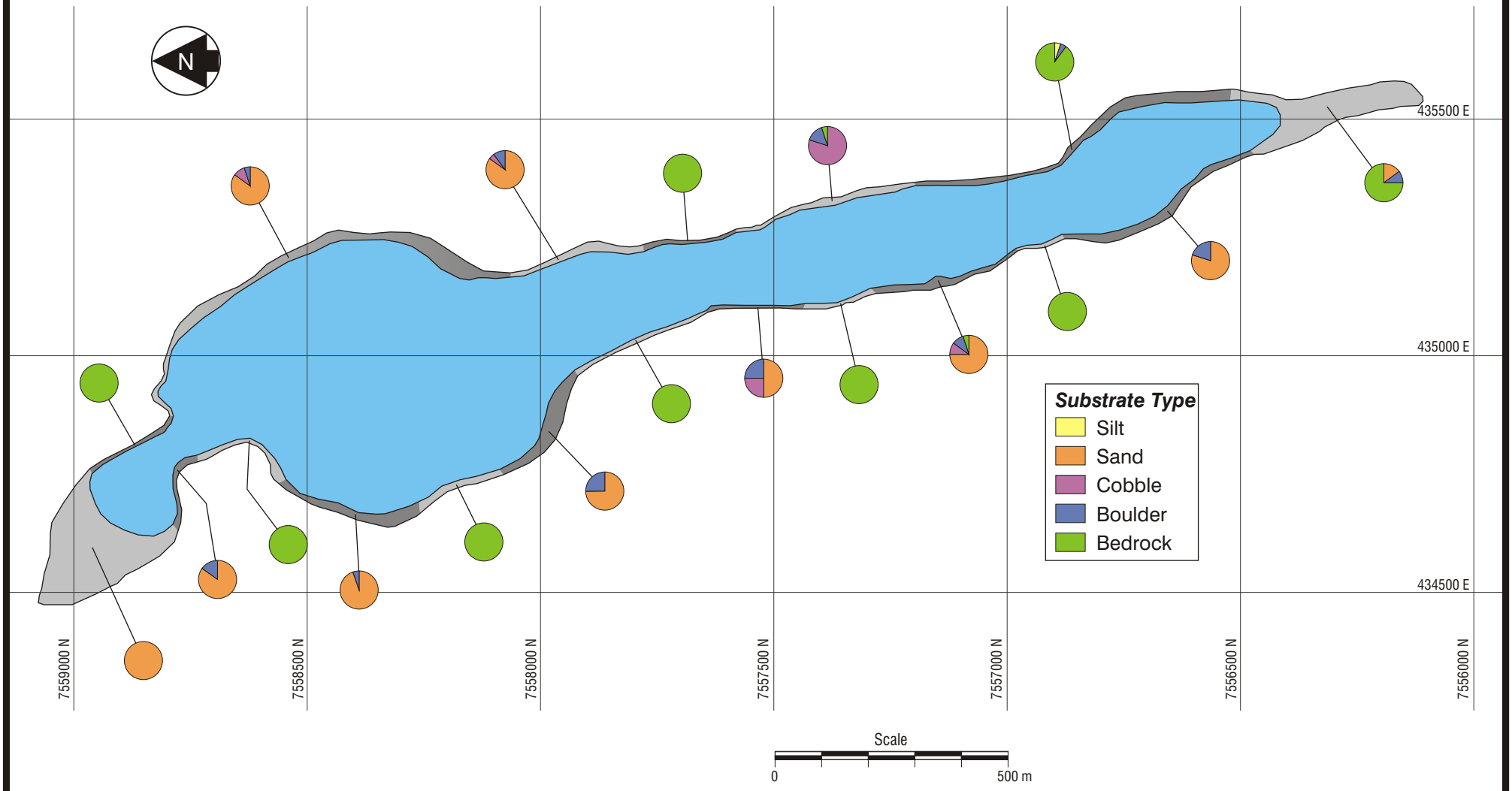
8.1.3 Tail Lake

Bathymetric survey data indicated that Tail Lake was 2.9 km in length and 0.77 km^2 in area. It attained a maximum depth of 6.5 m, with a mean depth of 3.1 m. The majority of the delineated littoral habitat zones from the 2000 aerial reconnaissance survey were comprised of sections of bedrock alternating with sections dominated by sand (Figure 8.4). There was virtually no silt along the shoreline areas. Lake trout was the only sportfish species captured in Tail Lake (Rescan 1997, 2001). Bedrock does not provide spawning, rearing, or feeding habitat for lake trout nor does it provide quality habitat for benthic invertebrates. These areas, therefore, were ranked as poor quality habitat (Figure 8.5). Sand, however, provides habitat for burrowing invertebrates and consequently good feeding areas for fish. Areas dominated by sand, therefore, have been ranked as fair habitat.

Two critical habitat components for the survival of lake trout populations are the availability of spawning substrate and nursery refugia (Marshall 1996). Lake trout commonly choose sediment-free cobble, boulders, and rubble for spawning (Fitzsimons 1996; Gunn et al. 1996). Cobbles and boulders also provide rearing habitat in the form of cover for young fish. Cobble was dominant in only one zone along the east shoreline of Tail Lake. It represented 80% of this section, with boulders and bedrock contributing 15% and 5%, respectively. This area likely would provide good spawning and cover habitat for lake trout, so it was ranked as excellent habitat (Figure 8.5). A small littoral section along the west shoreline was classified as good lake trout habitat, because the substrate was composed mainly of boulders and cobble. The portions of the littoral zone that were mostly sand with a mixture of cobble and boulders were rated as fair habitat quality.

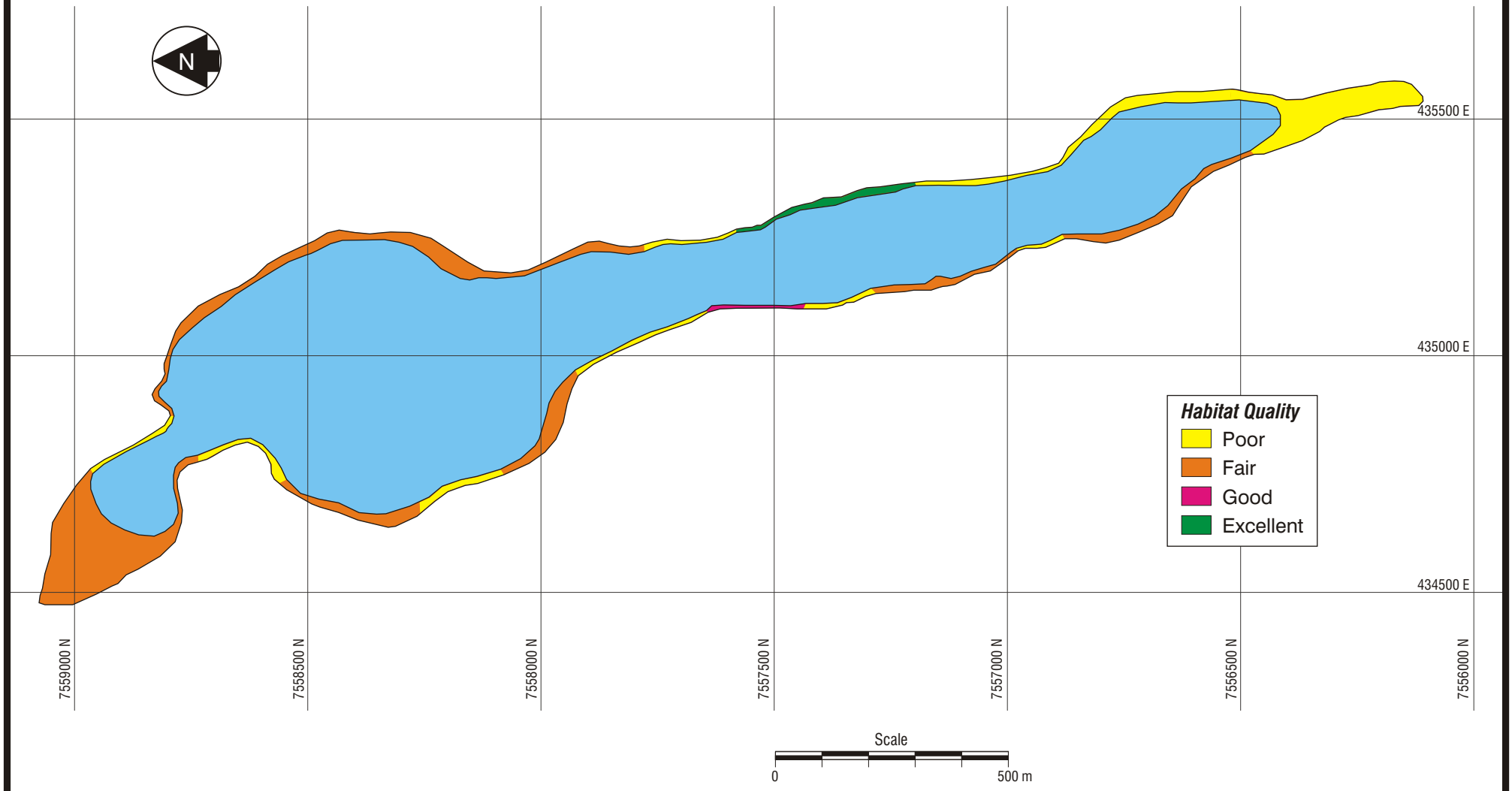
8.1.4 Little Roberts Lake

Little Roberts Lake (0.10 km^2 in area) is much smaller than Tail and Doris lakes but had a higher diversity of fish species including lake trout, lake whitefish, broad whitefish, Arctic char, and least cisco (Rescan 2001). The lake receives one outflow from each of Roberts and Doris lakes (Plate 1). Most of the shoreline was composed of vegetated flats based on observations from the August 2000 aerial survey. The littoral zone was dominated by silt mixed with some boulders (Figure 8.6). A small zone of sand was apparent to the west of the Doris Outflow mouth. Subsequently, the entire lakeshore habitat was ranked as fair habitat quality because of the dominance of silt and sand, which provide good feeding habitat (Figure 8.7). It is possible that fish living in Little Roberts Lake are



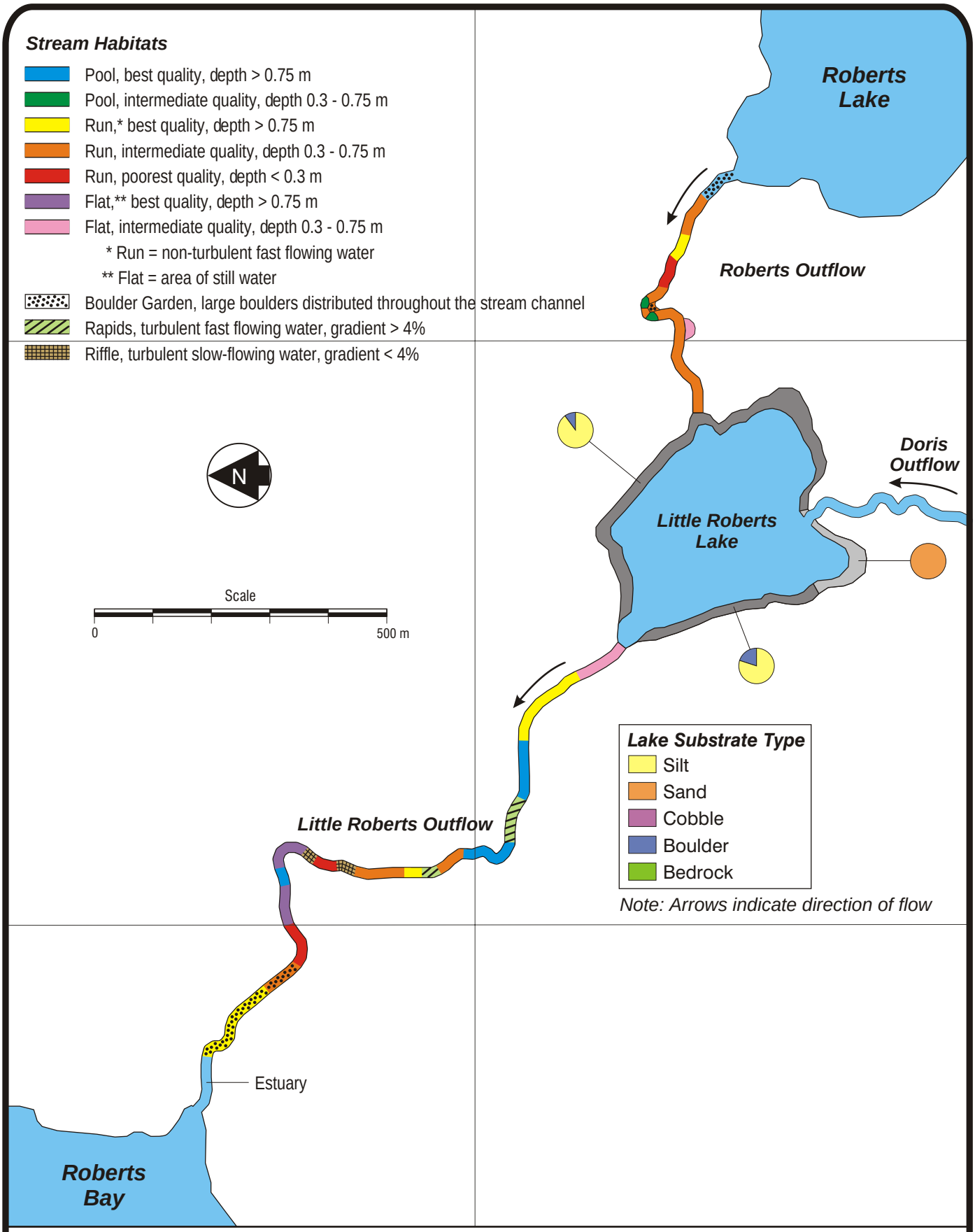
Tail Lake Habitat Assessment (Substrate Type), 2000

FIGURE 8.4



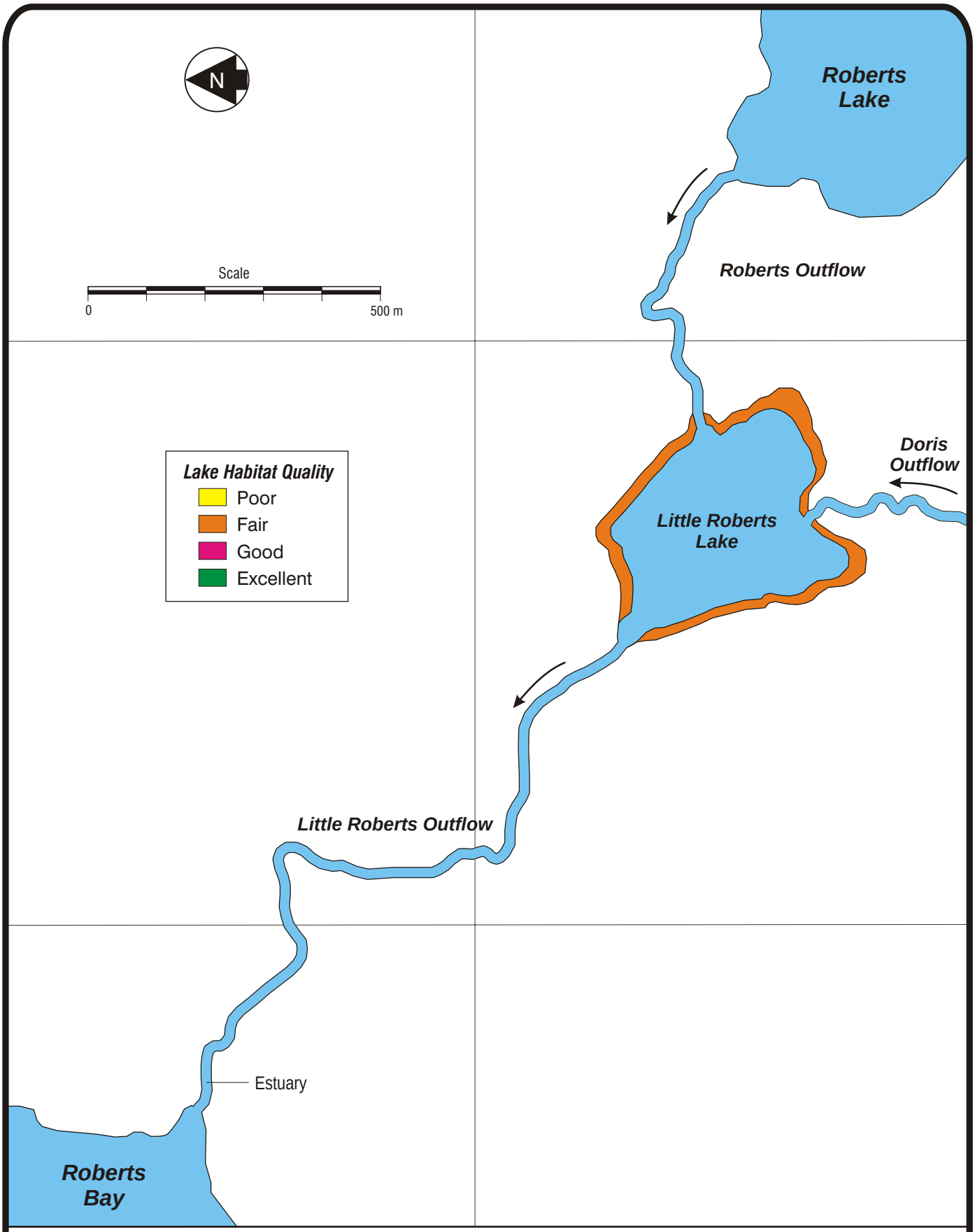
Tail Lake Habitat Assessment (Habitat Quality), 2000

FIGURE 8.5



Habitat Assessment of Little Roberts Lake, Roberts Outflow, and Little Roberts Outflow, 25 August 2000

FIGURE 8.6



Habitat Assessment of Little Roberts Lake (Habitat Quality), 25 August 2000

FIGURE 8.7

transient because of a lack of good fish habitat and/or its close proximity to Roberts Bay and Roberts Lake. However, the presence of juvenile fish in the captured sample of lake whitefish and Arctic char suggested that the lake is important as a feeding and rearing area, despite the apparent lack of cover in the littoral zone. The lake may also only be usable during the summer as it likely freezes to the bottom over winter.

8.2 STREAMS

8.2.1 Methods

Stream habitat surveys were conducted in the Doris Hinge area in 1995, 1996, 1997, and 2000. This involved visual characterization using a standard classification system during fish surveys in 1995, aerial assessments in 1996 and 1997, and detailed ground surveys carried out in conjunction with fish surveys in 1996, 1997, and 2000. The classification system used in collecting Arctic stream habitat data, including substrate assessment, is provided in Appendix E1. This system allowed the observer to visually quantify habitat units and quality using such key variables as water depth, velocity, and substrate type.

An attempt was made to survey streams between lakes or those connected to Roberts Bay, once during freshet (June-July) and once during lower flows (August). Streams connecting lakes were considered most important, and because of the connection to Melville Sound (Roberts Bay), streams were also assessed for migration potential. The site numbers assigned to streams in 1997 were used in this report to reference all streams assessed by air and ground between 1996 and 2000. As site coordinates were provided only for the 1996 survey, it is unknown whether the remaining assessments were done at the same locations from year to year.

Aerial surveys in 1996 and 1997 were conducted to determine the overall importance of lake inflow and outflow streams as fish habitat and to add streams not delineated on the maps. Streams were labelled as either ephemeral or permanent and reference photographs were taken of streams exhibiting very poor habitat. All other streams were given an identification number, photographed, and measured for approximate length using GPS waypoints. Some streams were assessed from the air in both 1996 and 1997, whereas some were ground surveyed in 1997 after an initial aerial assessment was done in 1996.

In 1996, habitat was characterized during ground surveys using several criteria including average water velocity, percent of runs/riffles/pools, bank vegetation, stream bank and substrate composition, and mean wetted width. Habitat was classified in three 100-m sections for each stream. Velocity was measured using the timed float method. The average of five wetted widths was taken to determine

the mean stream width. The remaining habitat parameters were visually estimated.

Methodology used for stream habitat surveys conducted in 1997 and 2000 were similar. Within each segment surveyed, instream habitat units (i.e., pools, runs, flats, riffles, cascades, and rapids) were quantified as a percentage of each surveyed segment. A series of habitat measurements was then collected for each habitat unit and averaged for the entire survey section. These parameters included:

- survey length;
- gradient;
- mean channel width;
- mean depth, maximum pool depth, and maximum riffle depth;
- streambed material composition (percent organic matter, silt, sand, small gravel, large gravel, cobble, boulder, and bedrock);
- total cover for fish, and percent from pools, boulders, cutbanks, macrophytes, and overhanging vegetation;
- streambed compaction and embeddedness;
- water temperature, colour, and stream stage; and,
- bank height, stability, substrate composition, and vegetative cover.

Stream habitat suitability for spawning, rearing, adult feeding, overwintering, and migration was qualitatively classified using a numerical scale of 0 to 4. Within this system, 0 = no fish habitat present, 1 = poor, 2 = fair, 3 = good, and 4 = excellent (Appendix E1).

Since the assessment methodology and habitat descriptions were similar and most detailed in 1997 and 2000, discussion of stream habitat is primarily based on the survey data and descriptions from these two years (Rescan 1998, 2001). Stream habitat data were collected for only four streams in 1996, and at a less detailed level than in the other years surveyed. Although the data have been included in Appendix E2, only stream velocity measurements are discussed in the results summary. Relevant observations from the 1995 Doris Lake watershed overview are also included in the discussion.

8.2.2 Doris Outflow (Sites #25 u/s and #25 d/s)

This approximately 3.7 km long stream connecting Doris and Little Roberts lakes was assessed for fish habitat from 1995 to 1997, and in 2000 at sites both downstream (#25 d/s) and upstream (#25 u/s) of the 2.3 m high waterfalls located approximately 400 m downstream of the lake. Stream discharge was visually estimated at 1.0 m^3/s in August 1995.

Fish habitat upstream of the waterfall was assessed over distances of 175 and 150 m in August 1997 and 2000, respectively (Appendix E2). Average velocity was measured at 0.86 m/s during the 1996 survey. It appears that the 2000 survey started at the lake outlet, whereas the 1997 survey may have started at least 100 m farther downstream. The stream had a low gradient and a well-defined single channel 2.5 to 3 m wide (1997 and 2000 surveys). Mean depth during the two surveys was 0.35 to 0.45 m at a moderate flow stage. Instream habitat was characterized by a series of rapids, riffles, and runs, with intermediate quality runs (depth of 0.3 to 0.75 m) dominating the August 2000 survey (Plate 2). Some shelf habitat (i.e., shallow flow over a bedrock outcrop) was also noted in the 1997 survey.

Sand and gravel were the predominant substrates within the stream section surveyed in 2000, whereas boulder and bedrock predominated at the site surveyed in 1997 (Appendix E2). Total cover varied from 25 to 75%, with boulders providing the most cover in 1997 (65%) and macrophytes/vegetation in 2000 (85%). Overall spawning and rearing habitat was considered fair to good, whereas overwintering habitat was generally poor to fair because of lack of depth, and adult feeding habitat was considered fair to good (Appendix E2). The waterfalls at the bottom of the site make Doris Lake inaccessible to migrating fish originating from downstream reaches (Plate 3). Electrofishing surveys resulted in the capture of lake trout, lake whitefish, and ninespine stickleback (Appendix D9).

The downstream fish habitat was assessed for a distance of 200 m within approximately 500 m of the lake in August 1997 (Appendix E2). Average velocity was measured at 1.25 m/s during the July 1996 survey. Although the stream was confined to a well-defined channel overall, instream bars were creating some areas of multiple channels. During the 1997 survey, the stream averaged 4.5 m in width and 0.45 m in depth at a moderate flow stage. Riffles and rapids dominated with an underlying streambed of boulder, cobble, and gravel. The total available cover was estimated at 75%, with boulders providing 65% of the total (Appendix E2). Rearing habitat was considered good, whereas spawning and feeding habitats were rated only as fair. Spawning habitat below the falls was considered abundant in August 1995, based on the availability of gravel substrates and shallow runs in close proximity to deep pools (Klohn-Crippen 1995). Overwintering habitat was considered poor because of the lack of depth. The highest diversity of fish species in the Doris Hinge streams occurred in this stream and included Arctic char, cisco, lake trout, lake whitefish, and ninespine stickleback (Appendix D10).

8.2.3 Doris Inflow (Site #04)

This approximately 2.6 km long tributary was surveyed over a 310 m distance near the lake in June 1997. It drains small headwater ponds, which are too

shallow to provide overwintering habitat for fish, through a marshy area before entering Doris Lake. The stream was in flood at the time of the survey, and was characterized at that time as having poorly defined multiple channels. The surveyed section flowed over terrestrial grass and organics through a series of plunge pools. It had an average depth of 0.3 m and mean wetted width of 4.1 m (Appendix E2). There was no available spawning, feeding, overwintering or migration habitat present, and rearing habitat was rated as fair. Ninespine stickleback were caught near the mouth (Appendix D9).

8.2.4 Tail Outflow (Site #03)

This approximately 600 m long stream flows into Doris Lake near the Doris Outflow. It was surveyed in downstream reaches in June 1997 and 2000 over distances of 270 and 100 m, respectively (Appendix E2).

The dispersed channel was located in a flooded terrace of sedges, willows, and macrophytes, with a mean width of 7.3 m and mean depth of 0.25 m at flood stage in 1997 (Plate 4). The surveyed section in 2000 had a mean width of only 0.45 m and similar depths at a moderate flow stage (Plate 5). The majority of stream habitat consisted of riffles (75 to 85%) combined with low quality runs (10 to 20%). Banks were low, stable, and well vegetated in 2000 (Appendix E2). Because of the organic bottom and lack of depth, spawning and overwintering habitat are not present. In addition, there was no observable feeding habitat, and migration and rearing habitat was considered to be minimal. One stickleback was observed at the mouth during electrofishing surveys.

8.2.5 Ogama Outflow (Site #22)

This outflow stream connects Ogama and Doris lakes over an approximate distance of 1.3 km. Stream sections of 300 and 200 m were assessed for fish habitat a short distance downstream of Ogama Lake in July 1996 and August 1997, respectively. Velocity measurements during the 1996 survey averaged 0.88 m/s over a 300 m stream section (Appendix E2).

Instream habitat in 1997 consisted primarily of deep runs and pools with occasional riffles (Plate 6). This 1.9 m wide, well defined, low gradient stream contained boulder, cobble, and gravel substrates. Average stream depth was 0.45 m, with pools in excess of 1.20 m depth. Instream cover was diverse, and provided mainly by boulders (45%) and pools (25%). Spawning, rearing, and feeding habitat suitability were rated as fair. There were no apparent barriers to fish migration between Doris and Ogama lakes. Mature lake trout and lake whitefish were caught in this stream, along with ninespine stickleback (Appendix D9).

8.2.6 Ogama Inflows (Sites #01, #06, #09, #14, and #20)

Five tributary inflows to Ogama Lake were assessed for fish habitat in July 1996, June 1997, and August 1997. Stream survey Sites #01, #06, #14, and #20 were all located on tributaries flowing into the south end of the lake. All but Site #20 were located upstream of unnamed lakes. Site #09 was a small inlet located at the northeast corner of the lake (Figure 8.1).

Sites #01 and #14

This unnamed tributary to the main inlet stream was assessed at two sites over a total distance of 260 m in June of 1997. Site #01 was located near the mouth, whereas Site #14 was upstream approximately 6.0 km and just below an unnamed lake (Figure 8.1). The stream was in flood stage during the surveys (Appendix E2).

The upstream site was characterized by a series of pools connected by shallow runs over terrestrial grass and organic matter (Plate 7). The channel was poorly defined and the pools became disconnected later in the summer. No suitable fish habitat was observed. The downstream site was deeper (mean depth of 0.70 m), and better defined despite being in flood stage. The stream flowed through a series of pools connected by riffles and runs before it discharged over a bedrock shelf and through rapids into the Ogama-Patch connector stream just upstream of Site #20 (Plate 8). The site was surveyed both above and within the rapids. The downstream site averaged 6.2 m in width and the substrate was dominated by bedrock and boulder. There was good spawning and rearing habitat available but no observable overwintering habitat. Good feeding habitat existed below the rock shelf. This shelf likely impeded upstream fish migration.

Fourteen lake trout were caught or observed below the rock shelf at Site #01, whereas only two ninespine stickleback were captured upstream at Site #14. A lake trout tagged at Site #01 in June 1997 was recaptured in Doris Lake in August 1997 indicating fish migration between lakes in this system (Appendix D9).

Site #06

This stream, which enters Ogama Lake from the southwest, was surveyed over a distance of 110 m in June 1997. It drains a small unnamed lake through an poorly-defined channel that flows into the eastern arm of Patch Lake (Figure 8.1). The stream was in flood at the time of the survey, and flowed over terrestrial grass, shrubs and organic matter. There was no observable fish habitat and fish migration between Patch Lake and the headwater lake was not possible (Appendix E2). No fish were captured during an electrofishing survey.

Site #09

This small inlet tributary was surveyed over a 130 m distance near its confluence with Ogama Lake in June of 1997 (Figure 8.1). The stream was at flood stage and was draining melt water through a poorly-defined channel. Similar to Site #06, it flowed over terrestrial grass, shrubs, and organic matter. There was no observable fish habitat and migration through the stream was not possible (Appendix E2). Two ninespine stickleback were caught at the mouth of the stream (Appendix D9).

Site #20

This primary inlet, which connects Ogama and Patch lakes, was surveyed in July 1996 and August 1997 within approximately 500 m of the lake. Average stream velocities during the 1996 survey were 0.52 m/s over a 300 m section. During the summer 1997 survey, the stream was characterized by a series of deep runs and pools interspersed with riffles and rapids at a moderate flow stage (Plate 9). This 2.1 m wide, low gradient stream had a diverse substrate that was dominated by sand (45%) with lesser amounts of boulder, cobble, and gravel (Appendix E2). Average stream depth was 0.5 m, with instream cover largely being provided by pools (60%). There was fair spawning and rearing habitat, good feeding habitat, and no observable migration barriers between lakes. Fish surveys in 1995, 1996, and 1997 resulted in the capture or observations of cisco, lake whitefish, lake trout, and ninespine stickleback (Appendix D9).

8.2.7 Patch Inflows (Sites #05, #07, #08 and #11)

Four tributary inflows to Patch Lake were assessed for fish habitat in June 1997. Stream survey Sites #05 and 11 were located on tributaries flowing into the northwest end of the lake. Site #07 was on a stream that originated from an unnamed lake to the south of Patch Lake, and Site #08 was located on the Wolverine Lake outflow (Figure 8.1).

Site #05

A 180 m section of this tributary was surveyed for fish habitat near its confluence with Patch Lake (Appendix E2). This stream was at flood stage as it drained a set of small ponds through a marshy area before discharging into Patch Lake. The surveyed section was characterized by an undefined shallow flow of water, approximately 3.1 m in width, over terrestrial grass and organic matter through a series of small plunge pools. The headwater ponds were too shallow to provide fish habitat, and stream migration was not possible. There was no observable spawning, overwintering, or feeding habitat, and rearing habitat was rated as poor. Eleven ninespine stickleback were captured by electrofishing near the mouth of the stream (Appendix D9).

Site #07

This stream was surveyed near its mouth. It drains a series of small ponds into Patch Lake. It was found to be in flood when surveyed in its lowest reach in June1997. Floodwaters from Wolverine Lake to the west were also flowing into the stream on the day of the survey. The surveyed section (220 m) was flowing through a few deep pools connected by shallow riffles (< 0.20 m) over terrestrial grass and organic matter (Appendix E2). The headwater ponds did not provide fish habitat and migration through the stream was not possible. There was no observable spawning, overwintering, or feeding habitat, and rearing habitat was rated as poor. Only one ninespine stickleback was captured near the mouth of the stream (Appendix D9).

Site #08

This tributary drains Wolverine Lake through a low-lying, large marshy area. The stream was in flood on the day of the survey. The 160 m long survey section was located just upstream of Patch Lake. The stream flowed over terrestrial grass and organic matter, forming shallow runs and riffles (Appendix E2; Plate 10). There was no suitable fish habitat observed and this tributary did not appear to provide a migration route between Patch and Wolverine lakes. An electrofishing survey resulted in the capture of 26 ninespine stickleback near the mouth of the stream (Appendix D9).

Site #11

This small tributary was in flood when surveyed on 22 June 1997; it drained a series of small ponds and a marshy melt water area into the northwest side of Patch Lake. The 90 m survey section was located in the lower reach. Water was observed to flow unconfined through small plunge pools connected by shallow runs over terrestrial grass and shrubs (Appendix E2). There was no observable feeding, spawning, or overwintering habitat, and rearing habitat was considered poor. The stream did not offer any migration potential and headwater ponds were too shallow to provide fish habitat. The lowest reach of the stream produced 30 ninespine stickleback during an electrofishing survey (Appendix D9) and four lake trout were observed in the lake near the stream mouth.

8.2.8 Windy Outflow (Sites #02 and #10)

This approximately 3.2 km long stream connecting Windy and Glenn lakes was assessed for fish habitat in 1996 and 1997 at both a downstream site (#10) and an upstream site (#02) (Figure 8.1). Stream velocity averaged 0.46 m/s over a 300 m section surveyed in July 1996.

The June 1997 survey at the upstream site was conducted within approximately 600 m of Windy Lake over a 360 m stream length. The downstream site was surveyed within approximately 500 m of Glenn Lake over a 170 m distance. Overall, the stream was found to be in high to flood stage. The outflow stream exits Windy Lake through a series of pools connected by runs and riffles. The upstream survey section (#02) had an average channel width of 2.9 m and was characterized by shallow runs and riffles between infrequent pools of fair to good quality (Appendix E2). Streambed composition was dominated by organic matter (65%), with lesser amounts of sand (10%), gravel (10%), cobble (10%), and boulder (5%).

Downstream of this section, stream flow dispersed into a low marshy area. Prior to entering Glenn Lake, the stream channel again became defined, containing pools, riffles and runs (survey section #10). The channel at this downstream site was wider (mean width of 4.5 m), with a higher percentage of run habitat (70%) and less riffle habitat (15%) than the upstream site. Substrate composition in the lower survey section was predominantly sand, organic matter, and boulders (Appendix E2). The marshy area midway along the outflow was considered to be a probable migration barrier to large fish. Spawning, rearing, and adult feeding habitat were considered good at both sites, whereas migration habitat within the surveyed sites was rated as fair, and no suitable overwintering habitat was observed.

Two mature lake trout and one juvenile Arctic char were caught at the upstream site (Appendix D10). The lake trout were probably Windy Lake residents, whereas the Arctic char was likely a migrant from Glenn Lake (Arctic char were not caught in Windy Lake). The nine mature lake trout captured or observed at the downstream site were believed to be residents of Glenn Lake (Appendix D9).

8.2.9 Windy Inflow (Site #13)

This short inlet tributary to the southern end of Windy Lake was assessed over a distance of 330 m on 23 June 1997. This stream drains a small unnamed lake through a low marshy area before discharging into Windy Lake (Figure 8.1). The stream was in flood at the time of the survey, with the survey section characterized by a dispersed and shallow (< 0.20 m deep) flow over terrestrial grass and organic matter (Appendix E2). Suitable fish habitat was not observed and migration potential was limited. In total, 51 ninespine stickleback were caught or observed in the lowest stream reach during backpack electrofishing in June 1997 (Appendix D9).

8.2.10 Glenn Outflow (Site #12 and #28)

This outlet connects Glenn Lake to Roberts Bay over a distance of 2.6 km. It was assessed for fish habitat in summer 2000 at a downstream site (#28) and in June 1997 at an upstream site (#12).

The upstream site (#12) was assessed on 23 June 1997. The surveyed section was 310 m in length and was located within 100 m of Glenn Lake. This well-defined channel averaged 3.1 m wide and contained a mixture of rapids, riffles, deep pools, and runs (Plate 11), with substrates dominated by boulder, cobble and gravel (Appendix E2). The surveyed section featured good spawning, rearing and adult feeding habitat and there were no observable barriers to migration. Two mature Arctic char and five mature lake trout were caught or observed at this site in June 1997 (Appendix D9).

The downstream site (#28) was assessed within approximately 800 m of Roberts Bay in June and August 2000, over distances of 300 m and 200 m, respectively. The stream was in flood in June, averaging 0.6 m in depth; at low flows in August, the stream averaged 0.3 m in depth (Appendix E2; Plate 12). This low gradient section of stream had a mean width of 3.5 m, with low to moderate quality runs and riffles dominating the instream habitat. During the spring survey, the substrate was comprised mainly of silt (45%), with lesser amounts of sand, gravel, cobble and boulder. Because of the high content of fines, embeddedness was also high (70%). The water was very turbid and grey in colour during the high flows of the spring survey. This outflow stream passes through a valley of eroded marine deposits, which add suspended solids to the stream causing this high turbidity, especially during freshet. Overall cover for fish was limited to 10-20%. Boulders provided 100% of the cover in the spring, whereas pools (25%), boulders (55%), cutbanks (5%) and macrophytes (15%) provided cover during the fall.

Fish habitat suitability was similar between seasons, with no overwintering habitat, poor spawning habitat, poor to fair feeding habitat, and good to excellent rearing and migration habitat. The Glenn Outflow provides a migration corridor from Roberts Bay for diadromous species such as Arctic char. Three juvenile and thirteen mature Arctic char, one juvenile lake trout, three slimy sculpin and four ninespine stickleback were caught or observed at this site in August of 1997 and 2000 (Appendix D9). The adult Arctic char were observed in a pool below the rapids.

8.2.11 Little Roberts Outflow (Site #26)

This outflow from Little Roberts Lake is the only connection between Roberts Bay and lakes such as Roberts and Pelvic to the east and Doris, Ogama and Patch

to the south (Figure 8.1). Stream habitat was assessed in August 1997 (Plate 13) and in June and August of 2000. Detailed habitat data were recorded for the August 1997 and June 2000 surveys (Appendix E2). A habitat map was produced based on the August 2000 survey (Figure 8.6). The 1997 survey was conducted within a 150 m section near the stream mouth, whereas the 2000 surveys included the entire stream length of approximately 1250 m.

The stream section surveyed in 1997 consisted of a series of rapids and riffles that terminated in a deep pool. The channel was well-defined. Substrate was dominated by boulder (80%), with lesser quantities of cobble, sand, and gravel (Appendix E2). The surveyed section had a mean depth of 0.45 m, with some pools nearing 2.0 m in depth. Fish habitat suitability was considered good for spawning, rearing and migration; however, adult feeding and overwintering habitat quality was fair. Ten juvenile Arctic char, three juvenile lake trout and eleven ninespine stickleback were caught at this site in August 1997 (Appendix D9).

The entire stream was assessed for fish habitat in June 2000 (Appendix E2). This low gradient outflow had a mean width of 18.0 m, with stable and well-vegetated banks that were 3.5 m in height. Instream habitat types were diverse and consisted of high quality pools (15%), runs (50%) and flats (20%), interspersed with rapids, riffles and chutes. Stream substrate was dominated by cobble (45%), with a mixture of boulder, silt, sand and bedrock (Figure 8.6). Erosion of marine sediments along the channel contributed to the high turbidity observed.

The survey conducted at low flows in August reflected similar habitat quality, except for the presence of some lower quality runs and the presence of boulders at the mouth. There was also an approximately 100 m long section of flat habitat in the farthest upstream area. Deep runs and lack of barriers provided for a good migration corridor for Arctic char. The diversity of instream habitats and substrates created good to excellent spawning, rearing and adult feeding habitat. Overwintering habitat was considered poor.

No fish were caught during an electrofishing survey conducted in August. The presence of juvenile Arctic char in 1997 combined with the capture of 29 Arctic char in Little Roberts Lake in August of 2000 indicated the importance of stream and lake habitat in the Little Roberts Lake system for diadromous Arctic char.

8.2.12 Roberts Outflow

This 600 m long outflow connects Roberts and Little Roberts lakes (Figure 8.1). Its entire length was surveyed in June and August of 2000 and mapped based on the latter survey (Figure 8.6). Detailed habitat data were only provided for the

June 2000 survey (Appendix E2). This stream was assessed because it is the suspected migratory route for Arctic char that may overwinter in Roberts Lake.

This low gradient stream was at freshet flows and exhibited high turbidity in June 2000. The stream averaged 13.0 m in width, with 2-2.5 m high banks that were very stable and well-vegetated (> 85%). Instream habitat was dominated by high quality runs (50%) and flats (30%) greater than 0.75 m deep, with rapids and high quality pools accounting for the remaining habitat (Figure 8.6). Silt dominated the substrate (50%), with lesser amounts of organic matter (15%), boulder (15%), cobble (10%) and sand (10%) (Appendix E2). Pools provided 80% of the total cover (45%) for fish. Lower water levels in August reduced much of the run habitat quality to intermediate. At the stream mid-point, there were pools and flats ranging in depth from 0.30-0.75 m. The uppermost 75 m section consisted of a boulder garden habitat (Plate 14), which may hinder fish migration during low flow periods (H. Wilson, Miramar Hope Bay Ltd., pers. comm.).

Similar to Little Roberts Outflow, Roberts Outflow provided good habitat for spawning, rearing and adult feeding, whereas overwintering habitat was rated as poor.

8.2.13 Other Streams

Streams that were aerially assessed in 1996 and 1997 and found to be either ephemeral, draining melt water into lakes, or considered to be poor fish habitat are indicated on Figure 8.1. Surveys in 1996 classified tributaries #5, #7, #8, #11, #13, #16, #18, #21, #23 and #24 as run off. Tributaries #5, #7, #8, #11 and #13 were also surveyed on the ground in 1997 (see sections 8.2.7 and 8.2.9). Ground surveys confirmed the lack of distinct channels in these flooded areas in June 1997; ninespine stickleback were the only fish caught in the lower reaches or at stream mouths.

Helicopter surveys in 1997 further confirmed that streams #16, #21, #15, and #27 were not suitable fish habitat as they were melt water streams, with water dispersed over terrestrial vegetation. Flow was not apparent in streams #17, #18, and #19. Streams #23 and #24 were confirmed to be seasonally flowing (during freshet only), but high gradient systems.

8.3 ROBERTS BAY

The shoreline of Roberts Bay was surveyed by helicopter in August 2000. Notes were taken on the composition of the marine substrate/sediments as well as the suitability of habitat for fish and aquatic organisms. Substrate types included the five types used in lake assessments (silt, sand, cobble, boulder, bedrock) plus

gravel. Habitat quality ratings were based upon the available cover for fish and invertebrates, substrate suitability for feeding/foraging, and the suitability of substrate for marine benthic invertebrates.

Benthic invertebrates tend to be more common in areas with higher proportions of sand or silt when compared to areas dominated by large boulders or bedrock. Boulders and bedrock do, however, provide habitat for sessile organisms (permanently attached to substrate) and cover for fish. General habitat quality was rated into four subjective types: poor, fair, good and excellent. By using the map depicting the substrate composition of each zone, a corresponding map of habitat quality ratings was produced. Similar to the lake rating system, if two substrate types were present, the most abundant substrate was used for rating habitat quality. Where three or more substrates were present, a weighted average was used to rank habitat quality.

The shoreline environment of Roberts Bay is subject to small tidal fluctuations of approximately 30 cm or less (Canadian Hydrographic Service). Tidal data were available for Igaluktuutiak (Cambridge Bay, approximately 150 km northeast) and Kugluktuk (Coppermine, approximately 350 km west). These two areas have notably different tidal patterns; Igaluktuutiak experiences semi-diurnal tides, whereas Kugluktuk undergoes mainly diurnal tides. The tidal cycle at Roberts Bay is likely intermediate between these areas. It was apparent from the August 2000 aerial survey that water height varied only slightly in Roberts Bay, with steep bedrock areas exhibiting minimal tidal variation, and flatter beach areas showing more variation. Considering the small degree of tidal fluctuation in Roberts Bay, it is likely that other physical forces (e.g., waves, storms, and ice scouring) influence the physical habitat of shoreline and littoral areas more than tides.

According to Rescan (2001), marine species that may use Roberts Bay include Arctic cod and sand lance. Other species such as Arctic char, Arctic cisco, least cisco, and broad whitefish that live in both freshwater and marine environments are also probable inhabitants of Roberts Bay. Some of these species will spend most of their life either at sea or in freshwater. Arctic char, Arctic cisco, and least cisco are diadromous, as they spawn in freshwater and then return to sea. The larvae of the migratory forms of the least cisco will move downstream to the sea after hatching (Scott and Crossman 1973), whereas young Arctic char may not return to sea until they are 5 to 7 years old (Grainger 1953). Broad whitefish, although mainly freshwater, can occasionally be found in brackish water. The majority of these fish species spawn in freshwater, and therefore, do not use the marine environment for spawning. The major potential for habitat use in Roberts Bay by most fish species is for rearing and feeding. As a result, habitats that provide good cover and food items were rated as high quality habitats.

Figure 8.8 presents the results from the Roberts Bay shoreline substrate habitat survey. The shoreline habitat map derived from the substrate survey is presented in Figure 8.9. The habitat ratings are qualitative because a large area was surveyed without detailed groundwork.

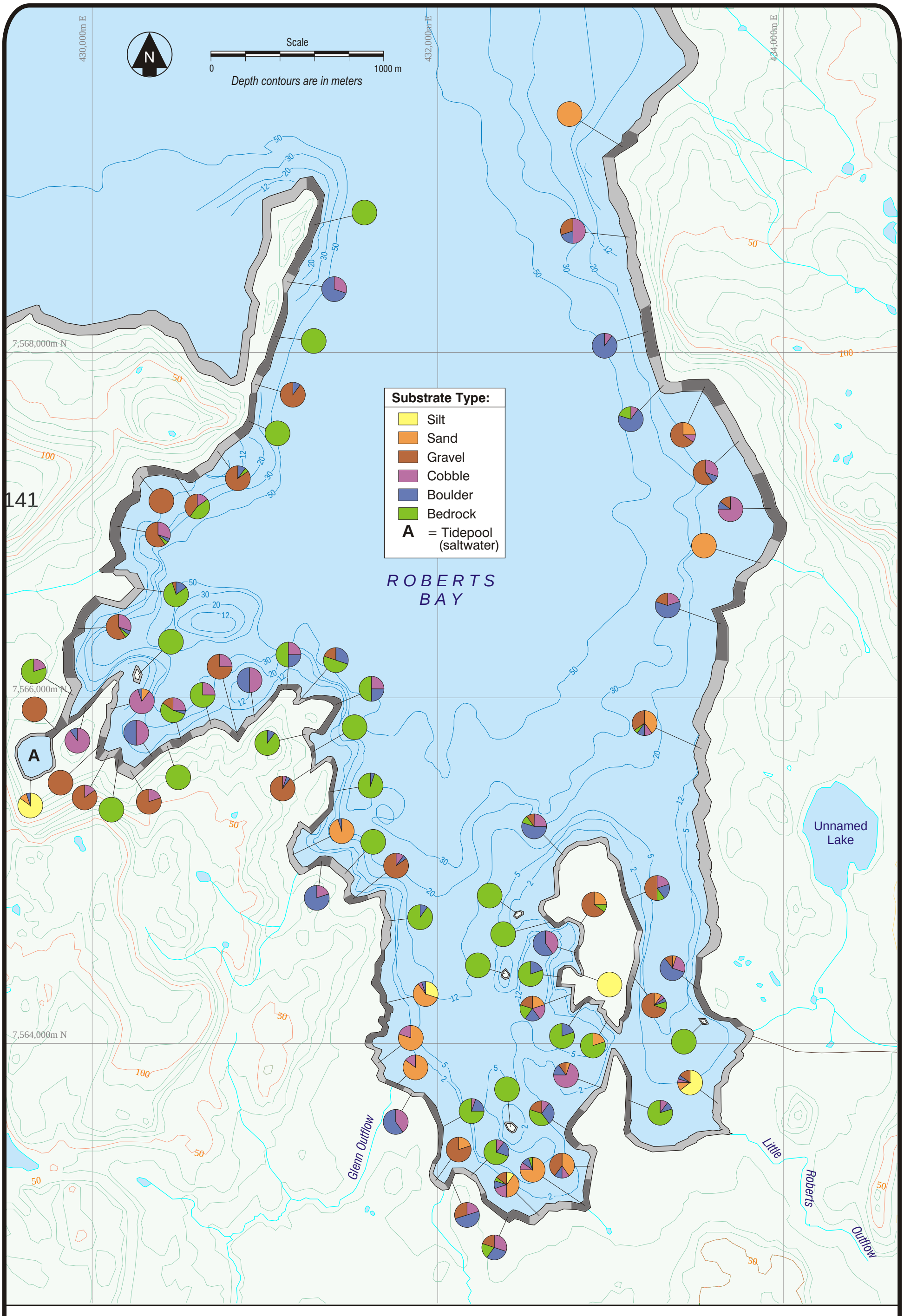
Roberts Bay is dominated by cliffs up to 50 m in height along both its northern and western shorelines (Plates 15 and 16). The eastern and southern areas of Roberts Bay are more gradually sloped and contain numerous lake outflows. Cliff areas generally were devoid of terrestrial vegetation but the gently sloped valleys had lush growths of reeds, grasses, and other vegetation (see terrestrial vegetation legend on Figure 8.9). However, none of this vegetation was observed to be growing in or over the water, and therefore, did not provide habitat for aquatic organisms.

Along the northwest peninsula, shoreline substrate was primarily bedrock mixed with pockets of boulders, cobble, and gravel. This littoral habitat was considered poor to fair for fish and aquatic organisms, as it provides little or no cover but is suitable for colonization by some benthic organisms such as small benthic invertebrates, anemones, and barnacles.

The proportion of gravel increased to the south and was the dominant substrate at several sites. Sand was sparse, but its limited presence allowed for potential colonization by small burrowing organisms, which may subsequently provide food for fish. Boulders and cobble provide potential cover for fish. Near-shore areas containing a mixture of these substrates were rated as good habitat for fish and marine benthic invertebrates.

A small tidal pool connected to the bay was observed along the western portion of Roberts Bay (marked A on Figures 8.8 and 8.9). This tide pool had primarily silt and sand substrates that were considered as potentially important habitat for marine benthic invertebrates. As a result, this area was rated as good habitat for fish and invertebrates. The availability of habitat for small burrowing invertebrates was greater here than in the near-shore zones to the north and this area could potentially contribute an important food source for fish.

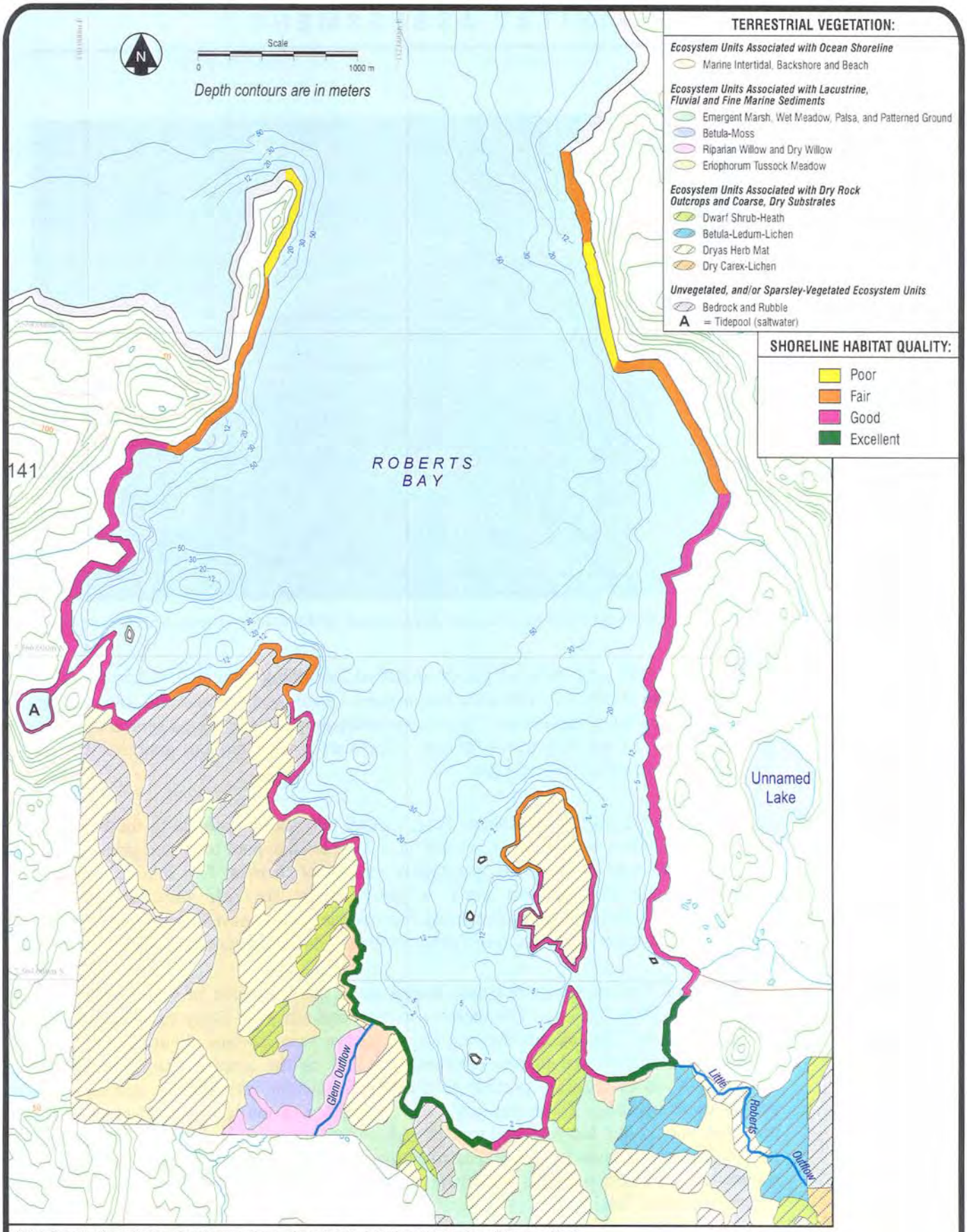
Moving southeast from the tidal pool around the western shoreline, habitat quality changed from good to fair. This was due to the increase in bedrock, although pockets of cobble and boulder were still prevalent. Continuing down the western shoreline into the more gently sloped areas, the proportion of gravel, sand and silt increased (Plate 17). The increase in such substrates was likely the result of the multiple outflows (e.g., Glenn and Little Roberts outflows) draining into the southern tip of Roberts Bay. Fish that inhabit both fresh and marine environments heavily utilize outflow areas. Areas of silt, sand, and gravel usually



Roberts Bay Shoreline Substrate Composition, 2000

FIGURE 8.8

Source: Canadian Hydrographic Services



Note: Results of previous terrestrial mapping are included for additional information (Rescan, 1998).

FIGURE 8.9

Marine Shoreline Habitat Assessment for Roberts Bay, Hope Bay Belt, 2000

provide good habitat for benthic invertebrates that are prey for fish. These outflow areas were rated as excellent habitat for fish and marine organisms because they are important to diadromous fish and the mixture of shoreline substrate types provided for areas of feeding and refugia. Overland run-off and outflows of freshwater may also provide nutrients, which benefits marine algae and ultimately invertebrates and fish. The outflow from the unnamed lake on the east side of Roberts Bay was disconnected from the lake during the August 2000 survey (Plate 18).

Gravel, sand, and silt were the main substrate types along the southern portion of the eastern shoreline of Roberts Bay, whereas cobble and boulders were more prevalent in the northern areas. This shift to larger substrate types was accompanied by a decrease in shoreline vegetation and increase in surrounding slope (Plate 19). Much of the southern portion of the eastern shoreline was rated as good habitat because of the availability of cover and suitable habitat for fish and marine organisms. The northern portion of this shoreline was rated as poor to fair, because it did not appear to provide much cover for fish or suitable substrate for marine benthic organisms.

Boulders and gravel dominated the northern shoreline of the large island at the south end of Roberts Bay, whereas gravel and bedrock mixed with some silt and cobble dominated the southern shoreline. Habitat quality ratings for fish and marine organisms ranged from fair at the northern end to good at the southern end.

A brief reconnaissance of the Little Roberts Outflow was conducted at its confluence with Roberts Bay in 1995. A shallow water shelf extended several hundred metres into the bay. This type of habitat provides important refugia and travel corridor areas for both marine and diadromous fish.

8.4 SUMMARY

8.4.1 Fish Habitat in Lakes

The shoreline or littoral zones of Doris, Tail, and Little Roberts lakes were aerially assessed and mapped in 2000. The surveys included mapping of near-shore substrates and assessments of habitat quality for lake trout and coregonid fish species.

Doris Lake had the highest diversity of littoral substrate types, with patches of boulder and cobble scattered along the eastern and western shorelines among areas of bedrock; substantial areas of sand were located along the southern shoreline. Since sand, cobble, and boulder provide fair to high quality habitats

(e.g., spawning, rearing, and feeding) for lake trout and coregonids, Doris Lake was considered to have the most suitable shoreline habitats of all lakes surveyed.

The littoral zone of Tail Lake was rated as poor to fair habitat for lake trout and coregonids based on a dominance of bedrock substrates. Little Roberts Lake had the least diverse littoral habitat, with silt and sand dominating. The entire shoreline was rated as fair quality fish habitat as these substrates provided some feeding habitat. Despite the rating of only fair, Little Roberts Lake had the highest diversity of fish species within the sampled Doris Hinge lakes, likely due to the unobstructed passage of diadromous species from Roberts Bay.

8.4.2 Fish Habitat in Streams

Stream habitat assessments were conducted at 17 stream sites between 1996 and 1998. An additional four stream sites were visually assessed from the air. Detailed habitat maps were elaborated for two streams (Roberts Outflow and Little Roberts Outflow) in 2000.

Streams that interconnect lakes or flow into Roberts Bay appeared to support the highest diversity of fish habitat for rearing, adult feeding, spawning, and migration. The associated lakes likely provided overwintering habitat, which was typically lacking within streams due to shallow depths.

Most of the small inflow tributaries that did not feature a lake or pond upstream were found to be either ephemeral, run-off from melt waters, or provided only marginal rearing and feeding habitat near their mouths. Most lake outflows had a wide diversity of instream habitats with riffles and runs dominating, along with lesser quantities of rapids in half of the outflows. Migration habitat was rated as good to excellent at Glenn, Ogama, Little Roberts and Roberts outflows, but was rated as fair in the Windy Outflow. The outflow from Tail Lake provided marginal fish habitat, including virtually no migration corridor to Doris Lake downstream. The outflows from Roberts and Little Roberts lakes also provided adult feeding, rearing, and spawning habitat to populations of Arctic char that are suspected to overwinter in Roberts Lake. Although Doris Outflow was diverse in fish habitat and species, a 2.3 m high waterfall located approximately 400 m downstream of the lake prevented upstream migration. As a result, the fish populations in Doris Lake are isolated from diadromous migrants from Roberts Bay.

8.4.3 Fish Habitat in Roberts Bay

The assessment of habitat quality for fish and benthic marine organisms in near-shore areas of Roberts Bay was mainly based on aerial observations and mapping of substrate distribution.

The rocky nature of the northwest shoreline provided poor to fair habitat for fish and marine benthic organisms. It provided little cover for fish but some substrate for the colonization of small benthic organisms, anemones, and barnacles. Along the southern shoreline, especially around the mouths of Glenn and Little Roberts outflows, habitats were considered good to excellent for fish and marine benthic organisms because of fine substrates that supported benthic growth and provided feeding areas for fish. These areas were deemed particularly important habitat for diadromous fish as stream waters locally modified the salinity of the marine environment.

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10.0 CLOSURE

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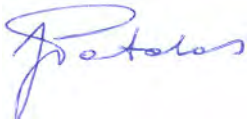
Yours truly,

GOLDER ASSOCIATES LTD.

Project Biologist:



Jacek Patalas, B.Sc., P.Biol.
Fisheries Scientist

Reviewer:

Gary Ash, M.Sc., P.Biol.
Senior Fisheries Biologist

PHOTOGRAPHIC PLATES

Plate 1. Aerial view of **Little Roberts Lake**. The Doris Outflow is located on the left, the Roberts Outflow at the bottom right, and Little Roberts Outflow at the top.

Plate 2. Run habitat in **Doris Outflow (Site # 25 u/s)** near the mouth of Doris Lake.

Plate 3. **Doris Outflow (Site # 25 d/s),** July 1996, showing waterfall downstream of Doris Lake.

Plate 4. **Tail Outflow (Site # 03)**, 20 June 1997. Dispersed flow through terrestrial grasses and shrubs.

Plate 5. **Tail Outflow (Site #03)** channel flowing through a flooded terrace filled with sedges and macrophytes. The stream channel was very narrow (0.45 m on average).

Plate 6. **Ogama Outflow (Site #22)**, 15 August 1997, showing a series of riffles and runs through a boulder garden. Mature and juvenile fish were captured throughout this stream.

Plate 7. **Ogama Outflow (Site #14)**, 23 June 1997, showing the dispersed flow through terrestrial grasses.

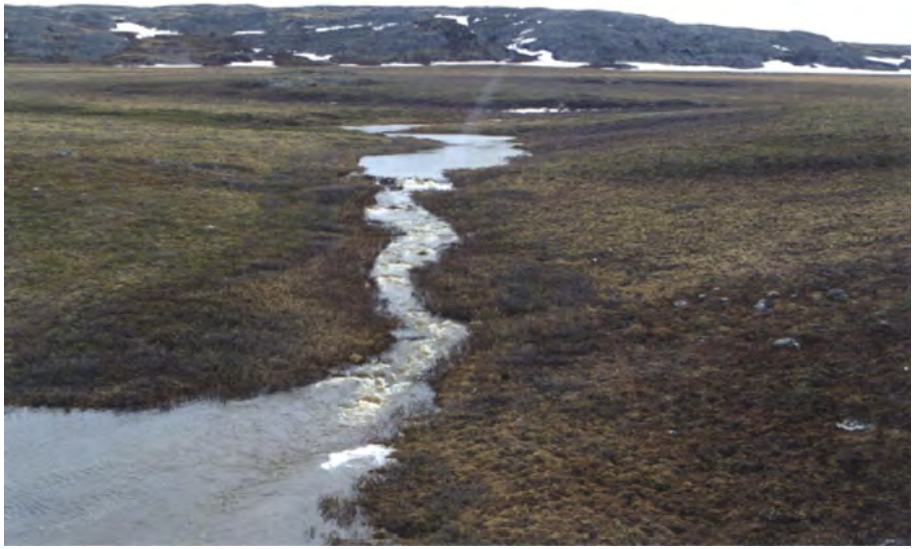


Plate 8. **Ogama Inflow (Site #01)**, 20 June 1997. Adult lake trout were found in the rapids, but no fish were captured in the upstream pools.

Plate 9. **Ogama Inflow (Site #20),** 14 August 1997, showing run and riffle habitat. The esker visible in the lower right corner provided sand and gravel substrate for the stream.

Plate 10. **Patch Inflow (Site #08),** 21 June 1997, showing the dispersed flow that was characteristic of this stream for the entire length.

Plate 11. **Glenn Outflow (Site #12)**, 23 June 1997, showing riffles and rapids flowing through marine sediment deposits, features found throughout this stream. Arctic char and lake trout were caught in this stream section.

Plate 12. Glenn Outflow (Site #28), 15 August, 1997, showing riffles and rapids flowing through marine sediment deposits. Juvenile Arctic char and lake trout were caught in this stream section.

Plate 13. Little Roberts Outflow (Site #26), 14 August 1997, showing the origin at Little Roberts Lake. This stream contained juvenile Arctic char and lake trout, indicating there may be a sea-run population of Arctic char using Little Roberts Lake.

Plate 14. Aerial view of **Roberts Lake** and **Roberts Outflow**. Boulder gardens cover the first habitat unit at the upstream section of Roberts Outflow.

Plate 15. View of western side of **Roberts Bay** looking north. While southern portions were vegetated and gently sloping, northern areas consisted primarily of bedrock cliffs over 50 m in height.

Plate 16. Close-up view of bedrock area characteristic of the northern portions of **Roberts Bay.**

Plate 17. View from southern area of **Roberts Bay** looking eastward. Sediments in this area were dominated by sands and silts. Silt (light brown area) is clearly visible towards the shoreline.

Plate 18. View of the disconnected outflow from the unnamed lake located on the eastern rim of **Roberts Bay.**

Plate 19. View from the southern island in **Roberts Bay** looking towards the eastern side. This view shows the shift from gently sloped, vegetated areas dominated by fine grained sediments in the southern areas, to more steeply sloped, non-vegetated areas dominated primarily by bedrock in the north.

Appendix A1. Summary of water quality and sediment sampling methodologies used in the Doris Hinge area, 1995-2000.

Parameter		Sampling Year				
		1995[a]	1996[b]	1997[c]	1998[d]	2000[e]
Lakes	**Limnology Methods**	YSI 51 B dissolved oxygen meter with a 30 m probe	UK	Precalibrated YSI 58 DO meter with a 50 m probe; profile measured at the deepest part of the lake.	Precalibrated YSI 58 DO meter with a 50 m probe; profile measured at the deepest part of the lake.	Precalibrated YSI 52 DO/T meter with a 50 m probe; profile measured at the deepest part of the lake.
	Water Quality Methods	Grab samples at surface 2 L Aquatic Research Instruments sampler for depth sampling	2 L acid-washed Go-Flo bottle for surface and depth sampling	5 L Go-Flo bottle for 1 m and depth samples Nutrient samples field-filtered and stored frozen Other samples kept cool and dark	5 L Go-Flo bottle for 1 m and depth samples Nutrient samples field-filtered and stored frozen Other samples kept cool and dark	5 L Go-Flo bottle for 1 m and mid-depth samples Samples kept cool and in the dark
	Number of Sample Days[6]	Doris - 6, Tail - 1, Ogama - 4, Patch - 5, Windy - 5, Little Roberts - 4	Doris - 2, Tail - 1, Ogama - 1, Patch - 2, Windy - 1 , Little Roberts - 1	Doris - 2, Tail - 2, Ogama - 2, Patch - 2, Wolverine - 2, Windy - 2 , Little Roberts - 1, Pelvic -1	Doris - 1, Tail - 1, Ogama - 1, Patch - 1, Wolverine - 1, Windy - 1, Pelvic -1	Doris - 2, Tail - 2, Ogama - 1, Windy - 1, Pelvic -2
	North/South Lake Sampling[7]	Yes - Doris, Patch	No	No	No	No
	Depth Sampling within Lakes[7]	Yes	Yes	Yes	Yes	Yes
	Sediment Quality Methods	NA	Ekman grab sampler, samples divided into 0-1 cm and 1-3 cm fractions	Ekman grab sampler, sample examined for texture and colour, top 2 cm transferred to Ziploc bags and frozen	NA	NA
Streams	**Stream Water Quality Methods**	NA	Grab samples just below surface, sample bottles triple-rinsed	Grab samples just below surface using clean plastic bottles, sample bottles triple-rinsed	NA	Depth-integrated samples - sample bottle lowered from surface to stream bottom
	Number of Sample Days[f]	NA	Doris OF - 2, Tail OF - 2, Ogama OF - 2, Patch OF - 2, Windy OF - 2, Little Roberts OF - 2	Doris OF - 2, Tail OF - 3, Ogama OF - 3, Patch OF - 3, Windy OF - 3, Little Roberts OF - 3, Pelvic OF - 3	NA	Doris OF - 2, Tail OF - 2, Pelvic OF - 2
Marine	**Water Quality Methods**	NA	2 L acid-washed Go-Flo bottle for surface and depth sampling	5 L Go-Flo bottle for 1 m and depth samples Nutrient samples field-filtered and stored frozen Other samples kept cool and dark	5 L Go-Flo bottle for 1 m and depth samples Nutrient samples field-filtered and stored frozen Other samples kept cool and dark	NA
	Sediment Quality Methods	NA	Ekman grab sampler, samples divided into 0-1 cm and 1-3 cm fractions	Ekman grab sampler, sample examined for texture and colour, top 2 cm transferred to Ziploc bags and frozen	Ekman grab sampler, sample examined for texture and colour, no chemical analyses	No sediments collected - surveyed area consisted of hardpan, boulder and gravel
QA/QC	**Split Samples[g]**	Yes	Yes	Yes	Yes	No
	Replicates[g]	No	Yes	Yes	Yes	Yes
	Travel/Field Blanks[h]	Yes	No	Yes	Yes	Yes
	Inter Lab Sample	Yes	No	No	No	No
	Analytical Laboratory(ies)[i]	Spring – ASL Early August – ERI and ESL Late August - ASL	Water - ASL, ERI Sediment - ERI	Dissolved nutrients (water) - UBC Physical parameters, dissolved ions and metals (water) -ASL Sediment - ASL	Dissolved nutrients (water) - UBC Physical parameters, dissolved ions and metals (water) -ASL	ASL

Notes: NA = not applicable (not sampled during that year); UK = unknown (methods not described in report); OF = outflow

[a] For a complete description of methods, see Klohn-Crippen (1995)

[b] For a complete description of methods, see Rescan (1997a)

[c] For a complete description of methods, see Rescan (1997b)

[d] For a complete description of methods, see Rescan (1998)

[e] For a complete description of methods, see Rescan (2001)

[f] Sample day = number of individual samples/lake - incorporates multiple samples/depths for each day and does not count QA/QC samples

[g] See Appendices A4, A5, A8, and A9 for raw data

[h] See Appendix A3 for QA/QC data

[i] ASL= Analytical Service Laboratories, Vancouver; ERI = Elemental Research Inc., Vancouver; UBC = University of British Columbia, Vancouve

Appendix A2. Analytical Detection Limits

A detection limit is the lowest concentration that an analytical laboratory can determine for a specific method of analysis. Concentrations that are reported as less than the detection limit are too low to be accurately measured. For example, a concentration that is reported as <10 mg/L is equivalent to a concentration that is between 0 to 10 mg/L.

Analytical laboratories that perform water/sediment quality analyses typically publish their detection limits for each parameter and the method of analyses. Published analytical method detection limits were provided for water quality analyses in only a few of the reports integrated within this document. Method detection limits may vary by parameter and may change depending on the sample matrix (for example, detection limits may increase if samples contain high concentrations of suspended solids) and laboratory method used. Consequently, the reported detection limits accompanying laboratory results may vary. For this report, a range of method detection limits (MDL) is provided in Table A2.1, which integrates both the published and reported analytical detection limits for the entire monitoring period. For some parameters, the published method detection limit and/or the reported detection limit is unavailable (i.e., was not published in the reports and is not documented within laboratory results). As a result of the pre-concentration step necessary for the removal of seawater matrix, detection limits for most metals are normally lower than those for freshwater samples.

Table A2.1 Detection Limits for Water Quality Analysis in Doris Hinge Area, 1995-2000.

Group	Parameter (units)	Published [a,b]		Reported [c]	
		Min	Max	Min	Max
Physical Parameters	Conductivity (µS/cm)	2	2	2	2
	Total Dissolved Solids(mg/L)	1	1	1	10
	Hardness ($CaCO_3$) (mg/L)	0.05	0.05	0.05	1
	PH (units)	0.01	0.01		
	Total Suspended Solids (mg/L)	1	1	1	3
	Turbidity (NTU)	0.1	0.1	0.1	0.1
Conventional Parameters	Acidity ($CaCO_3$) (mg/L)	1	1	1	1
	AlkalinityTotal ($CaCO_3$) (mg/L)	1	1	1	1
	Alkalinity to pH 4.5 (mg/L)	*1*	*1*	1	1
	Bicarbonate Alkalinity (mg/L)	*1*	*1*	1	1
	Carbonate Alkalinity (mg/L)	*1*	*1*	1	1
Major Ions (dissolved)	Bromide (mg/L)				
	Chloride (mg/L)	0.5	0.5	0.5	0.5
	Silicate (mg/L)	*1*	*1*	0.1	1
	Fluoride (mg/L)	0.02	0.02	0.02	20
	Sulphate (mg/L)	1	1	0.1	1
	Calcium (mg/L)	0.05	0.05		
	Potassium (mg/L)	*2*	*2*		
	Magnesium (mg/L)	*.05*	*.1*		
	Sodium (mg/L)	*2*	*2*		
Major Ions (total)	Calcium (mg/L)	0.05	0.05	0.05	0.05
	Potassium (mg/L)	*2*	*2*	0.001	2
	Magnesium (mg/L)	0.05	0.05	0.05	0.1
	Sodium (mg/L)	*2*	*2*	0.01	2
Nutrients	Ammonia Nitrogen (mg/L)	*.005*	*.005*	0.005	5
	Dissolved Nitrate (mg/L)	0.001	0.001	0	5
	Dissolved Nitrite (mg/L)	0.001	0.001	0.001	1
	Nitrite/Nitrate (mg/L)	*.005*	*.005*		
	Dissolved Silicate (mg/L)	*1*	*1*		
	Dissolved Phosphate (mg/L)	0.001	0.001	0.001	0.002
	Dissolved ortho-Phosphate (mg/L)	*.001*	*.001*	0.001	0.002
	Phosphorus, Total (mg/L) (ICP)	*.3*	*.3*	0.05	0.3
	Phosphorus, Dissolved (mg/L) (ICP)	*.3*	*.3*	0.05	0.3

Group	Parameter (units)	Published [a,b]		Reported [c]	
		Min	Max	Min	Max
Nutrients	Total Phosphorus (mg/L)	0.002	0.002	0.001	0.002
	Total Phosphate (mg/L)				
	Total Organic Carbon (mg/L)	*0.5*	*0.5*	0.5	0.5
Total Metals	Aluminum (µg/L)	5	5	1	5
	Antimony (µg/L)	0.1	0.1	0.05	200
	Arsenic (µg/L)	0.1	0.1	0.1	5
	Barium (µg/L)	10	10	0.05	10
	Beryllium (µg/L)	5	5	0.05	5
	Boron (µg/L)	100	100	1	100
	Cadmium (µg/L)	0.2	0.2	0.05	0.5
	Chromium (µg/L)	1	1	0.5	1
	Cobalt (µg/L)	1	1	0.1	15
	Copper (µg/L)	1	1	0.1	1
	Iron (µg/L)	10	10	10	30
	Lead (µg/L)	1	1	0.05	1
	Manganese (µg/L)	5	5	0.05	5
	Mercury (µg/L)	*0.05*	*0.05*	0.01	0.05
	Molybdenum (µg/L)	1	1	0.05	30
	Nickel (µg/L)	1	1	0.1	10
	Selenium (µg/L)	0.5	0.5	0.05	1
	Silicon (µg/L)	*50*	*50*	50	
	Silver (µg/L)	0.1	0.1	50	
	Strontium (µg/L)	*1*	*5*	1	5
	Thallium (µg/L)	*100*	*200*	0.05	200
	Tin (µg/L)	*30*	*300*	0.1	300
	Titanium (µg/L)	*10*	*10*	0.01	10
	Uranium (µg/L)	0.005	0.005	0.01	0.05
	Vanadium (µg/L)	30	30	0.1	30
	Zinc (µg/L)	5	5	1	5
Dissolved Metals	Aluminum (µg/L)	5	5	1	20
	Antimony (µg/L)	0.1	0.1	0.05	0.2
	Arsenic (µg/L)	0.1	0.1	0.1	5
	Barium (µg/L)	10	10	10	10
	Beryllium (µg/L)	5	5	0.1	5
	Boron (µg/L)	100	100	100	100
	Cadmium (µg/L)	0.2	0.2	0.02	0.2
	Chromium (µg/L)	1	1	0.1	1
	Cobalt (µg/L)	1	1	0.05	1
	Copper (µg/L)	1	1	0.5	1
	Iron (µg/L)	10	10	1	30
	Lead (µg/L)	1	1	0.05	1
	Lithium (µg/L)	*10*	*15*	1	10
	Manganese (µg/L)	5	5	0.05	5
	Mercury (µg/L)	*0.05*	*0.05*	0.01	0.05
	Molybdenum (µg/L)	1	1	0.05	1
	Nickel (µg/L)	1	1	0.5	1
	Selenium (µg/L)	0.5	0.5	0.05	0.5
	Silicon (µg/L)	*50*	*50*		
	Silver (µg/L)	0.1	0.1	0.01	1
	Strontium (µg/L)	*1*	*5*		
	Thallium (µg/L)	*100*	*200*	0.05	100
	Tin (µg/L)	*30*	*300*	0.1	30
	Titanium (µg/L)	*10*	*10*	0.5	10
	Uranium (µg/L)	0.005	0.005	0.05	0.01
	Vanadium (µg/L)	30	30	0.01	30
	Zinc (µg/L)	5	5	0.5	5

[a] Detection limits published in Rescan (1997b); Rescan (1998)
[b] Italicized detection limits provided by ALS for the period between 1995 to 2000.
[c] Detection limits as reported in the raw data (Appendices A.4, A4, A6, A9 and A.10).

Appendix A3. Summary of water quality QA/QC program in Doris Hinge waterbodies, 1995-2000.

Waterbody	Number of Sample Days	Number of Duplicates/ Splits/Triplicates	Depth Composites	Site Composites	Inter Lab Comparisons	North/ South Comparisons
Doris Lake	13	9	Yes	Yes	No	Yes
Tail Lake	7	6	Yes	Yes	No	No
Ogama Lake	8	5	Yes	No	No	No
Patch Lake	10	4	Yes	No	1	Yes
Wolverine Lake	3	3	No	No	No	No
Windy Lake	10	4	Yes	No	No	No
Little Roberts Lake	6	2	No	No	No	No
Pelvic Lake	4	4	Yes	No	No	No
Doris Outflow	7	3	No	No	No	No
Tail Outflow	7	3	No	No	No	No
Ogama Outflow	5	1	No	No	No	No
Patch Outflow	5	2	No	No	No	No
Windy Outflow	5	2	No	No	No	No
Little Roberts Outflow	5	2	No	No	No	No
Pelvic Outflow	5	2	No	No	No	No
Roberts Bay	3	7	Yes	Yes	No	No

Appendix A4. Analytical results for water quality QA/QC samples from Doris Hinge area, 1995-2000.

Parameter	Unit	QA/QC for Lake and Marine Sites									QA/QC for Stream Sites			
		Travel Blank 18-Aug 1995	Field Blank 20-Aug 1995	Travel Blank 20-Aug 1997	Field Blank 25-Apr 1998	Travel Blank 25-Apr 1998	Travel Blank 21-Jul 1998	Field Blank 21-Jul 1998	Field Blank 25-Jul 2000	Travel Blank 25-Jul 2000	Travel Blank 19-Jun 1997	Travel Blank 20-Aug 1997	Travel Blank 20-Jun 2000	Travel Blank 15-Sep 2000
Physical Parameters														
Conductivity	µS/cm	1.3	1.3				<2	<2	<2	<2	<2		<2	<2
Total Dissolved Solids	mg/L	<1	2				<10	<10	<1	<1	<10		<10	<10
Hardness ($CaCO_3$)	mg/L	<1	<1					<0.05	<0.5	<0.5			<0.5	<0.5
pH	units	4.6	6				5.89	4.74	6.02	5.59			5.36	5.57
Total Suspended Solids	mg/L	1	2				<1	2	<3	<3	<1		<3	<3
Salinity	$^{o}/_{oo}$						<1	<1						
Turbidity	NTU						<0.1	0.1	0.1	0.1	<0.1		0.2	<0.1
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L						5	5	<1	2	2		<1	<1
AlkalinityTotal ($CaCO_3$)	mg/L						<1	<1	<1	<1	<1		<1	<1
Alkalinity to pH 4.5	mg/L	<1	<1											
Bicarbonate Alkalinity	mg/L	<1	<1											
Carbonate Alkalinity	mg/L	<1	<1											
Bromide	mg/L								<0.5	<0.5				
Chloride	mg/L	0.02	0.02				<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
Silicate	mg/L	<0.1	<0.1											
Fluoride	mg/L	0.02	0.01				<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02
Sulphate	mg/L	<0.1	<0.1				<1	<1	<1	<1	<1		<1	<1
Nutrients														
Ammonia Nitrogen	mg/L	<0.02	0.02						<0.005	<0.005	0.012		<0.005	<0.005
Dissolved Nitrate	mg/L	0.005	<0.005						<0.005	<0.005	<0.000		<0.005	<0.005
Dissolved Nitrite	mg/L	<0.001	<0.001						<0.001	<0.001	0.005		<0.001	0.001
Dissolved Silicate	mg/L										0.006			
Dissolved Phosphate	mg/L										0.003			
Dissolved ortho-Phosphate	mg/L	<0.002	0.002						0.001	0.002			<0.001	<0.001
Total Phosphorus	mg/L										<0.001			<0.002
Total Phosphate	mg/L								<0.002	0.002				
Total Organic Carbon	mg/L	<0.5	<0.5						1.4	<0.5			<0.5	<0.5
Total Metals														
Aluminum	µg/L	2	<1	<5	110	<5		<5	<1	<1	117	<5	<1	<1
Antimony	µg/L	<0.2	<0.2	<0.1	<0.1	<0.1		<0.1	<0.05	<0.05	<0.1	<0.1	<0.05	<0.05
Arsenic	µg/L	<1	1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	µg/L	0.2	0.1	<10	<10	<10		<10	<0.05	<0.05	<10	<10	<0.05	<0.05
Beryllium	µg/L	<0.1	0.3	<5	<5	<5		<5	<0.5	<0.5	<5	<5	<0.5	<0.5
Bismuth	µg/L	0.1	<0.06	<100	<100	<100		<100	<0.5	<0.5	<100	<100	<0.5	<0.5
Boron	µg/L	<1	2	<100	<100	<100		<100	<1	<1	<100	<100	<1	<1
Cadmium	µg/L	<0.1	0.2	<0.2	<0.2	<0.2		<0.2	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05
Calcium	µg/L	20	20	<50	550	<50		<50	<50	<50	240	<50	<50	<50
Chromium	µg/L	<0.5	0.5	<1	<1	<1		<1	<0.5	<0.5	<1	<1	<0.5	<0.5
Cobalt	µg/L	<0.1	<0.1	<1	<1	<1		<1	<0.1	<0.1	<1	<1	<0.1	<0.1
Copper	µg/L	<0.5	<0.5	<1	<1	<1		<1	<0.1	<0.1	<1	<1	<0.1	<0.1
Gold	µg/L	<0.1	<0.1											
Iron	µg/L	<10	20	<10	<10	<10		<10	<30	<30	<10	<10	<30	<30
Lead	µg/L	<0.1	<0.1	<1	<1	<1		<1	<0.05	<0.05	<1	<1	<0.05	<0.05
Lithium	µg/L	<0.5	0.7	<10	<10	<10		<10	<1	<1	<10	<10	<1	<1
Magnesium	µg/L	<0.5	1.9	<50	<100	<100		<100	<100	<100	<50	<50	<100	<100
Manganese	µg/L	<0.1	<0.1	<5	<5	<5		<5	<0.05	<0.05	<5	<5	0.09	<0.05
Mercury	µg/L	<0.01	<0.01	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05		<0.05	<0.05	<0.05
Molybdenum	µg/L	<0.2	<0.2	<1	<1	<1		<1	<0.05	<0.05	<1	<1	<0.05	<0.05
Nickel	µg/L	<0.5	0.7	<1	<1	<1		<1	<0.1	<0.1	<1	<1	<0.1	<0.1
Phosphorus	µg/L	<50	<50	<300	<300	<300		<300			<300	<300		
Potassium	µg/L	70	<50	<10	40	<1		<10	<2000	<2000	<10	<10	<2000	<10
Selenium	µg/L	2	2	<0.5	<0.5	<0.5		<0.5	<1	<1	<0.5	<0.5	<1	<1
Silicon	µg/L	<50	<50	<50	<50	<50		<50	<50	<50	<50	<50		
Silver	µg/L	<0.01	<0.01	<0.1	<0.1	<0.1		<0.1	<0.01	<0.01	<0.1	<0.1	<0.01	<0.01
Sodium	µg/L	<10	30	<10	200	20		<10	<2000	<2000	20	<10	<2000	<10
Strontium	µg/L	0.2	0.2	<1	<5	<5		<5			<1	<1		
Thallium	µg/L	<0.05	<0.05	<100	<200	<200		<200			<100	<100		
Thorium	µg/L	<0.05	<0.05											
Tin	µg/L	<0.1	<0.1	<30	<30	<30		<30			<30	<30		
Titanium	µg/L	<0.5	<0.5	<10	<10	<10		<10			<10	<10		
Uranium	µg/L	<0.05	<0.05						<0.01	<0.01			<0.01	<0.01
Vanadium	µg/L	<1	<1	<30	<30	<30		<30	<1	<1	<30	<30	<1	<1
Zinc	µg/L	3	<1	<5	<5	<5		<5	<1	<1	<5	<5	<1	<1

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

		Doris Lake											
		North	South	North	South	North	South	SW3-1	SW3-2	SW3-3	SW3-4	SW3-5	SW4-1
Parameter	**Unit**												
		4-May 1995	4-May 1995	7-Jun 1995	7-Jun 1995	2-Jul 1995	2-Jul 1995	20-Aug 1995	20-Aug 1995	20-Aug 1995	20-Aug 1995	20-Aug 1995	20-Aug 1995
Physical Parameters													
Conductivity	µS/cm	268	261	110	18.6	202	177	190	190	200	200	200	200
Total Dissolved Solids	mg/L	134	118	46	<1	120	107	120	110	120	110	120	130
Hardness ($CaCO_3$)	mg/L							31.0	34.0	31.0	33.0	31.0	31.0
pH	units	7.66	7.17	6.96	6.47	6.85	6.90	6.30	6.40	6.30	6.20	5.90	6.30
Total Suspended Solids	mg/L	4	5	4	4	3	6	4	3	8	11	11	3
Turbidity	NTU												
Dissolved Anions													
Acidity ($CaCO_3$)	mg/L												
AlkalinityTotal ($CaCO_3$)	mg/L	27.3	28.1	11.3	1.8	20.8	18.1						
Alkalinity to pH 4.5	mg/L							21	21	21	21	21	22
Bicarbonate Alkalinity	mg/L							21	21	21	21	21	22
Carbonate Alkalinity	mg/L							<1	<1	<1	<1	<1	<1
Bromide	mg/L												
Chloride	mg/L							45.8	45.8	45.4	45.7	45.9	45.8
Silicate	mg/L							2.9	0.7	2.8	2.9	4.2	2.3
Fluoride	mg/L							0.06	0.05	0.05	0.04	0.04	0.04
Sulphate	mg/L	2.8	2.3	1.2	<1	1.5	1.2	1.6	1.6	1.6	1.6	1.5	1.6
Nutrients													
Ammonia Nitrogen	mg/L	0.009	0.005	0.013	0.039	<0.005	0.005	0.02	<0.02	0.04	<0.02	<0.02	<0.02
Dissolved Nitrate	mg/L	0.021	0.026	<0.005	0.006	<0.005	<0.005	0.008	<0.005	0.009	0.008	0.008	<0.005
Dissolved Nitrite	mg/L	0.002	0.003	0.002	0.002	0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrite/Nitrate	mg/L												
Dissolved Silicate	mg/L												
Dissolved Phosphate	mg/L												
Diss. ortho-Phosphate	mg/L							<0.002	<0.002	0.002	<0.002	<0.002	0.004
Total Phosphorus	mg/L												
Total Phosphate	mg/L												
Total Organic Carbon	mg/L							4.3	4.4	4.3	4.5	4.7	4.3
Total Metals													
Aluminum	µg/L							25	18	31	40	120	28
Antimony	µg/L							<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	µg/L							<1	<1	<1	<1	3	<1
Barium	µg/L							2.50	2.40	2.60	3.00	7.30	2.30
Beryllium	µg/L							<0.1	0.5	<0.1	<0.1	<0.1	<0.1
Bismuth	µg/L							0.06	<0.06	0.14	0.09	0.13	0.07
Boron	µg/L							17	16	21	19	23	18
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	µg/L							6160	5580	6030	5750	6170	6030
Chromium	µg/L							1	<0.5	0.6	<0.5	2.2	<0.5
Cobalt	µg/L							<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper	µg/L	2	2	4	2	2	1	1.1	<0.5	2	2.3	1.8	1.8
Gold	µg/L							<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	µg/L							60	40	80	130	720	60
Lead	µg/L	<1	<1	<1	<1	<1	<1	0.2	<0.1	0.2	<0.1	<0.1	<0.1
Lithium	µg/L							5.2	4.2	4.6	6.3	6.2	4.3
Magnesium	µg/L							5670	5240	5680	5300	5770	5560
Manganese	µg/L							5.9	5.2	13.1	46.9	191	7.8
Mercury	µg/L							<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	µg/L							<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel	µg/L							1.4	1.1	1.4	0.7	1.7	0.8
Phosphorus	µg/L							<50	<50	<50	60	80	<50
Potassium	µg/L							3040	2490	2970	2750	3050	2810
Selenium	µg/L							2	2	<1	3	4	3
Silicon	µg/L							1070	260	1050	1080	1550	850
Silver	µg/L							<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Sodium	µg/L							27700	26200	28000	26300	28100	27400
Strontium	µg/L							23.7	23.2	23.7	22.1	24.2	23.4
Thallium	µg/L							<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Thorium	µg/L							<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tin	µg/L							<0.1	<0.1	0.2	<0.1	<0.1	<0.1
Titanium	µg/L							<0.5	0.6	<0.5	1.5	2.9	<0.5
Tungsten	µg/L												
Uranium	µg/L							<0.05	<0.05	<0.05	<0.05	0.05	<0.05
Vanadium	µg/L							<1	<1	<1	<1	<1	<1
Zinc	µg/L	118	98	36	15	<5	<5	6	15	19	5	4	7

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Doris Lake											
		SW4-1	SW4-2	SW4-3	North	South							
							3 m	6 m	9 m	13 m	4 m	8 m	12 m
		Split											
		20-Aug	20-Aug	20-Aug	24-Aug	24-Aug	23-Apr	23-Apr	23-Apr	23-Apr	28-Aug	28-Aug	28-Aug
		1995	1995	1995	1995	1995	1996	1996	1996	1996	1996	1996	1996
Physical Parameters													
Conductivity	µS/cm	200	200	200	206	203	263	261	266	265	239	249	258
Total Dissolved Solids	mg/L	120	120	130	100	103	146	139	155	141	133	136	139
Hardness ($CaCO_3$)	mg/L	33.0	29.0	30.0			42.4	42.3	42.6	42.6	33.4	31.5	39.4
pH	units	6.40	6.50	6.50	7.28	7.39	6.99	6.90	6.95	6.84	7.40	7.40	7.40
Total Suspended Solids	mg/L	3	4	3	6	2	3	3	3	<1	<1	3	5
Turbidity	NTU						3.7	3.5	3.4	3	6	7	7
Dissolved Anions													
Acidity ($CaCO_3$)	mg/L						2	4	3	4	2	2	2
AlkalinityTotal ($CaCO_3$)	mg/L				22.3	22.5							
Alkalinity to pH 4.5	mg/L	19	21	22			28.6	28.7	28.6	29.3	26	24	22
Bicarbonate Alkalinity	mg/L	19	21	22							26	24	22
Carbonate Alkalinity	mg/L	<1	<1	<1							<1	<1	<1
Bromide	mg/L												
Chloride	mg/L	46.1	45.8	45.9			58.3	58	59.1	58.3	59.9	60	60
Silicate	mg/L	2.5	2.6	2.4									
Fluoride	mg/L	0.04	0.04	0.04			0.06	0.06	0.06	0.06	<0.02	<0.02	<0.02
Sulphate	mg/L	1.6	1.6	1.6	1.3	1.2	2.7	2.8	3.1	3.4	1.8	1.8	1.8
Nutrients													
Ammonia Nitrogen	mg/L	<0.02	<0.02	<0.02	0.01	0.033	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Nitrate	mg/L	0.008	0.011	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.018	0.016	4.51
Dissolved Nitrite	mg/L	<0.001	0.017	<0.001	0.002	0.003	0.002	0.002	0.002	0.002	<0.001	<0.001	<0.001
Nitrite/Nitrate	mg/L												
Dissolved Silicate	mg/L												
Dissolved Phosphate	mg/L						0.003	0.001	0.002	0.002			
Diss. ortho-Phosphate	mg/L	<0.002	<0.002	0.002			<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001
Total Phosphorus	mg/L						0.019	0.015	0.017	0.012	0.004	<0.001	0.007
Total Phosphate	mg/L												
Total Organic Carbon	mg/L	4.3	4.3	4.4									
Total Metals													
Aluminum	µg/L	28	30	19			5	5	6	7	42	55	56
Antimony	µg/L	<0.2	<0.2	<0.2			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06
Arsenic	µg/L	1	<1	<1			0.54	0.59	0.55	0.62	4	1	7
Barium	µg/L	2.70	2.50	2.30			2.88	2.67	2.80	2.67	1.90	1.93	2.03
Beryllium	µg/L	<0.1	<0.1	<0.1			<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5
Bismuth	µg/L	0.08	0.07	<0.06			<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5
Boron	µg/L	20	19	17			23	23	23	22	64	55	78
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.2	<0.2	0.42	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Calcium	µg/L	5620	5750	5600			6950	6860	7290	6930	5980	6400	6420
Chromium	µg/L	1.2	3.5	2.3			0.5	0.6	0.4	0.6	2	3.2	3.4
Cobalt	µg/L	<0.1	<0.1	<0.1			<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1
Copper	µg/L	1.3	0.6	1	1	<1	3.2	2.4	3.5	2.8	1.6	1.9	2.2
Gold	µg/L	<0.1	<0.1	<0.1									
Iron	µg/L	70	80	60			<10	<10	<10	<10	130	150	140
Lead	µg/L	<0.1	<0.1	<0.1	<1	<1	0.21	0.13	0.24	0.12	0.31	0.26	0.26
Lithium	µg/L	5.8	4	4.2			3	3	3	3			
Magnesium	µg/L	5550	5590	5520			6180	6150	6240	6200	5180	4660	6140
Manganese	µg/L	6.4	6.6	6.4			1.81	1.89	1.92	2.51	19.1	20.9	18.4
Mercury	µg/L	<0.01	<0.01	<0.01									
Molybdenum	µg/L	<0.2	<0.2	<0.2			0.18	0.17	0.18	0.16	0.18	0.11	0.17
Nickel	µg/L	1.2	1.2	0.9			0.3	0.4	0.4	0.5	1.2	1.5	1.7
Phosphorus	µg/L	50	60	<50									
Potassium	µg/L	2710	2770	2560			2460	2440	2470	2460	1810	1980	2940
Selenium	µg/L	2	<1	<1			<0.05	<0.05	<0.05	<0.05	<0.5	1.1	3.6
Silicon	µg/L	940	950	900			990	990	1030	1050	990	990	1100
Silver	µg/L	<0.01	<0.01	<0.01			<0.01	<0.01	<0.01	<0.01	0.08	<0.01	<0.01
Sodium	µg/L	27200	27800	27300			33800	33800	34900	34200			
Strontium	µg/L	22.7	23.0	22.7			34.7	34.1	35.1	34.5	21.9	29.4	34.2
Thallium	µg/L	<0.05	<0.05	<0.05			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Thorium	µg/L	<0.05	<0.05	<0.05									
Tin	µg/L	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	0.2	0.1	0.2
Titanium	µg/L	<0.5	<0.5	1.5			<10	<10	<10	<10	2	3	2
Tungsten	µg/L												
Uranium	µg/L	<0.05	<0.05	<0.05			0.03	0.03	0.03	0.03	0.01	0.05	0.03
Vanadium	µg/L	<1	<1	<1			<0.1	0.3	<0.1	0.3	<1	3	<1
Zinc	µg/L	10	10	5	<5	<5	2	2	3	2	4	3	3

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Doris Lake												
		16 m		1 m	1 m Rep 1	1 m Rep 2	15 m Split 1	15 m Split 2	1 m	12.5 m	3 m Rep 1	3 m Split 1A	3 m Rep 2	1 m Rep 1
		28-Aug 1996	28-Aug 1996	18-Apr 1997	18-Jul 1997	18-Jul 1997	18-Jul 1997	18-Jul 1997	22-Aug 1997	22-Aug 1997	25-Apr 1998	25-Apr 1998	25-Apr 1998	24-Jul 2000
Physical Parameters														
Conductivity	µS/cm	254	230	291	212	211	215	219	222	222	266		268	231
Total Dissolved Solids	mg/L	130	137	154	114	106	106	114	122	122	156		152	126
Hardness ($CaCO_3$)	mg/L	35.1	36.0	49.0	37.8	40.2	39.5	40.2	34.7	34.8	49.3		50.8	37.4
pH	units	7.40	7.40	7.06	6.91	7.19	6.96	7.04	7.31	7.30	7.34		7.35	7.09
Total Suspended Solids	mg/L	1	<1	11	4	4	2	4	6	7	3		5	4
Turbidity	NTU	6	8	10.3	4.5	5	5	4.3	6.2	6.3	4.3		4.5	2.1
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L	1	2	4	2	<1	4	4	2	2	4		4	3
AlkalinityTotal ($CaCO_3$)	mg/L			34	23	23	23	23	22	22	29		29	23
Alkalinity to pH 4.5	mg/L	24	20											
Bicarbonate Alkalinity	mg/L	24	20											
Carbonate Alkalinity	mg/L	<1	<1											
Bromide	mg/L													<0.5
Chloride	mg/L	59.9	56.3	66.8	47.2	46.5	88	48	46.7	46.7	62.8		63.1	53.4
Silicate	mg/L													
Fluoride	mg/L	<0.02	<0.02	0.06	0.05	0.05	0.05	0.05	0.09	0.09	0.08		0.08	0.14
Sulphate	mg/L	1.8	1.6	3	2	2	2	2	2	2	3		3	2
Nutrients														
Ammonia Nitrogen	mg/L	<0.005	<0.005		0.0061	0.0047	0.0254	0.0272	0.0055	0.0132				<0.005
Dissolved Nitrate	mg/L	<0.005	<0.005		0.0053	0.002	0.0167	0.0071	0.0017	0.0053				<0.005
Dissolved Nitrite	mg/L	<0.001	<0.001		<0.001	<0.001	0.0009	0.0028	<0.001	<0.001				<0.001
Nitrite/Nitrate	mg/L													
Dissolved Silicate	mg/L				1.38	1.39	1.00	0.51	1.41	1.36				
Dissolved Phosphate	mg/L				0.0012	0.0046	0.0012	0.0012	0.0012	0.0012				
Diss. ortho-Phosphate	mg/L	<0.001	<0.001											0.007
Total Phosphorus	mg/L	<0.001	<0.001	0.051	0.013	0.016	0.017	0.016	0.018	0.016				
Total Phosphate	mg/L													0.013
Total Organic Carbon	mg/L													6.8
Total Metals														
Aluminum	µg/L	53	90	19	94	88	73	76	60	52	8	9	13	20
Antimony	µg/L	0.05	<0.05	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05
Arsenic	µg/L	15	5	0.3	<0.1	<0.1	<0.1	<0.1	0.5	0.5	0.4	0.4	0.4	0.3
Barium	µg/L	1.95	2.26	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	2.56
Beryllium	µg/L	<0.5	<0.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5
Bismuth	µg/L	<0.5	<0.5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<0.5
Boron	µg/L	66	74	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	18
Cadmium	µg/L	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05
Calcium	µg/L	5960	6100	8150	6140	6120	6200	6170	6060	5920	8200	8250	8480	6340
Chromium	µg/L	1.8	2.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Cobalt	µg/L	0.2	<0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1
Copper	µg/L	1.9	2.1	5	2	2	1	1	2	1	3	2	4	1.3
Gold	µg/L													
Iron	µg/L	140	140	40	180	180	230	240	90	80	20	20	30	80
Lead	µg/L	0.28	0.28	<1	1	1	<1	<1	1	<1	<1	<1	4	0.1
Lithium	µg/L			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	3
Magnesium	µg/L	5730	5410	7110	5020	5030	5060	5050	5220	5120	7000	7000	7200	5200
Manganese	µg/L	19.9	20	<5	30	27	48	51	11	11	<5	<5	<5	7.71
Mercury	µg/L			<0.01					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	µg/L	0.15	0.14	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.14
Nickel	µg/L	1.3	1.4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.3
Phosphorus	µg/L			<300	<300	<300	<300	<300	<300	<300	<300	<300	<300	
Potassium	µg/L	1910	1910	3170	1920	1920	1920	1970	2440	2510	2650	2730	2750	2000
Selenium	µg/L	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.5	<1
Silicon	µg/L	1050	1060	1200	1230	1250	1330	1340	1070	1040	1340	1340	1370	990
Silver	µg/L	<0.01	0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01
Sodium	µg/L			34300	25800	25900	26800	26900	26800	25900	34000	34000	35000	28000
Strontium	µg/L	27.2	22.6	45.0	37.0	37.0	38.0	37.0	42.0	41.0	46.0	46.0	47.0	
Thallium	µg/L	<0.05	0.07	<100	<100	<100	<100	<100	<100	<100	<200	<200	<200	
Thorium	µg/L													
Tin	µg/L	0.1	0.1	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	
Titanium	µg/L	3	3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Tungsten	µg/L													
Uranium	µg/L	0.03	0.04											0.03
Vanadium	µg/L	2	<1	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<1
Zinc	µg/L	5	3	12	<5	6	<5	<5	<5	<5	<5	<5	<5	<1

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

		Doris Lake					Tail Lake							
Parameter	**Unit**	1 m Rep 2 24-Jul 2000	8 m Rep 1 24-Jul 2000	8 m Rep 2 24-Jul 2000	8 m Rep 1 22-Aug 2000	8 m Rep 2 22-Aug 2000	SW2-1 18-Aug 1995	SW2-2 18-Aug 1995	SW2-3 18-Aug 1995	2.5 m Rep A 27-Aug 1996	2.5 m Rep B 27-Aug 1996	2.5 m Rep C 27-Aug 1996	1 m 27-Aug 1996	4 m 27-Aug 1996
Physical Parameters														
Conductivity	µS/cm	235	239	241	244	244	130	120	120	153	163	188	158	160
Total Dissolved Solids	mg/L	128	131	133	140	140	77	67	67	76	74	71	73	76
Hardness ($CaCO_3$)	mg/L	35.0	35.7	36.5	41.3	42.6	27.0	30.0	25.0	28.0	27.0	28.0	28.0	28.0
pH	units	7.45	7.30	7.56	7.78	7.80	5.50	5.80	6.00	7.20	7.30	7.30	7.30	7.30
Total Suspended Solids	mg/L	<3	<3	3	5	5	3	<1	<1	4	2	2	3	7
Turbidity	NTU	2.2	3.1	3.4	4.7	4.9				5.4	5.2	5.5	5.2	5.2
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L	2	2	1	<1	<1				2	2	1	2	2
AlkalinityTotal ($CaCO_3$)	mg/L	23	23	23	24	24								
Alkalinity to pH 4.5	mg/L						20	19	19	22	22	24	22	17
Bicarbonate Alkalinity	mg/L						20	19	19	22	22	24	22	17
Carbonate Alkalinity	mg/L						<1	<1	<1	<1	<1	<1	<1	<1
Bromide	mg/L	<0.5	<0.5	<0.5										
Chloride	mg/L	52.9	53.4	53.9	53.1	53.4	28.6	28.1	27.9	22.356	22.356	22.356	22.437	22.275
Silicate	mg/L						0.7	0.4	0.8					
Fluoride	mg/L	0.08	0.11	0.09	0.07	0.08	0.05	0.04	0.05	0.07	0.07	0.07	0.08	0.08
Sulphate	mg/L	2	2	2	3	3	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5
Nutrients														
Ammonia Nitrogen	mg/L	<0.005	<0.005	<0.005	0.006	0.005	0.04	0.04	0.04	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Nitrate	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.007	0.008	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Nitrite	mg/L	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrite/Nitrate	mg/L													
Dissolved Silicate	mg/L													
Dissolved Phosphate	mg/L									0.004	0.004	0.004	0.006	0.004
Diss. ortho-Phosphate	mg/L	0.007	0.01	0.009	0.001	0.001	0.002	0.002	0.012	0.002	0.004	0.002	0.002	0.002
Total Phosphorus	mg/L									0.013	0.011	0.011	0.012	0.013
Total Phosphate	mg/L	0.014	0.016	0.017	0.018	0.016								
Total Organic Carbon	mg/L	6.9	6.9	7.2	7.2	6.7	4.7	4.4	4.4					
Total Metals														
Aluminum	µg/L	22	18	20	19	19	34	23	28	294	295	299	228	309
Antimony	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	µg/L	0.3	0.3	0.3	0.5	0.5	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	2
Barium	µg/L	2.59	2.56	2.53	2.55	2.56	1.80	1.50	1.50	3.40	3.79	3.64	2.89	3.65
Beryllium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.19	<0.06	0.25	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/L	18	18	18	21	21	12	7	11	10	9	10	10	10
Cadmium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	0.12	<0.1	<0.1	<0.1	<0.1
Calcium	µg/L	5970	6100	6130	6790	7000	4990	4340	5150	4700	4440	5110	4570	4730
Chromium	µg/L	<0.5	<0.5	<0.5	0.7	0.7	<0.5	<0.5	1.2	2.3	1.8	2	2.3	2.3
Cobalt	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1
Copper	µg/L	1.3	1.2	1.2	1.4	1.4	3.8	<0.5	1.5	1.8	2.3	2.2	2.2	1.9
Gold	µg/L						<0.1	<0.1	<0.1					
Iron	µg/L	70	90	90	40	50	60	40	70	230	210	230	200	210
Lead	µg/L	0.06	0.1	<0.05	0.14	0.05	0.5	<0.1	<0.1	0.32	0.14	0.12	0.14	0.19
Lithium	µg/L	3	3	3	3	3	3.7	2.9	3.6					
Magnesium	µg/L	4900	5000	5100	5900	6100	4310	3830	4370	4190	4030	4150	4240	4190
Manganese	µg/L	7.96	12	10.3	8.1	8.33	4.6	2.8	3.4	4.48	3.81	4.02	4.01	4.26
Mercury	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01					
Molybdenum	µg/L	0.15	0.14	0.15	0.63	0.51	<0.2	<0.2	<0.2	0.32	0.17	0.12	0.24	0.32
Nickel	µg/L	0.3	0.4	0.3	0.4	0.4	3.2	<0.5	1.2	1	0.8	0.8	1	1
Phosphorus	µg/L						<50	<50	<50					
Potassium	µg/L	2000	2000	2000	2280	2270	2220	1690	2330	1580	1520	1400	1520	1450
Selenium	µg/L	<1	<1	<1	1	1	<1	4	<1	1.9	0.7	<0.5	<0.5	<0.5
Silicon	µg/L	960	990	1000			260	150	290	910	690	800	710	860
Silver	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.22	<0.01	1
Sodium	µg/L	26000	25000	26000	27300	28900	15900	14000	15700	13500	13400	13700	13700	13400
Strontium	µg/L						16.4	14.2	16.1	16.9	16.3	17.5	16.9	16.3
Thallium	µg/L						<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Thorium	µg/L						<0.05	<0.05	<0.05					
Tin	µg/L						<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	0.2
Titanium	µg/L						<0.5	<0.5	0.7	7	6	8	6	7
Tungsten	µg/L													
Uranium	µg/L	0.03	0.03	0.03	0.03	0.03	<0.05	<0.05	<0.05	<0.01	0.03	0.04	<0.01	<0.01
Vanadium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc	µg/L	<1	<1	<1	<1	<1	85	4	56	<1.0	<1.0	2	<1.0	3

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Tail Lake											Ogama Lake	
		1 m	1 m	3 m	3 m	3 m	1 m	1 m	3 m	3 m	3 m	3 m		
				Rep 1	Rep 2	Split 2A	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2		
		18-Apr	16-Jul	25-Apr	25-Apr	25-Apr	19-Jul	19-Jul	19-Jul	19-Jul	19-Aug	19-Aug	28-May	7-Jun
		1997	1997	1998	1998	1998	2000	2000	2000	2000	2000	2000	1995	1995
Physical Parameters														
Conductivity	µS/cm	239	125	243	244	244	143	143	143	144	153	153	20.2	61.3
Total Dissolved Solids	mg/L	138	67	140	136	142	78	78	77	79	89	89	18	28
Hardness ($CaCO_3$)	mg/L	53.6	29.8	58.6	60.4	60.0	29.3	31.8	30.6	29.2	34.0	32.9		
pH	units	6.94	7.31	7.35	7.34	7.39	7.54	7.71	7.68	7.62	7.70	7.70	6.96	6.43
Total Suspended Solids	mg/L	3	2	<1	<1	<1	<3	5	<3	<3	<3	<3	3	<1
Turbidity	NTU	6.7	3.5	0.8	0.8	0.9	0.6	0.8	0.3	0.8	0.9	1		
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L	10	4	7	8	8	1	2	1	1	<1	<1		
AlkalinityTotal ($CaCO_3$)	mg/L	48	23	44	44	44	20	21	21	21	24	24	1.9	4.9
Alkalinity to pH 4.5	mg/L													
Bicarbonate Alkalinity	mg/L													
Carbonate Alkalinity	mg/L													
Bromide	mg/L						<0.5	<0.5	<0.5	<0.5				
Chloride	mg/L	45.1	22.9	46.6	47.1	46.8	26.9	26.9	26.8	26.9	29.4	29.1		
Silicate	mg/L													
Fluoride	mg/L	0.08	0.07	0.13	0.11	0.13	0.09	0.07	0.09	0.1	0.14	0.09		
Sulphate	mg/L	4	2	3	3	3	2	2	2	2	2	2	<1	<1
Nutrients														
Ammonia Nitrogen	mg/L		0.0101				0.017	0.016	0.016	0.02	0.013	0.016	0.02	0.059
Dissolved Nitrate	mg/L		0.0025				<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.156	0.029
Dissolved Nitrite	mg/L		0.0009				<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001
Nitrite/Nitrate	mg/L													
Dissolved Silicate	mg/L		0.64											
Dissolved Phosphate	mg/L		0.0012											
Diss. ortho-Phosphate	mg/L						0.003	0.005	0.003	0.004	0.001	0.002		
Total Phosphorus	mg/L	0.013	0.014											
Total Phosphate	mg/L						0.012	0.009	0.009	0.01	0.013	0.018		
Total Organic Carbon	mg/L						6.5	6.9	6.6	6.8	6.6	7.1		
Total Metals														
Aluminum	µg/L	170	133	47	51		19	20	20	20	31	27		
Antimony	µg/L	<0.1	<0.1	<0.1	<0.1		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Arsenic	µg/L	0.3	<0.1	0.4	0.4		0.2	0.2	0.2	0.2	0.3	0.3		
Barium	µg/L	<10	<10	<10	<10		1.64	1.67	1.69	1.64	1.43	1.43		
Beryllium	µg/L	<5	<5	<5	<5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Bismuth	µg/L	<100	<100	<100	<100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Boron	µg/L	<100	<100	<100	<100		12	13	13	12	15	15		
Cadmium	µg/L	0.2	<0.2	<0.2	<0.2		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.8	<0.2
Calcium	µg/L	9300	4780	10200	10300		5060	5480	5330	5080	5610	5410		
Chromium	µg/L	3	<1	<1	<1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Cobalt	µg/L	<1	<1	<1	<1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Copper	µg/L	4	1	4	7		1.1	1	1	1	1.2	1.1	2	3
Gold	µg/L													
Iron	µg/L	300	300	120	130		50	60	50	50	60	60		
Lead	µg/L	<1	<1	1	1		0.05	0.05	0.05	0.05	0.11	0.09	2	<1
Lithium	µg/L	<10	<10	<10	<10		3	3	3	3	3	3		
Magnesium	µg/L	7620	3620	8000	8400		4000	4400	4200	4000	4900	4700		
Manganese	µg/L	6	45	5	6		5.12	5.22	5.26	5.25	5	4.99		
Mercury	µg/L	<0.01		<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Molybdenum	µg/L	<1	<1	<1	<1		0.09	0.09	0.09	0.09	1.44	0.89		
Nickel	µg/L	1	<1	1	1		0.5	0.5	0.5	0.5	0.6	0.6		
Phosphorus	µg/L	<300	<300	<300	<300									
Potassium	µg/L	2970	1290	2850	2870		<2000	<2000	<2000	<2000	1570	1580		
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5		<1	<1	<1	<1	<1	<1		
Silicon	µg/L	1280	970	1970	2020		340	380	370	360				
Silver	µg/L	<0.1	<0.1	<0.1	<0.1		<0.01	0.05	<0.01	<0.01	<0.01	<0.01		
Sodium	µg/L	25000	12700	27000	27000		15000	16000	15000	14000	14400	14900		
Strontium	µg/L	38.0	22.0	41.0	40.0									
Thallium	µg/L	<100	<100	<200	<200									
Thorium	µg/L													
Tin	µg/L	<30	<30	<30	<30									
Titanium	µg/L	<10	<10	<10	<10									
Tungsten	µg/L													
Uranium	µg/L						0.02	0.02	0.02	0.02	0.03	0.03		
Vanadium	µg/L	<30	<30	<30	<30		<1	<1	<1	<1	<1	<1		
Zinc	µg/L	<5	<5	7	7		<1	<1	<1	<1	<1	<1	25	26

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Ogama Lake												
		2-Jul 1995	24-Aug 1995	1 m 27-Aug 1996	1 m Rep 27-Aug 1996	2 m 27-Aug 1996	3 m 27-Aug 1996	1 m Split 1 18-Apr 1997	1 m Split 2 18-Apr 1997	1 m 16-Jul 1997	2.5 m Rep 1 24-Apr 1998	2.5 m Split 1A 24-Apr 1998	2.5 m Rep 2 24-Apr 1998	2.5 m Split 2A 24-Apr 1998
Physical Parameters														
Conductivity	µS/cm	210	227	345		276	248	518	516	177	565	572	571	
Total Dissolved Solids	mg/L	109	125	117		114	120	294	290	98	331	329	336	
Hardness ($CaCO_3$)	mg/L			38.0		37.0	38.0	83.4	84.5	31.7	100.0	100.0	99.8	
pH	units	6.64	7.35	7.30		7.30	7.20	6.93	6.90	6.90	7.38	7.19	7.29	
Total Suspended Solids	mg/L	4	7	4		4	6	12	4	6	<1	<1	1	
Turbidity	NTU			6.9		6.3	7.2	12.9	13.2	12.1	4.4	4.5	4.1	
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L			3		1	2	12	16	2	10	10	10	
AlkalinityTotal ($CaCO_3$)	mg/L	18.9	22.8					58	55	20	59	58	56	
Alkalinity to pH 4.5	mg/L			23		23	24							
Bicarbonate Alkalinity	mg/L			23		23	24							
Carbonate Alkalinity	mg/L			<1		<1	<1							
Bromide	mg/L													
Chloride	mg/L			52.164		52.326	52.245	127	127	38.2	140	138	138	
Silicate	mg/L													
Fluoride	mg/L			0.07		0.07	0.07	0.09	0.09	0.06	0.15	0.16	0.15	
Sulphate	mg/L	2	<1	1.8		1.8	1.8	6	6	2	5	5	5	
Nutrients														
Ammonia Nitrogen	mg/L	0.03	0.042	<0.01		<0.01	<0.01			0.0082				
Dissolved Nitrate	mg/L	0.023	<0.005	<0.005		<0.005	<0.005			0.0113				
Dissolved Nitrite	mg/L	0.002	0.002	<0.001		<0.001	<0.001			0.0017				
Nitrite/Nitrate	mg/L													
Dissolved Silicate	mg/L									0.69				
Dissolved Phosphate	mg/L			0.004		0.006	0.006			0.0012				
Diss. ortho-Phosphate	mg/L			0.002		0.002	0.004							
Total Phosphorus	mg/L			0.02		0.022	0.022	0.03	0.03	0.024				
Total Phosphate	mg/L													
Total Organic Carbon	mg/L													
Total Metals														
Aluminum	µg/L			398	452	334	424	300	300	439	221		227	216
Antimony	µg/L			<0.05	<0.05	<0.05	<0.05	<0.1	0.2	<0.1	<0.1		<0.1	<0.1
Arsenic	µg/L			<1.0	<1.0	1	<1.0	0.6	0.6	0.2	0.8		0.8	0.8
Barium	µg/L			5.71	6.41	4.28	6.01	<10	<10	<10	<10		<10	<10
Beryllium	µg/L			<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5		<5	<5
Bismuth	µg/L			<0.5	<0.5	<0.5	<0.5	<100	<100	<100	<100		<100	<100
Boron	µg/L			14	17	15	24	<100	<100	<100	<100		<100	<100
Cadmium	µg/L	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	0.5	0.5	<0.2	<0.2		<0.2	<0.2
Calcium	µg/L			5110	5690	5500	5760	11600	12200	4570	14400		14300	14300
Chromium	µg/L			2.3	2.3	2.1	2.3	1	2	<1	2		2	2
Cobalt	µg/L			<0.1	<0.1	0.3	<0.1	<1	<1	<1	<1		<1	<1
Copper	µg/L	1	<1	1.9	2.1	3.9	2.9	12	12	2	6		7	7
Gold	µg/L													
Iron	µg/L			270	310	270	330	630	650	580	230		200	230
Lead	µg/L	<1	<1	0.42	0.44	0.19	0.22	3	3	<1	<1		<1	<1
Lithium	µg/L							<10	<10	<10	<10		10	10
Magnesium	µg/L			5980	6520	5920	6070	13200	13600	4510	15600		15600	15600
Manganese	µg/L			8.21	9.54	8.46	11.1	316	329	25	17		17	18
Mercury	µg/L							<0.01	<0.01		<0.05		<0.05	<0.05
Molybdenum	µg/L			0.25	0.28	0.31	0.29	<1	<1	<1	<1		<1	<1
Nickel	µg/L			1.3	1.7	1.1	2.2	2	2	1	3		3	3
Phosphorus	µg/L							<300	<300	<300	<300		<300	<300
Potassium	µg/L			2000	2240	2090	2100	5480	5540	1740	4970		5410	6000
Selenium	µg/L			<0.5	0.6	<0.5	1	0.6	<0.5	<0.5	<0.5		<0.5	<0.5
Silicon	µg/L			1660	1920	1430	1640	3970	4100	2010	4090		4110	4050
Silver	µg/L			0.01	0.04	0.06	0.06	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Sodium	µg/L			28200	30100	28600	28500	66300	67300	22800	76000		76000	75000
Strontium	µg/L			25.2	27.8	27.1	27.1	62.0	62.0	27.0	78.0		80.0	77.0
Thallium	µg/L			<0.05	<0.05	0.06	<0.05	<100	<100	<100	<200		<200	<200
Thorium	µg/L													
Tin	µg/L			<0.1	0.2	0.3	<0.1	<30	<30	<30	<30		<30	<30
Titanium	µg/L			9	9	6	8	<10	<10	10	<10		<10	<10
Tungsten	µg/L													
Uranium	µg/L			<0.01	<0.01	<0.01	0.06							
Vanadium	µg/L			1	<1.0	<1.0	<1.0	<30	<30	<30	<30		<30	<30
Zinc	µg/L	<5	<5	<1.0	2	4	13	12	12	<5	15		11	14

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Patch Lake												
		North	South	North	South	North	South	SW5-1	SW5-1 Split	SW5-1 Lab Split	North	South	3 m	4 m
		7-May 1995	7-May 1995	7-Jun 1995	7-Jun 1995	2-Jul 1995	2-Jul 1995	20-Aug 1995	20-Aug 1995	20-Aug 1995	24-Aug 1995	24-Aug 1995	23-Apr 1996	23-Apr 1996
Physical Parameters														
Conductivity	µS/cm	434	383	64	6	184	198	238	240		245	241	415	247
Total Dissolved Solids	mg/L	207	145	20	<1	98	109	136	130		109	113	217	135
Hardness ($CaCO_3$)	mg/L							38.4	38.0				67.3	49.2
pH	units	7.09	7.16	6.73	6.10	7.09	6.89	7.82	6.10		7.63	7.63	7.01	6.93
Total Suspended Solids	mg/L	4	2	<1	<1	<1	<1	1	3		12	3	<1	<1
Turbidity	NTU												0.6	0.8
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L												5.1	7.1
AlkalinityTotal ($CaCO_3$)	mg/L	52.3	45.2	6.4	<1	21.8	23.8	28.4			30.6	30.5		
Alkalinity to pH 4.5	mg/L								28				52.6	42.6
Bicarbonate Alkalinity	mg/L							28.4	28					
Carbonate Alkalinity	mg/L							<1	<1					
Bromide	mg/L													
Chloride	mg/L							52.4	53.8				88.7	59.5
Silicate	mg/L							<1	0.2					
Fluoride	mg/L								0.04				0.09	0.09
Sulphate	mg/L	2.5	3	<1	<1	1.4	<1	1	1.4		<1	1.5	2.8	3.9
Nutrients														
Ammonia Nitrogen	mg/L	<0.005	0.021	0.03	0.014	0.011	0.015	<0.02	0.02		0.01	0.02	0.009	0.007
Dissolved Nitrate	mg/L	<0.005	0.008	0.037	0.007	0.008	0.023	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005
Dissolved Nitrite	mg/L	0.002	0.002	0.001	0.001	0.001	0.001		<0.001		0.001	0.001	0.002	0.001
Nitrite/Nitrate	mg/L							0.005						
Dissolved Silicate	mg/L													
Dissolved Phosphate	mg/L												<0.001	0.003
Diss. ortho-Phosphate	mg/L							0.002	<0.002				<0.001	0.001
Total Phosphorus	mg/L												0.005	0.007
Total Phosphate	mg/L													
Total Organic Carbon	mg/L							4.3	3.1					
Total Metals														
Aluminum	µg/L							38	27	22			15	7
Antimony	µg/L							<200	<0.2	<0.2			<0.05	<0.05
Arsenic	µg/L							<0.1	1	<1			0.72	0.52
Barium	µg/L							<10	1.70	2.60			2.96	2.51
Beryllium	µg/L							<5	<0.1	<0.1			<0.5	<0.5
Bismuth	µg/L							<100	0.08	<0.06			<0.5	<0.5
Boron	µg/L							<100	19	22			35	23
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<0.05	0.14
Calcium	µg/L							6420	6710	5940			11300	9260
Chromium	µg/L							<1	2.4	<0.5			0.8	0.7
Cobalt	µg/L							<15	<0.1	<0.1			<0.1	<0.1
Copper	µg/L	2	4	1	1	1	1	<1	0.7	<0.5	<1	<1	3.6	6.6
Gold	µg/L								<0.1	<0.1				
Iron	µg/L							53	50	80			40	70
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<1	<1	0.29	0.13
Lithium	µg/L							<15	4.8	6.2			5	4
Magnesium	µg/L							6190	6720	5570			9870	7140
Manganese	µg/L							<5	2.5	5.4			3.6	4.1
Mercury	µg/L							<0.05	<0.01	<0.01				
Molybdenum	µg/L							<30	<0.2	<0.2			0.21	0.16
Nickel	µg/L							<10	1.6	<0.5			0.7	1
Phosphorus	µg/L							<300	50	60				
Potassium	µg/L							<2000	3260	2630			3670	2490
Selenium	µg/L							<0.5	1	<1			<0.5	<0.5
Silicon	µg/L								90	880			240	730
Silver	µg/L							<0.1	<0.01	<0.01			<0.01	<0.01
Sodium	µg/L							32100	32000	27600			55600	28000
Strontium	µg/L							34.0	26.8	23.1			50.8	35.5
Thallium	µg/L							<100	<0.05	<0.05			<0.05	<0.05
Thorium	µg/L								<0.05	<0.05				
Tin	µg/L							<300	<0.1	<0.1			<0.1	<0.1
Titanium	µg/L							<10	<0.5	<0.5			<0.01	<0.01
Tungsten	µg/L							<100						
Uranium	µg/L								0.05	<0.05			0.04	0.02
Vanadium	µg/L							<30	<1	<1			0.4	0.3
Zinc	µg/L	<5	23	7	10	<5	<5	<5	<1	4	<5	<5	1	9

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Patch Lake												
		6 m	9 m	6 m Split A	6 m Split B	1 m	3 m	9 m	12 m	1 m	1 m	3 m Rep 1	3 m Split 1A	3 m Rep 2
		23-Apr 1996	23-Apr 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	18-Apr 1997	18-Jul 1997	25-Apr 1998	25-Apr 1998	25-Apr 1998
Physical Parameters														
Conductivity	µS/cm	417	422	282	299	293	280	272	257	361	247	428		431
Total Dissolved Solids	mg/L	218	227	125	130	143	127	130	136	184	122	218		226
Hardness ($CaCO_3$)	mg/L	66.0	63.4	42.0	46.0	42.0	40.0	43.0	41.0	59.6	45.1	77.2		77.8
pH	units	7.08	7.17	7.50	7.60	7.50	7.50	7.60	7.60	7.14	7.10	7.51		7.52
Total Suspended Solids	mg/L	<1	<1	1	<1	4	7	<1	<1	4	1	1		<1
Turbidity	NTU	0.5	0.7	3.4	3	3.5	4	3.2	3.8	4.4	2.5	0.9		0.8
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L	8.1	4	2	1	2	2	1	2	7	2	6		6
AlkalinityTotal ($CaCO_3$)	mg/L									50	33	52		53
Alkalinity to pH 4.5	mg/L	52.2	51.5	32	30	31	30	32	29					
Bicarbonate Alkalinity	mg/L			32	30	31	30	32	29					
Carbonate Alkalinity	mg/L			<1	<1	<1	<1	<1	<1					
Bromide	mg/L													
Chloride	mg/L	91.2	92.1	53.46	53.541	53.541	53.46	53.541	53.379	82.4	54.2	98.3		99.8
Silicate	mg/L													
Fluoride	mg/L	0.09	0.09	0.08	0.07	0.07	0.08	0.07	0.07	0.08	0.07	0.13		0.15
Sulphate	mg/L	2.7	3.4	1.5	1.5	1.5	1.5	1.5	1.5	3	2	3		3
Nutrients														
Ammonia Nitrogen	mg/L	0.007	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		0.007			
Dissolved Nitrate	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		0.003			
Dissolved Nitrite	mg/L	0.002	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			
Nitrite/Nitrate	mg/L													
Dissolved Silicate	mg/L										0.37			
Dissolved Phosphate	mg/L	<0.001	0.005	0.002	<0.002	<0.002	0.002	0.002	0.002		0.0012			
Diss. ortho-Phosphate	mg/L	<0.001	0.003	0.002	<0.002	<0.002	0.002	0.002	<0.002					
Total Phosphorus	mg/L	0.003	0.008	0.006	0.006	0.004	0.004	0.008	0.004	0.012	0.006			
Total Phosphate	mg/L													
Total Organic Carbon	mg/L													
Total Metals														
Aluminum	µg/L	16	18	78	182	123	80	161	143	99	69	32	30	30
Antimony	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	µg/L	0.76	0.68	<1.0	<1.0	1	2	1	1	0.3	0.1	0.5	0.5	0.5
Barium	µg/L	3.00	3.01	1.89	3.17	2.40	2.17	2.84	2.53	<10	<10	<10	<10	<10
Beryllium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5	<5
Bismuth	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<100	<100	<100	<100
Boron	µg/L	36	37	17	22	17	17	18	20	<100	<100	<100	<100	<100
Cadmium	µg/L	0.11	0.13	<0.05	0.13	<0.05	<0.05	0.06	0.17	0.2	<0.2	<0.2	<0.2	<0.2
Calcium	µg/L	10900	10800	7010	7620	6730	7320	6760	6440	9600	7330	13000	13000	13100
Chromium	µg/L	0.8	0.9	1.9	2.4	2	2.2	2.1	2.2	2	<1	<1	<1	<1
Cobalt	µg/L	<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<1	<1	<1	<1	<1
Copper	µg/L	3.7	5.2	1.5	1.7	1.1	1	2.5	2.7	3	1	3	3	6
Gold	µg/L													
Iron	µg/L	30	30	40	120	80	60	90	60	80	70	40	40	40
Lead	µg/L	0.27	0.61	0.07	0.16	0.05	0.08	0.13	0.06	<1	<1	<1	<1	2
Lithium	µg/L	5	4							<10	<10	<10	<10	<10
Magnesium	µg/L	9710	9760	5930	6960	6570	6420	6320	6180	9020	5850	10900	10900	11000
Manganese	µg/L	3.9	3.8	1.71	3.16	2.61	2.35	2.66	2.43	<5	8	<5	<5	<5
Mercury	µg/L									<0.01		<0.05	<0.05	<0.05
Molybdenum	µg/L	0.19	0.2	0.13	0.25	0.12	0.14	0.25	0.29	<1	<1	<1	<1	<1
Nickel	µg/L	0.7	0.8	0.5	1.1	0.7	1.4	0.8	0.7	<1	<1	<1	<1	<1
Phosphorus	µg/L									<300	<300	<300	<300	<300
Potassium	µg/L	3660	3680	2320	2500	2310	2270	2440	2440	4430	2380	4010	4060	4060
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	2.2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	µg/L	240	250	280	580	390	300	500	490	420	440	550	560	560
Silver	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	µg/L	54700	54900	30400	30800	30700	30300	30300	30900	44000	30600	54000	54000	54000
Strontium	µg/L	51.0	51.8	29.9	32.4	31.0	31.7	31.3	31.0	49.0	41.0	72.0	72.0	72.0
Thallium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<100	<100	<200	<200	<200
Thorium	µg/L													
Tin	µg/L	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.1	<0.1	<30	<30	<30	<30	<30
Titanium	µg/L	<0.01	<0.01	1	3	3	2	3	2	<10	<10	<10	<10	<10
Tungsten	µg/L													
Uranium	µg/L	0.04	0.04	0.03	<0.01	0.05	0.01	0.02	0.06					
Vanadium	µg/L	3	0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<30	<30	<30	<30	<30
Zinc	µg/L	2	3	<1.0	2	<1.0	<1.0	2	3	14	<5	<5	<5	<5

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Wolverine Lake						Windy Lake						
											SW1			
		1 m	1 m	3 m	3 m	3 m	3 m						1 m	1 m
				Rep 1	Split 1A	Rep 2	Split 2A						Split A	Split B
		18-Apr	16-Jul	24-Apr	24-Apr	24-Apr	24-Apr	28-May	7-Jun	2-Jul	17-Aug	24-Aug	29-Aug	29-Aug
		1997	1997	1998	1998	1998	1998	1995	1995	1995	1995	1995	1996	1996
Physical Parameters														
Conductivity	µS/cm	614	257	642		644	647	406	19.8	168	390	409	456	449
Total Dissolved Solids	mg/L	327	136	366		342	366	207	8	89	220	205	237	219
Hardness ($CaCO_3$)	mg/L	98.5	46.4	117.0		119.0	118.0				52.0		59.9	55.2
pH	units	6.92	7.02	7.43		7.42	7.46	7.44	6.33	7.09	6.90	7.75	7.90	7.80
Total Suspended Solids	mg/L	2	2	1		2	5	<1	<1	<1	1	19	2	3
Turbidity	NTU	2.9	2.7	1.1		1.2	1.1						5	5
Dissolved Anions														
Acidity ($CaCO_3$)	mg/L	18	4	11		11	13						1	1
AlkalinityTotal ($CaCO_3$)	mg/L	79	32	78		78	77	47.8	1.3	17.9		46.6		
Alkalinity to pH 4.5	mg/L										45		46	46
Bicarbonate Alkalinity	mg/L										45		46	46
Carbonate Alkalinity	mg/L										<1		<1	<1
Bromide	mg/L													
Chloride	mg/L	145	57.2	155		155	154				95.2		95.9	98.6
Silicate	mg/L										0.7			
Fluoride	mg/L	0.1	0.06	0.19		0.19	0.19				0.08		<0.02	0.06
Sulphate	mg/L	2	<1	1		1	1	7.2	<1	3	6.6	8.7	6.8	7
Nutrients														
Ammonia Nitrogen	mg/L		0.0052					0.011	0.021	0.015	<0.02	0.009	<0.005	<0.005
Dissolved Nitrate	mg/L		0.0022					<0.005	0.052	0.034	0.008	<0.005	<0.005	0.015
Dissolved Nitrite	mg/L		<0.001					0.001	0.001	0.001	<0.001	0.001	<0.001	<0.001
Nitrite/Nitrate	mg/L													
Dissolved Silicate	mg/L		0.64											
Dissolved Phosphate	mg/L		0.0012											
Diss. ortho-Phosphate	mg/L										0.002		<0.001	<0.001
Total Phosphorus	mg/L	0.014	0.01										<0.001	<0.001
Total Phosphate	mg/L													
Total Organic Carbon	mg/L										1.4			
Total Metals														
Aluminum	µg/L	34	66	12	15	16					12		147	127
Antimony	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1					<0.2		0.08	0.06
Arsenic	µg/L	0.8	<0.1	0.8	0.8	0.8					4		<1	5
Barium	µg/L	10.00	<10	<10	<10	<10					2.30		2.72	2.34
Beryllium	µg/L	<5	<5	<5	<5	<5					<0.1		<0.5	<0.5
Bismuth	µg/L	<100	<100	<100	<100	<100					0.14		<0.5	<0.5
Boron	µg/L	<100	<100	<100	<100	<100					43		93	92
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.1	<0.2	<0.05	<0.05
Calcium	µg/L	15000	6570	17300	17400	17500					12900		10900	11200
Chromium	µg/L	<1	<1	<1	<1	<1					5.3		2.6	2.2
Cobalt	µg/L	<1	<1	<1	<1	<1					<0.1		<0.1	<0.1
Copper	µg/L	3	<1	2	2	3		1	<1	<1	1.1	<1	1.4	0.8
Gold	µg/L										<0.1			
Iron	µg/L	400	280	320	300	320					80		150	120
Lead	µg/L	<1	<1	<1	<1	<1		1	<1	<1	0.2	<1	0.36	0.28
Lithium	µg/L	10	<10	10	10	10					5.8			
Magnesium	µg/L	16100	6250	17900	18100	18200					11500		7980	7960
Manganese	µg/L	26	12	58	57	58					0.7		2.17	1.66
Mercury	µg/L	<0.01		<0.05	<0.05	<0.05					<0.01			
Molybdenum	µg/L	<1	<1	<1	<1	<1					<0.2		0.47	0.48
Nickel	µg/L	1	<1	2	2	2					1.5		1.3	1.1
Phosphorus	µg/L	<300	<300	<300	<300	<300					110			
Potassium	µg/L	5600	1970	5000	4670	5000					5740		3220	3240
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5					5		4.1	2.2
Silicon	µg/L	1170	520	980	990	990					270		690	560
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1					<0.01		0.06	0.02
Sodium	µg/L	78300	32300	84000	86000	86000					48500			
Strontium	µg/L	79.0	37.0	88.0	88.0	88.0					51.1		43.8	44.6
Thallium	µg/L	<100	<100	<200	<200	<200					<0.05		<0.05	<0.05
Thorium	µg/L										<0.05			
Tin	µg/L	<30	<30	<30	<30	<30					<0.1		0.1	0.1
Titanium	µg/L	<10	<10	<10	<10	<10					<0.5		5	3
Tungsten	µg/L													
Uranium	µg/L										0.15		0.17	0.19
Vanadium	µg/L	<30	<30	<30	<30	<30					<1		2	6
Zinc	µg/L	24	<5	13	13	11		<5	<5	<5	<1	<5	5	4

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Windy Lake											
		4 m	7 m	1 m	1 m	14 m	3 m Rep 1	3 m Rep 2	3 m Split 2A	1 m Rep 1	1 m Rep 2	7 m Rep 1	7 m Rep 2
		29-Aug 1996	29-Aug 1996	17-Apr 1997	17-Jul 1997	17-Jul 1997	25-Apr 1998	25-Apr 1998	25-Apr 1998	25-Jul 2000	25-Jul 2000	25-Jul 2000	25-Jul 2000
Physical Parameters													
Conductivity	µS/cm	451	584	381	429	444	496	500		416	418	419	421
Total Dissolved Solids	mg/L	224	231	210	217	222	246	259		228	229	229	231
Hardness ($CaCO_3$)	mg/L	60.3	62.0	42.2	70.1	72.7	82.2	82.8		63.1	62.5	65.4	62.3
pH	units	7.90	8.00	7.60	7.41	7.42	7.69	7.73		7.92	7.88	7.85	7.89
Total Suspended Solids	mg/L	1	2	2	<1	<1	1	<1		<3	3	<3	3
Turbidity	NTU	5	5	2.1	1.6	1.9	0.3	0.4		1	1	0.8	0.6
Dissolved Anions													
Acidity ($CaCO_3$)	mg/L	1	1	6	2	2	4	4		1	1	1	1
AlkalinityTotal ($CaCO_3$)	mg/L			54	49	50	56	55		44	44	45	45
Alkalinity to pH 4.5	mg/L	46	44										
Bicarbonate Alkalinity	mg/L	46	44										
Carbonate Alkalinity	mg/L	<1	<1										
Bromide	mg/L									<0.5	<0.5	<0.5	<0.5
Chloride	mg/L	98.5	98	96	96	102	112	111		94.9	94.7	95.9	95.8
Silicate	mg/L												
Fluoride	mg/L	0.06	0.06	0.07	0.08	0.09	0.18	0.16		0.11	0.14	0.12	0.13
Sulphate	mg/L	7	6.9	7	7	8	9	9		7	7	7	7
Nutrients													
Ammonia Nitrogen	mg/L	<0.005	<0.005		0.0031	0.0081				<0.005	<0.005	<0.005	<0.005
Dissolved Nitrate	mg/L	<0.005	<0.005		0.0109	0.004				<0.005	<0.005	<0.005	<0.005
Dissolved Nitrite	mg/L	<0.001	<0.001		<0.001	0.0009				<0.001	<0.001	<0.001	<0.001
Nitrite/Nitrate	mg/L												
Dissolved Silicate	mg/L				0.36	0.47							
Dissolved Phosphate	mg/L				0.0046	0.0012							
Diss. ortho-Phosphate	mg/L	<0.001	<0.001							0.004	0.003	0.002	0.002
Total Phosphorus	mg/L	<0.001	<0.001	0.006	0.004	0.004							
Total Phosphate	mg/L									0.006	0.006	0.006	0.006
Total Organic Carbon	mg/L									2.6	3.2	3.1	3.3
Total Metals													
Aluminum	µg/L	118	63	19	48	38	9	10	9	43	43	38	38
Antimony	µg/L	0.09	0.07	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.05	0.06	0.05	0.05
Arsenic	µg/L	2	<1	0.2	0.2	<0.1	0.5	0.5	0.6	0.4	0.4	0.4	0.4
Barium	µg/L	2.39	1.97	<10	<10	<10	<10	<10	<10	2.25	2.29	2.34	2.26
Beryllium	µg/L	<0.5	<0.5	<5	<5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5
Bismuth	µg/L	<0.5	<0.5	<100	<100	<100	<100	<100	<100	<0.5	<0.5	<0.5	<0.5
Boron	µg/L	86	86	<100	<100	<100	<100	<100	<100	44	44	45	46
Cadmium	µg/L	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05
Calcium	µg/L	11200	11400	5400	11400	11600	13900	14000	14000	10700	10500	11000	10600
Chromium	µg/L	2.6	3.2	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5
Cobalt	µg/L	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Copper	µg/L	0.9	1	2	<1	<1	2	2	2	0.9	0.8	0.8	0.9
Gold	µg/L												
Iron	µg/L	140	100	20	30	20	10	<10	<10	40	40	40	40
Lead	µg/L	0.18	0.28	<1	<1	<1	<1	1	1	0.07	0.07	0.07	0.07
Lithium	µg/L			<10	<10	<10	<10	<10	<10	2	2	2	2
Magnesium	µg/L	9310	9160	4810	9200	9530	11500	11600	11600	8800	8800	9200	8700
Manganese	µg/L	1.89	1.37	<5	<5	<5	<5	<5	<5	1.72	1.7	1.87	1.81
Mercury	µg/L			0.02			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	µg/L	0.48	0.47	<1	<1	<1	<1	<1	<1	0.61	0.6	0.61	0.64
Nickel	µg/L	1.3	1.1	<1	<1	<1	<1	<1	<1	0.2	0.2	0.2	0.3
Phosphorus	µg/L			<300	<300	<300	<300	<300	<300				
Potassium	µg/L	3230	3160	2420	3840	3890	4810	4780	4810	4000	4000	4000	4000
Selenium	µg/L	2.7	3.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	1	1	1
Silicon	µg/L	630	440	120	330	340	250	250	250	290	270	290	280
Silver	µg/L	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.01	<0.01	<0.01	<0.01
Sodium	µg/L			26500	56000	57500	66000	67000	66000	53000	52000	53000	50000
Strontium	µg/L	44.7	44.0	30.0	57.0	57.0	68.0	69.0	68.0				
Thallium	µg/L	<0.05	<0.05	<100	<100	<100	<200	<200	<200				
Thorium	µg/L												
Tin	µg/L	<0.1	0.1	<30	<30	<30	<30	<30	<30				
Titanium	µg/L	4	3	<10	<10	<10	<10	<10	<10				
Tungsten	µg/L												
Uranium	µg/L	0.16	0.14							0.18	0.18	0.18	0.18
Vanadium	µg/L	8	<1	<30	<30	<30	<30	<30	<30	<1	<1	<1	<1
Zinc	µg/L	3	5	5	<5	<5	<5	<5	<5	<1	<1	<1	<1

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Little Roberts Lake							
		7-May 1995	7-Jun 1995	2-Jul 1995	24-Aug 1995	2 m Split A 27-Aug 1996	2 m Split B 27-Aug 1996	1 m Rep 1 15-Jul 1997	1 m Rep 2 15-Jul 1997
Physical Parameters									
Conductivity	µS/cm	927	83.5	195	286	287	233	201	200
Total Dissolved Solids	mg/L	488	68	115	173	146	140	107	104
Hardness ($CaCO_3$)	mg/L					42.9	14.3	35.4	37.0
pH	units	7.04	7.02	6.78	7.06	7.50	7.50	7.17	7.02
Total Suspended Solids	mg/L	21	11	11	11	<1	3	4	3
Turbidity	NTU					1	0.8	5.8	5.8
Dissolved Anions									
Acidity ($CaCO_3$)	mg/L					2	2	2	2
AlkalinityTotal ($CaCO_3$)	mg/L	90.3	20.6	17.8	23.2			21	21
Alkalinity to pH 4.5	mg/L					20	22		
Bicarbonate Alkalinity	mg/L					20	22		
Carbonate Alkalinity	mg/L					<1	<1		
Bromide	mg/L								
Chloride	mg/L					59.4	58.7	42.8	43.2
Silicate	mg/L								
Fluoride	mg/L					<0.02	<0.02	0.06	0.05
Sulphate	mg/L	10.5	4.7	2.2	<1	3.7	3.7	4	3
Nutrients									
Ammonia Nitrogen	mg/L	0.064	0.051	0.018	0.023	<0.005	<0.005	0.0104	0.0051
Dissolved Nitrate	mg/L	0.023	0.015	<0.005	<0.005	<0.005	0.02	0.0093	0.0022
Dissolved Nitrite	mg/L	0.007	0.004	0.002	0.001	<0.001	<0.001	0.0009	<0.001
Nitrite/Nitrate	mg/L								
Dissolved Silicate	mg/L							1.01	1.25
Dissolved Phosphate	mg/L							0.0012	0.0012
Diss. ortho-Phosphate	mg/L					<0.001	<0.001		
Total Phosphorus	mg/L					<0.001	<0.001	0.017	0.015
Total Phosphate	mg/L								
Total Organic Carbon	mg/L								
Total Metals									
Aluminum	µg/L					256	209	160	343
Antimony	µg/L					<0.05	0.06	<0.1	<0.1
Arsenic	µg/L					4	2	0.1	0.2
Barium	µg/L					3.73	3.40	<10	<10
Beryllium	µg/L					<0.5	<0.5	<5	<5
Bismuth	µg/L					<0.5	<0.5	<100	<100
Boron	µg/L					83	89	<100	<100
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2
Calcium	µg/L					6410	5970	5170	5070
Chromium	µg/L					2.2	2.7	<1	<1
Cobalt	µg/L					0.1	0.1	<1	<1
Copper	µg/L	9	3	2	1	3.4	2.9	2	2
Gold	µg/L								
Iron	µg/L					240	260	210	200
Lead	µg/L	1	<1	<1	<1	0.66	0.54	4	<1
Lithium	µg/L							<10	<10
Magnesium	µg/L					8180	4970	4660	4620
Manganese	µg/L					5.07	5.98	12	11
Mercury	µg/L								
Molybdenum	µg/L					0.25	0.2	<1	<1
Nickel	µg/L					2.5	2.3	1	<1
Phosphorus	µg/L							<300	<300
Potassium	µg/L					2500	1900	1780	1610
Selenium	µg/L					2.8	2.4	<0.5	<0.5
Silicon	µg/L					1140	1240	1060	1030
Silver	µg/L					<0.01	<0.01	<0.1	<0.1
Sodium	µg/L							24300	24100
Strontium	µg/L					37.8	27.5	34.0	34.0
Thallium	µg/L					<0.05	<0.05	<100	<100
Thorium	µg/L								
Tin	µg/L					0.5	0.2	<30	<30
Titanium	µg/L					6	6	<10	<10
Tungsten	µg/L								
Uranium	µg/L					0.01	0.08		
Vanadium	µg/L					1	2	<30	<30
Zinc	µg/L	327	10	<5	<5	8	6	<5	<5

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A5. Physical parameters, anions, nutrients and total metals in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Pelvic Lake								
		1 m	14 m	3 m	3 m	3 m	1 m	1 m	9 m	9 m
				Rep 1	Rep 2	Rep 2A	Rep 1	Rep 2	Rep 1	Rep 2
		17-Jul	17-Jul	24-Apr	24-Apr	24-Apr	24-Jul	24-Jul	24-Jul	24-Jul
		1997	1997	1998	1998	1998	2000	2000	2000	2000
Physical Parameters										
Conductivity	µS/cm	163	164	269	259	260	207	206	205	208
Total Dissolved Solids	mg/L	91	94	153	185	146	115	113	114	116
Hardness ($CaCO_3$)	mg/L	29.8	28.4	44.1	43.5	44.0	30.2	30.2	30.3	30.5
pH	units	7.43	7.05	7.08	7.19	7.16	7.51	7.60	7.45	7.65
Total Suspended Solids	mg/L	10	6	3	5	<1	8	4	6	6
Turbidity	NTU	11.7	9.8	6.1	6.3	6	5.8	5.3	7.3	5.9
Dissolved Anions										
Acidity ($CaCO_3$)	mg/L	4	2	6	5	6	1	1	2	1
AlkalinityTotal ($CaCO_3$)	mg/L	17	17	24	25	25	16	16	16	16
Alkalinity to pH 4.5	mg/L									
Bicarbonate Alkalinity	mg/L									
Carbonate Alkalinity	mg/L									
Bromide	mg/L						<0.5	<0.5	<0.5	<0.5
Chloride	mg/L	35	34.9	61.7	62.8	61.6	47.3	47.4	46.9	46.2
Silicate	mg/L									
Fluoride	mg/L	0.06	0.05	0.08	0.08	0.09	0.08	0.07	0.05	0.05
Sulphate	mg/L	3	2	4	4	4	3	3	3	3
Nutrients										
Ammonia Nitrogen	mg/L	0.0074	0.0059				<0.005	<0.005	<0.005	<0.005
Dissolved Nitrate	mg/L	0.0019	0.0027				<0.005	<0.005	<0.005	<0.005
Dissolved Nitrite	mg/L	0.0009	0.0017				<0.001	<0.001	<0.001	<0.001
Nitrite/Nitrate	mg/L									
Dissolved Silicate	mg/L	0.56	0.41							
Dissolved Phosphate	mg/L	0.0012	0.0046							
Diss. ortho-Phosphate	mg/L						0.013	0.013	0.016	0.017
Total Phosphorus	mg/L	0.026	0.026							
Total Phosphate	mg/L						0.02	0.02	0.026	0.024
Total Organic Carbon	mg/L						6.3	6.4	6.5	6.9
Total Metals										
Aluminum	µg/L	338	66	93	95		93	91	93	88
Antimony	µg/L	<0.1	<0.1	<0.1	<0.1		<0.05	<0.05	<0.05	<0.05
Arsenic	µg/L	0.2	0.1	0.5	0.5		0.3	0.3	0.3	0.3
Barium	µg/L	<10	<10	<10	<10		2.61	2.65	2.71	2.63
Beryllium	µg/L	<5	<5	<5	<5		<0.5	<0.5	<0.5	<0.5
Bismuth	µg/L	<100	<100	<100	<100		<0.5	<0.5	<0.5	<0.5
Boron	µg/L	<100	<100	<100	<100		18	18	17	19
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2		<0.05	<0.05	<0.05	<0.05
Calcium	µg/L	3490	3410	5690	5550		3900	3910	3940	3930
Chromium	µg/L	<1	<1	2	2		<0.5	<0.5	<0.5	<0.5
Cobalt	µg/L	<1	<1	<1	<1		<0.1	<0.1	<0.1	<0.1
Copper	µg/L	2	1	13	14		1.4	1.3	1.3	1.3
Gold	µg/L									
Iron	µg/L	410	430	110	80		170	170	180	180
Lead	µg/L	5	<1	2	1		0.08	0.08	0.12	0.1
Lithium	µg/L	<10	<10	<10	<10		2	2	2	2
Magnesium	µg/L	4150	4080	7300	7200		5000	5000	5000	5000
Manganese	µg/L	22	36	<5	<5		16.1	16	19.1	20.5
Mercury	µg/L			<0.05	<0.05		<0.05	<0.05	<0.05	<0.05
Molybdenum	µg/L	<1	<1	<1	<1		0.11	0.12	0.11	0.11
Nickel	µg/L	<1	<1	2	2		0.3	0.3	0.3	0.3
Phosphorus	µg/L	<300	<300	<300	<300					
Potassium	µg/L	1560	2300	2410	2470		<2000	<2000	<2000	<2000
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5		<1	<1	<1	<1
Silicon	µg/L	1640	1790	1500	1480		1200	1220	1200	1210
Silver	µg/L	<0.1	<0.1	<0.1	<0.1		<0.01	<0.01	<0.01	<0.01
Sodium	µg/L	21000	20500	35000	35000		25000	25000	25000	25000
Strontium	µg/L	25.0	25.0	38.0	38.0					
Thallium	µg/L	<100	<100	<200	<200					
Thorium	µg/L									
Tin	µg/L	<30	<30	<30	<30					
Titanium	µg/L	10	10	<10	<10					
Tungsten	µg/L									
Uranium	µg/L						0.04	0.04	0.04	0.04
Vanadium	µg/L	<30	<30	<30	<30		<1	<1	<1	<1
Zinc	µg/L	<5	<5	12	10		<1	<1	<1	<1

Note: Split = split sample; Rep = field replicate; Lab Split = inter lab comparison

Appendix A6. Dissolved metal concentrations in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Doris Lake													
		SW3-5	3 m	6 m	9 m	13 m	4 m	8 m	12 m	12 m Rep	16 m		1 m	1 m Rep 1	1 m Rep 2	15 m Split 1
		20-Aug 1995	23-Apr 1996	23-Apr 1996	23-Apr 1996	23-Apr 1996	28-Aug 1996	28-Aug 1996	28-Aug 1996	28-Aug 1996	28-Aug 1996	28-Aug 1996	18-Apr 1997	18-Jul 1997	18-Jul 1997	18-Jul 1997
Dissolved Metals																
Aluminum	µg/L	33	3	3	3	5	4	4	4	4	4	4	<5	22	21	22
Antimony	µg/L	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1
Arsenic	µg/L	<1	0.62	0.5	0.47	0.57	<1	<1	<1	1	<1	<1	0.3	<0.1	<0.1	<0.1
Barium	µg/L	6.7	2.73	2.59	2.7	2.6	1.51	1.42	1.67	1.65	1.55	1.46	<10	<10	<10	<10
Beryllium	µg/L	<0.1	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5
Bismuth	µg/L	<0.06	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<100	<100	<100
Boron	µg/L	16	23	22	23	22	55	48	58	64	58	49	<100	<100	<100	<100
Cadmium	µg/L	<0.1	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2
Calcium	µg/L	4770	6790	6860	6880	6930	5920	5730	6250	6310	5910	5830	8090	6100	5980	6250
Chromium	µg/L	<0.5	0.5	0.6	0.4	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	<1
Cobalt	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	<1
Copper	µg/L	<0.5	3.3	2.8	3.3	3.6	0.7	0.8	1.3	1.1	0.9	0.9	4	1	1	1
Gold	µg/L	<0.1														
Iron	µg/L	90	10	20	30	30	20	20	30	30	30	20	10	50	50	60
Lead	µg/L	<0.1	0.07	0.06	0.07	0.07	0.06	0.1	0.14	0.14	0.14	0.17	<1	<1	<1	<1
Lithium	µg/L	2.5	3	3	3	3							<10	<10	<10	<10
Magnesium	µg/L	4430	6180	6120	6170	6160	4530	4170	5780	5380	4940	5120	7000	4910	4880	5040
Manganese	µg/L	127	0.45	0.51	0.57	0.95	0.13	0.16	0.13	0.17	0.15	0.14	<5	<5	<5	15
Mercury	µg/L	<0.01											<0.01			
Molybdenum	µg/L	<0.2	0.25	0.17	0.22	0.2	0.08	0.15	0.11	0.1	0.14	0.12	<1	<1	<1	<1
Nickel	µg/L	<0.5	0.9	0.7	0.8	0.7	0.3	0.2	0.4	0.3	0.3	0.2	<1	<1	<1	<1
Phosphorus	µg/L	<50											<300	<300	<300	<300
Potassium	µg/L	1890	2440	2370	2440	2470	1800	1870	2050	1920	1900	1840	3100	1850	1800	1880
Selenium	µg/L	2	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	1.1	6.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	µg/L	950	970	970	980	1040	940	770	910	960	920	910	1170	1070	1060	1210
Silver	µg/L	<0.01	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1
Sodium	µg/L	22500	33200	33300	33700	34000							33800	25800	25300	26900
Strontium	µg/L	20.8	34.7	34.5	34.7	34.5	21.3	26.0	33.5	29.3	23.3	22.1	45.0	37.0	37.0	38.0
Thallium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<100	<100	<100	<100
Thorium	µg/L	<0.05														
Tin	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.2	0.1	0.1	0.1	<30	<30	<30	<30
Titanium	µg/L	<0.5	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<10	<10	<10	<10
Uranium	µg/L	<0.05	0.03	0.03	0.03	0.03	0.01	0.01	0.03	0.01	0.03	0.04				
Vanadium	µg/L	<1	<0.1	0.1	<0.1	0.1	<0.1	0.1	0.3	0.6	0.6	0.4	<30	<30	<30	<30
Zinc	µg/L	<1	2	<1	2	2	2	3	3	2	2	2	12	<5	<5	<5

Appendix A6. Dissolved metal concentrations in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Doris Lake			Tail Lake							Ogama Lake					
		15 m Split 2 18-Jul 1997	1 m 22-Aug 1997	12.5 m 22-Aug 1997	2.5 m Rep A 27-Aug 1996	2.5 m Rep B 27-Aug 1996	2.5 m Rep C 27-Aug 1996	1 m 27-Aug 1996	4 m 27-Aug 1996	1 m 18-Apr 1997	1 m 16-Jul 1997	1 m 27-Aug 1996	2 m 27-Aug 1996	3 m 27-Aug 1996	1 m Split 1 18-Apr 1997	1 m Split 2 18-Apr 1997	1 m 16-Jul 1997
Dissolved Metals																	
Aluminum	µg/L	21	16	15	40	38	42	44	38	110	55	78	84	81	220	160	139
Antimony	µg/L	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	0.1	<0.1
Arsenic	µg/L	<0.1	0.5	0.4	<1.0	<1.0	<1.0	<1.0	<1.0	0.3	<0.1	<1.0	<1.0	<1.0	0.6	0.5	0.1
Barium	µg/L	<10	<10	<10	1.66	1.57	1.54	1.67	1.66	<10	<10	2.7	2.75	2.64	<10	10	<10
Beryllium	µg/L	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.5	<0.5	<0.5	<5	<5	<5
Bismuth	µg/L	<100	<100	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<100	<0.5	<0.5	<0.5	<100	<100	<100
Boron	µg/L	<100	<100	<100	10	9	10	10	10	<100	<100	15	15	17	<100	<100	<100
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.05	<0.05	<0.05	0.3	0.3	<0.2
Calcium	µg/L	5950	5720	5720	4260	4250	4260	4250	4710	9130	4640	5070	5040	5130	11700	11900	4410
Chromium	µg/L	<1	<1	<1	0.8	0.9	0.8	1	0.9	3	<1	1.1	1	1.1	<1	1	<1
Cobalt	µg/L	<1	<1	<1	<0.1	<0.1	0.2	<0.1	<0.1	<1	<1	<0.1	<0.1	<0.1	<1	<1	<1
Copper	µg/L	1	1	1	0.9	0.9	0.8	1	0.8	3	1	1.3	1	2.8	11	11	2
Gold	µg/L																
Iron	µg/L	50	<30	<30	10	<1.00	20	10	<1.00	170	100	20	20	30	350	300	200
Lead	µg/L	<1	<1	<1	<0.05	<0.1	<0.05	<0.05	<0.05	<1	<1	<0.05	<0.05	<0.05	1	<1	<1
Lithium	µg/L	<10	<10	<10						<10	<10				<10	<10	<10
Magnesium	µg/L	4890	4960	4980	4170	3910	4120	4210	4030	7470	3530	6140	5900	6050	13100	13300	4290
Manganese	µg/L	14	<5	<5	<0.05	<0.05	0.05	<0.05	<0.05	<5	<5	0.14	0.14	0.26	309	314	<5
Mercury	µg/L		<0.05	<0.05						<0.01					<0.01	<0.01	
Molybdenum	µg/L	<1	<1	<1	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<1	0.22	0.16	0.16	<1	<1	<1
Nickel	µg/L	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	1	<1	0.2	0.2	0.2	2	2	<1
Phosphorus	µg/L	<300	<300	<300						<300	<300				<300	<300	<300
Potassium	µg/L	1900	2400	2420	1470	1420	1400	1460	1380	2960	1240	2100	2030	2100	5430	5400	1540
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	0.8	<0.5	<0.5
Silicon	µg/L	1150	980	1000	300	290	310	300	270	1400	790	960	980	1030	4150	4130	1320
Silver	µg/L	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	0.02	<0.01	<0.01	<0.1	<0.1	<0.1
Sodium	µg/L	25800	26000	25300	13100	12500	12800	13000	12100	24800	12400	22900	27100	27400	66400	66000	22000
Strontium	µg/L	37.0	41.0	41.0	15.9	15.8	16.5	15.6	16.2	37.0	20.0	26.3	24.5	27.0	62.0	62.0	26.0
Thallium	µg/L	<100	<100	<100	<0.05	<0.05	<0.05	<0.05	<0.05	<100	<100	<0.05	<0.05	<0.05	<100	<100	<100
Thorium	µg/L																
Tin	µg/L	<30	<30	<30	<0.1	<0.1	<0.1	<0.1	<0.1	<30	<30	<0.1	<0.1	<0.1	<30	<30	<30
Titanium	µg/L	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0	<1.0	<1.0	<10	<10	<10
Uranium	µg/L				<0.01	<0.01	0.03	<0.01	<0.01			<0.01	<0.01	0.03			
Vanadium	µg/L	<30	<30	<30	0.3	0.3	0.3	0.3	0.3	<30	<30	0.4	0.4	0.4	<30	<30	<30
Zinc	µg/L	<5	<5	<5	<1.0	<1.0	<1.0	<1.0	<1.0	12	<5	1	<1.0	<1.0	30	12	<5

Appendix A6. Dissolved metal concentrations in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Patch Lake												Wolverine L.	
		3 m	4 m	6 m	9 m	6 m Rep A	6 m Rep B	1 m	3 m	9 m	12 m	1 m	1 m	1 m	1 m
		23-Apr 1996	23-Apr 1996	23-Apr 1996	23-Apr 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	26-Aug 1996	18-Apr 1997	18-Jul 1997	18-Apr 1997	16-Jul 1997
Dissolved Metals															
Aluminum	µg/L	5	4	7	5	12	14	12	12	14	14	26	17	21	19
Antimony	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1
Arsenic	µg/L	0.74	0.4	0.73	0.76	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.3	<0.1	0.7	<0.1
Barium	µg/L	2.8	2.49	2.93	2.85	1.71	1.66	1.63	1.59	1.8	1.82	<10	<10	<10	<10
Beryllium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5
Bismuth	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<100	<100	<100
Boron	µg/L	35	23	35	37	17	19	16	16	18	18	<100	<100	<100	<100
Cadmium	µg/L	0.08	0.23	0.07	0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2
Calcium	µg/L	11000	8890	10600	10300	6940	7450	6650	6110	6700	6370	9400	7230	14300	6550
Chromium	µg/L	0.6	0.4	0.6	0.7	1.1	1.2	1.1	1	1.1	1.1	<1	<1	<1	<1
Cobalt	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	<1
Copper	µg/L	3.4	6.7	4.3	4.5	0.6	0.7	0.5	0.5	0.6	0.5	2	1	2	<1
Gold	µg/L														
Iron	µg/L	30	40	30	10	<10	<10	<10	<10	<10	<10	10	<10	180	90
Lead	µg/L	0.06	<0.05	0.93	0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.1	<1	<1	<1	<1
Lithium	µg/L	4	4	4	4							<10	<10	<10	<10
Magnesium	µg/L	9680	6550	9590	9170	5910	6640	6210	6060	6280	6090	8770	5780	15200	6160
Manganese	µg/L	0.51	1.39	0.4	0.33	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<5	<5	11	<5
Mercury	µg/L											<0.01		<0.01	
Molybdenum	µg/L	0.23	0.2	0.23	0.26	0.06	0.12	<0.05	<0.05	0.07	<0.05	<1	<1	<1	<1
Nickel	µg/L	1.1	1.2	1.2	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	1	<1
Phosphorus	µg/L											<300	<300	<300	<300
Potassium	µg/L	3650	2490	3630	3380	2280	2500	2270	2190	2310	2330	4300	2300	5510	1910
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silicon	µg/L	210	690	210	220	240	240	230	210	240	230	390	330	1100	410
Silver	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1
Sodium	µg/L	53800	27600	53300	51400	28500	29200	28600	29300	29400	29000	42900	30300	74400	32300
Strontium	µg/L	50.8	34.3	51.0	48.7	29.6	31.5	27.7	28.5	31.0	30.5	48.0	41.0	75.0	36.0
Thallium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<100	<100	<100	<100
Thorium	µg/L														
Tin	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<30	<30	<30	<30
Titanium	µg/L	<10	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10
Uranium	µg/L	0.04	0.02	0.04	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
Vanadium	µg/L	0.1	0.1	<0.1	0.1	0.3	0.5	0.3	0.3	0.4	0.3	<30	<30	<30	<30
Zinc	µg/L	1	9	2	3	<1.0	2	<1.0	<1.0	<1.0	<1.0	14	<5	23	<5

Appendix A6. Dissolved metal concentrations in water quality samples from Doris Hinge lakes, 1995-2000.

Parameter	Unit	Windy Lake							Little Roberts Lake				Pelvic Lake	
		1 m Rep A 29-Aug 1996	1 m Rep B 29-Aug 1996	4 m 29-Aug 1996	7 m 29-Aug 1996	1 m 17-Apr 1997	1 m 17-Jul 1997	14 m 17-Jul 1997	2 m Rep A 27-Aug 1996	2 m Rep B 27-Aug 1996	1 m Rep 1 15-Jul 1997	1 m Rep 2 15-Jul 1997	1 m 17-Jul 1997	14 m 17-Jul 1997
Dissolved Metals														
Aluminum	µg/L	6	4	6	4	<5	10	10	<1	6	45	46	99	116
Antimony	µg/L	0.05	0.06	0.08	0.07	<0.1	0.1	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1
Arsenic	µg/L	<1	<1	1	<1	0.2	<0.1	<0.1	2	1	<0.1	<0.1	<0.1	<0.1
Barium	µg/L	1.6	1.6	1.76	1.62	<10	<10	<10	1.98	0.59	<10	<10	<10	<10
Beryllium	µg/L	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<0.5	<0.5	<5	<5	<5	<5
Bismuth	µg/L	<0.5	<0.5	<0.5	<0.5	<100	<100	<100	<0.5	<0.5	<100	<100	<100	<100
Boron	µg/L	83	64	62	78	<100	<100	<100	78	59	<100	<100	<100	<100
Cadmium	µg/L	<0.05	<0.05	<0.05	<0.05	0.2	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2
Calcium	µg/L	10900	9380	11000	11400	7500	11700	11100	5100	1910	5020	4920	3390	3380
Chromium	µg/L	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	<0.1	<0.1	<1	<1	<1	<1
Cobalt	µg/L	<0.1	<0.1	<0.1	<0.1	<1	<1	<1	<0.1	<0.1	<1	<1	<1	<1
Copper	µg/L	0.3	0.3	0.4	0.3	2	<1	<1	1.5	0.6	2	2	2	2
Gold	µg/L													
Iron	µg/L	10	10	20	20	<10	<10	<10	40	20	60	50	120	160
Lead	µg/L	0.09	<0.05	<0.05	<0.05	<1	<1	<1	0.26	0.21	<1	<1	<1	<1
Lithium	µg/L					<10	<10	<10			<10	<10	<10	<10
Magnesium	µg/L	7940	7720	7970	8150	5700	9410	9050	7320	2310	4560	4530	4020	3970
Manganese	µg/L	0.1	0.12	0.1	0.08	<5	<5	<5	0.23	0.14	<5	<5	<5	11
Mercury	µg/L					<0.01								
Molybdenum	µg/L	0.39	0.44	0.4	0.36	<1	<1	<1	0.21	0.09	<1	<1	<1	<1
Nickel	µg/L	0.2	0.1	0.2	0.1	<1	<1	<1	0.5	0.2	<1	<1	<1	<1
Phosphorus	µg/L					<300	<300	<300			<300	<300	<300	<300
Potassium	µg/L	3150	3160	3220	3150	2700	3840	3650	2500	980	1730	1680	1450	1480
Selenium	µg/L	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	1.1	1.6	<0.5	<0.5	<0.5	<0.5
Silicon	µg/L	260	330	290	240	110	260	250	760	260	800	790	1100	1290
Silver	µg/L	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1
Sodium	µg/L					29800	57000	54800			24200	23900	20600	20500
Strontium	µg/L	43.7	44.4	36.1	44.0	37.0	57.0	57.0	30.3	10.5	34.0	32.0	24.0	25.0
Thallium	µg/L	<0.05	<0.05	<0.05	<0.05	<100	<100	<100	<0.05	<0.05	<100	<100	<100	<100
Thorium	µg/L													
Tin	µg/L	0.1	<0.1	<0.1	<0.1	<30	<30	<30	0.3	0.2	<30	<30	<30	<30
Titanium	µg/L	<1	<1	<1	<1	<10	<10	<10	<1	<1	<10	<10	<10	<10
Uranium	µg/L	0.12	0.15	0.14	0.14				<0.01	0.01				
Vanadium	µg/L	0.4	0.5	0.5	0.5	<30	<30	<30	0.5	0.2	<30	<30	<30	<30
Zinc	µg/L	2	2	2	2	8	<5	<5	2	2	<5	<5	<5	<5

Appendix A7. Secchi depths (m) measured in Doris Hinge lakes, 1995-2000.

Date	Doris	Tail	Ogama	Patch	Wolverine	Windy	Little Roberts	Pelvic
20-Aug-95	1.7			3.8				
15-Jul-97							1.1	
16-Jul-97		1.6	0.5		2.1			
17-Jul-97				2.75		4.25		1.4
18-Jul-97	1.5							
22-Aug-97	1.25							
24-Jul-00	2.2							1.6
25-Jul-00						2.9		
22-Aug-00	1.5	4.2						
23-Aug-00								0.5
26-Aug-00							1.6	

Appendix A8. Derivation of Water/Sediment Quality Statistics

Non-detectable results must be replaced with numeric values when calculating summary statistics for a dataset. The summary statistics presented in the water quality baseline setting were generated using the raw data presented in Appendices A5, A6, A9 and A10. These data include results that were recorded as less than method detection limit (MDL). As mentioned, these detection limits vary by parameter and may change depending on the sample matrix or analytical method, and therefore, detection limits that varied for a parameter throughout the dataset were considered on a case-specific basis.

Common practices for developing summary statistics include replacing non-detectable results with zeroes, half of the MDL or the MDL (e.g., < 0.1 becomes 0, 0.05 or 0.1 respectively). A Visual Basic program designed to calculate medians, minimums, maximums, and sample numbers based on the specific dataset was used for the production of baseline summaries for each of the following four scenarios:

- non-detects (NDs) = -MDL
- NDs = MDL
- NDs are eliminated form the dataset
- all detectable results are eliminated from the dataset and NDs = -MDL

The results of this exercise were tabulated, as shown on Table A8-1. Using the selection criteria detailed below, single values were chosen from the tabulated results to represent sample medians, minimums, maximums and numbers.

Table A8-1 General Representation of the Results Matrix Produced from the Four Different Non-Detect Replacement Methods used in this Assessment.

Statistic	Dataset Contains			
	NDs = -MDL	no NDs	NDs = MDL	only NDs (NDs = -MDL)
Median	a	b	c	d
Minimum	e	f	g	h
Maximum	i	j	k	l
Sample number	m	n	o	p

Selection Criteria

The following logic trees were used to select representative median, maximum, minimum, and sample number values from the sample matrix shown in Table A8-1. Each logic tree is written here with reference to the letters listed in Table A8-1.

Median

If **p** = 0, then the median = **a**, **b** or **c** (since **a** = **b** = **c**)
If **n** = 0, then the median = **a**, **-c**, or **d** (since **a** = **-c** = **d**)
If **m** is odd, then
  if **p** > **n**, then the median = **-c** [(a)]
  if **p** < **n**, then the median = **c**
If **m** is even, then
  if **p** = **n**, then the median = **c**
  if **p** > **n**, then the median = **-c**[(a)]
  if **p** < **n**, then the median = **c**

[(a)] using the inverse of **c** to indicate that the majority of the existing data were NDs

Minimum

If **p** = 0, then the minimum = **e**, **f** or **g** (since **e** = **f** = **g**)
If **n** = 0, then the minimum = **-g**
If **-h** > **f**, then the minimum = **f**
If **-h** < **f**, then the minimum = **h**

This logic tree was constructed on the assumption that when NDs = -MDL, the minimum value is equal to the number closest to zero. For example, the minimum value for the dataset -0.1, -1, -0.2, -0.3 is -0.1.

Maximum

Maximum = **i**

This assumes that the maximum value is equal to the largest number in the dataset while maintaining true to its origin. For example, the maximum value for the dataset <1, 0.3, 0.8, <0.2 is <1.

Sample Number

Sample number = **m** or **o** (since **m** = **o**).

Data Reduction

For each water body, the data were arranged by date. Non-detect samples were replaced with the detection limit. The data was then divided into the appropriate seasons, as designated for each water body (e.g., ice covered and open water). The following steps were then followed to obtain the summary statistics tables for each water body in each season:

- The sample size was determined using the original data set.
- The medians were calculated using one value for each sample date. Where several samples were taken from one lake on a given date, the median of the pooled samples was used to represent that date.
- In data sets with several detection limits, if the median value was non-detect, then the median was listed as less than the median detection limit.
- The absolute minimum and maximum values were obtained from the raw data (i.e., the pooled medians were not used to represent minimum or maximum values).

Appendix A9. Analytical results for water quality samples from Doris Hinge streams, 1996-2000.

Parameter	Unit	Doris Outflow										Tail Outflow			
		23-Jun 1996	22-Aug 1996	19-Jun 1997	Rep 1 19-Jul 1997	Rep 2 19-Jul 1997	20-Aug 1997	Rep 1 20-Jun 2000	Rep 2 20-Jun 2000	Rep 1 14-Sep 2000	Rep 2 14-Sep 2000	23-Jun 1996	22-Aug 1996	Rep 1 19-Jun 1997	Rep 2 19-Jun 1997
Physical Parameters															
Conductivity	µS/cm	150	311	236	212	211	227	269	268	261	262	97.6	142	83	79
Total Dissolved Solids	mg/L	86	232	130	132	104	122	136	161	157	157	55	88	44	42
Hardness ($CaCO_3$)	mg/L	22	70	38.1	39.1	38.5	36.6	49	48.8	46.9	65.9	19	30	16.7	17.2
pH	units	7.2	7.3	6.83	7.06	6.99	7.21	7.6	7.7	7.55	7.6	7.1	7.3	6.78	6.77
Total Suspended Solids	mg/L	<1	<1	6	4	6	7	<3	<3	7	7	<1	20	<1	2
Turbidity	NTU	3	6.5	6.6	4.3	4.5	6.9	4.5	5.3	5.8	6.5	0.7	12	1.7	1.9
Dissolved Anions															
Acidity ($CaCO_3$)	mg/L	2.2	2	3	2	2	3	2	1	2	3	2.3	2	3	3
AlkalinityTotal ($CaCO_3$)	mg/L			26	24	24	23	26	26	25	25			15	15
Alkalinity to pH 4.5	mg/L	16	24									20	26		
Bicarbonate Alkalinity	mg/L		24										26		
Carbonate Alkalinity	mg/L		<1										<1		
Chloride	mg/L	30.5	87	53	46.7	47.1	48.3	59.3	59	58.7	58.3	16.5	27.3	13.2	12.9
Fluoride	mg/L	0.04	0.06	0.06	0.06	0.06	0.09	0.07	0.07	0.08	0.08	0.05	0.06	0.04	0.04
Sulphate	mg/L	1	2.5	3	2	2	2	3	3	4	4	1	3.9	2	2
Nutrients															
Ammonia Nitrogen	mg/L	<0.005	<0.005	0.012	1.3598	1.4024	1.3533	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.015	0.015
Dissolved Nitrate	mg/L	<0.005	<0.005	0.019	0.0023	0.0029	0.002	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.001	<0.001
Dissolved Nitrite	mg/L	<0.001	<0.001	0.005	0.0012	0.0012	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.004
Dissolved Silicate	mg/L			0.381	0.0037	0.0043	0.0047							0.09	0.078
Dissolved Phosphate	mg/L	0.004	0.01	0.008	<0.001	<0.001	0.0009					0.006	0.004	0.005	0.004
Diss. ortho-Phosphate	mg/L	0.002	<0.002					<0.001	<0.001	<0.001	0.001	0.002	<0.002		
Total Phosphorus	mg/L	0.006	0.015	0.018	0.014	0.014	0.022			0.015	0.017	0.008	0.035	0.009	0.009
Total Organic Carbon	mg/L							5.9	6.4	6.3	6.4				
Total Metals															
Aluminum	µg/L	75	19	150	81	92	130	28	34	24	91	16	45	85	85
Antimony	µg/L	<0.05	0.06	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1
Arsenic	µg/L	<4	3	0.4	<0.1	<0.1	0.4	0.3	0.3	0.3	0.4	<2.0	<1.0	0.1	0.1
Barium	µg/L	3.13	7.72	<10	<10	<10	<10	2.98	3.05	3.01	3.58	1.41	2.2	<10	<10
Beryllium	µg/L	<0.5	<0.5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5
Bismuth	µg/L	<0.5	<0.5	<100	<100	<100	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<100
Boron	µg/L	13	14	<100	<100	<100	<100	22	21	20	22	11	8	<100	<100
Cadmium	µg/L	0.19	<0.05	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2
Calcium	µg/L	4110	18200	6220	6100	6370	6230	8410	8480	8220	15700	3550	6320	2990	3050
Chromium	µg/L	0.8		<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	0.9		<1	<1
Cobalt	µg/L	<0.1	0.1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1
Copper	µg/L	1.5	1.6	2	2	2	2	1.6	1.5	1.6	2.3	1.2	1.7	1	<1
Iron	µg/L	100	170	310	170	200	210	60	70	100	120	50	1110	110	120
Lead	µg/L	0.14	0.07	<1	<1	<1	<1	0.09	0.09	0.15	0.27	0.09	0.15	<1	<1
Lithium	µg/L	2		<10	<10	<10	<10	4	4	4	4	2		<10	<10
Magnesium	µg/L	3090	6550	5440	4930	5130	5210	6800	6700	6400	6500	2790	3560	2340	2350
Manganese	µg/L	8.56	57.9	41	24	27	22	7.93	8.17	13.5	14.9	0.98	13.8	<5	<5
Mercury	µg/L						<0.05	<0.05	<0.05	<0.05	<0.05				
Molybdenum	µg/L	0.13	0.16	<1	<1	<1	<1	0.17	0.17	0.14	0.18	0.09	0.08	<1	<1
Nickel	µg/L	0.6	1.3	<1	<1	<1	<1	0.4	0.4	0.4	0.6	0.5	0.7	<1	<1
Phosphorus	µg/L			<300	<300	<300	<300							<300	<300
Potassium	µg/L	1240	2320	2230	1950	1950	2480	3000	3000	9100	3500	1140	1300	860	890
Selenium	µg/L	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	<1	0.6	<0.5	<0.5	<0.5
Silicon	µg/L	710	1030	1500	1190	1260	1110					300	1050	590	610
Silver	µg/L	<0.01	0.03	<0.1	<0.1	<0.1	<0.1	0.02	<0.01	<0.01	<0.01	<0.01	0.07	<0.1	<0.1
Sodium	µg/L	16400	21300	26200	25400	26800	26200	37000	36000	26400	27900	10600	10800	7080	7240
Strontium	µg/L	29.2	168	35	38	38	45					13.2	23.9	13	13
Thallium	µg/L	<0.05	0.05	<100	<100	<100	<100					<0.05	<0.05	<100	<100
Tin	µg/L	<0.1	<0.1	<30	<30	<30	<30					<0.1	<0.1	<30	<30
Titanium	µg/L	2	3	<10	<10	<10	<10					<1.0	5	<10	<10
Uranium	µg/L	<0.01	<0.01					0.03	0.03	0.03	0.04	<0.01	<0.01		
Vanadium	µg/L	<1.0	<1.0	<30	<30	<30	<30	<1	<1	<1	<1	<1.0	<1.0	<30	<30
Zinc	µg/L	2	<1.0	<5	<5	<5	<5	<1	<1	<1	2	1	<1.0	<5	<5
Dissolved Metals															
Aluminum	µg/L	14	6	37	23	24	16					7	20	39	39
Antimony	µg/L	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1					<0.05	<0.05	<0.1	<0.1
Arsenic	µg/L	<1.0	<1.0	<0.1	<0.1	<0.1	0.5					<1.0	<1.0	<0.1	<0.1
Barium	µg/L	2.27	7.70	<10	<10	<10	<10					1.15	1.62	<10	<10
Beryllium	µg/L	<0.5	<0.5	<5	<5	<5	<5					<0.5	<0.5	<5	<5
Bismuth	µg/L	<0.5	<0.5	<100	<100	<100	<100					<0.5	<0.5	<100	<100
Boron	µg/L	11	14	<100	<100	<100	<100					11	6	<100	<100
Cadmium	µg/L	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2					<0.05	<0.05	<0.2	<0.2
Calcium	µg/L	3970	17400	6200	5970	6100	6170					3240	6250	2960	3050
Chromium	µg/L	0.4		<1	<1	<1	<1					0.4		<1	<1
Cobalt	µg/L	<0.1	<0.1	<1	<1	<1	<1					<0.1	<0.1	<1	<1
Copper	µg/L	0.9	1.5	2	2	1	1					0.7	0.7	1	<1
Iron	µg/L	40	40	90	50	60	30					20	50	50	50
Lead	µg/L	<0.05	<0.05	<1	<1	<1	<1					<0.05	<0.05	<1	<1
Lithium	µg/L	2		<10	<10	<10	<10					2		<10	<10
Magnesium	µg/L	3020	6350	5440	4840	4940	5150					2730	3410	2270	2320
Manganese	µg/L	1.83	2.07	17	<5	<5	<5					0.12	0.13	<5	<5
Mercury	µg/L			<0.01			<0.05							<0.01	<0.01
Molybdenum	µg/L	<0.05	0.15	<1	<1	<1	<1					<0.05	0.08	<1	<1
Nickel	µg/L	0.2	0.8	<1	<1	<1	<1					0.2	0.7	<1	<1
Phosphorus	µg/L			<300	<300	<300	<300							<300	<300
Potassium	µg/L	1200	2320	2190	1800	1820	2420					1120	1300	840	840
Selenium	µg/L	0.6	<0.5	<0.5	<0.5	<0.5	<0.5					0.6	<0.5	<0.5	<0.5
Silicon	µg/L	580	1050	1210	1050	1080	960					290	1000	460	470
Silver	µg/L	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1					<0.01	<0.01	<0.1	<0.1
Sodium	µg/L	14600	20900	26000	25000	25600	25900					9690	9150	6980	7080
Strontium	µg/L	26.5	168	35	38	37	44					13.2	21.5	11	12
Thallium	µg/L	<0.05	<0.05	<100	<100	<100	<100					<0.05	<0.05	<100	<100
Tin	µg/L	<0.1	<0.1	<30	<30	<30	<30					<0.1	<0.1	<30	<30
Titanium	µg/L	<1.0	<1.0	<10	<10	<10	<10					<1.0	<1.0	<10	<10
Uranium	µg/L	<0.01	<0.01									<0.02	<0.01		
Vanadium	µg/L	0.1	0.3	<30	<30	<30	<30					<0.1	<0.1	<30	<30
Zinc	µg/L	1	<1.0	<5	<5	<5	<5					1	<1.0	<5	<5

Appendix A9. Analytical results for water quality samples from Doris Hinge streams, 1996-2000.

Parameter	Unit	Tail Outflow						Ogama Outflow						Patch Outflow	
		19-Jul 1997	19-Aug 1997	Rep 1 20-Jun 2000	Rep 2 20-Jun 2000	Rep 1 14-Sep 2000	Rep 2 14-Sep 2000	23-Jun 1996	Rep A 22-Aug 1996	Rep B 22-Aug 1996	18-Jun 1997	18-Jul 1997	20-Aug 1997	23-Jun 1996	Rep A 23-Aug 1996
Physical Parameters															
Conductivity	µS/cm	127	140	58	57	209	209	174	240	234	194	200	225	165	261
Total Dissolved Solids	mg/L	75	75	38	32	125	125	88	135	131	118	112	126	106	133
Hardness ($CaCO_3$)	mg/L	32.8	29	14.4	13.9	43	43.6	24	32	32	28.7	31.6	35.5	24	36
pH	units	6.9	6.69	7.34	7.31	7.64	7.53	7.2	5.4	7.4	6.63	6.98	7.3	7.3	7.6
Total Suspended Solids	mg/L	1	<1	<3	<3	<3	5	2	5	2	12	13	4	<1	20
Turbidity	NTU	1.4	1.4	0.8	0.8	5.3	4.5	5	9	6	16.7	10.6	10.3	4	24
Dissolved Anions															
Acidity ($CaCO_3$)	mg/L	6	6	<1	1	2	2	2.3	2	2	4	4	2	1.8	1
AlkalinityTotal ($CaCO_3$)	mg/L	25	23	9	9	23	23				18	20	22		
Alkalinity to pH 4.5	mg/L							18	24	22				20	30
Bicarbonate Alkalinity	mg/L								24	22					30
Carbonate Alkalinity	mg/L								<1	<1					<1
Chloride	mg/L	22.6	23.6	8.1	8.1	43.4	44	37.8	60.8	60.9	44.1	39.5	47.8	31.5	65.1
Fluoride	mg/L	0.06	0.1	0.04	0.04	0.08	0.08	0.05	0.06	0.07	0.05	0.05	0.09	0.05	0.06
Sulphate	mg/L	1	1	<1	<1	5	6	1	1.9	1.9	2	2	2	1	2.1
Nutrients															
Ammonia Nitrogen	mg/L	0.6938	0.1226	0.031	0.029	<0.005	<0.005	<0.005	<0.005	<0.005	0.022	0.6815	0.9802	<0.005	<0.005
Dissolved Nitrate	mg/L	0.0024	0.0035	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.014	0.042	0.0046	0.0022	<0.005	<0.005
Dissolved Nitrite	mg/L	0.0012	0.0046	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.007	0.0079	0.0046	<0.001	<0.001
Dissolved Silicate	mg/L	0.0054	0.0093								0.238	0.0049	0.004		
Dissolved Phosphate	mg/L	<0.001	<0.001					0.006	0.01	0.008	0.011	0.0017	0.0009	0.004	0.008
Diss. ortho-Phosphate	mg/L			0.006	0.006	0.001	0.001	0.006	0.004	0.002				0.002	0.004
Total Phosphorus	mg/L	0.006	0.007			0.006	0.006	0.006	0.022	0.022	0.032	0.021	0.022	0.01	0.035
Total Organic Carbon	mg/L			5.3	5.2	6	6.2								
Total Metals															
Aluminum	µg/L	64	57	31	30	14	14	179	297	223	547	489	499	58	175
Antimony	µg/L	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.09	<0.1	<0.1	<0.1	<0.05	<0.05
Arsenic	µg/L	<0.1	0.4	0.1	0.1	0.2	0.2	<2.0	4	3	0.5	0.2	0.6	2	<1.0
Barium	µg/L	<10	<10	1.26	1.22	2.88	2.89	3.66	5.63	5	10	10	<10	1.69	3.31
Beryllium	µg/L	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<0.5	<0.5
Bismuth	µg/L	<100	<100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<100	<100	<0.5	<0.5
Boron	µg/L	<100	<100	5	5	13	12	14	15	15	<100	<100	<100	14	17
Cadmium	µg/L	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
Calcium	µg/L	4990	5790	2760	2550	7680	7810	3670	5070	5120	4110	4560	5160	3930	6350
Chromium	µg/L	<1	<1	<0.5	<0.5	<0.5	<0.5	1.3			1	<1	<1	0.8	
Cobalt	µg/L	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<1	<1	<1	<0.1	<0.1
Copper	µg/L	1	3	0.7	0.8	0.8	0.7	1.4	3	2.1	2	2	2	1.4	1.1
Iron	µg/L	240	140	80	80	590	570	260	320	310	1070	710	350	70	250
Lead	µg/L	<1	<1	0.06	0.05	0.07	0.09	0.3	0.29	0.2	<1	<1	<1	0.08	0.13
Lithium	µg/L	<10	<10	1	1	3	3	2			<10	<10	<10	2	
Magnesium	µg/L	3690	5150	1800	1800	5800	5900	3950	4740	4880	4670	4510	5460	3680	5340
Manganese	µg/L	5	9	1.52	1.43	13.5	13.4	21.1	13.9	14.2	97	27	12	3.19	3.86
Mercury	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05						<0.05		
Molybdenum	µg/L	<1	<1	0.07	0.06	0.06	0.06	0.18	0.25	0.25	<1	<1	<1	0.1	0.14
Nickel	µg/L	<1	<1	0.4	0.4	0.5	0.5	0.9	1.8	1.1	2	1	<1	0.3	0.9
Phosphorus	µg/L	<300	<300								<300	<300	<300		
Potassium	µg/L	1220	2420	<2000	<2000	1850	1850	1650	2100	2040	2220	1790	2660	1600	2450
Selenium	µg/L	<0.5	<0.5	<1	<1	<1	<1	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.5
Silicon	µg/L	530	650					1160	1710	1300	2700	2200	1690	260	520
Silver	µg/L	<0.1	<0.1	0.05	0.02	<0.01	<0.01	<0.01	0.08	0.03	<0.1	<0.1	<0.1	<0.01	0.05
Sodium	µg/L	12500	26900	5000	5000	18700	18100	22700	24200	21500	22300	22500	27800	20000	30300
Strontium	µg/L	23	43					17.8	30.4	31.2	23	28	36	18.1	36.7
Thallium	µg/L	<100	<100					<0.05	<0.05	<0.05	<100	<100	<100	<0.05	<0.05
Tin	µg/L	<30	<30					<0.1	<0.1	<0.1	<30	<30	<30	<0.1	<0.1
Titanium	µg/L	<10	<10					4	10	9	20	20	<10	1	11
Uranium	µg/L			0.01	0.01	<0.01	<0.01	0.02	<0.01	0.03				0.03	0.02
Vanadium	µg/L	<30	<30	<1	<1	<1	<1	<1.0	<1.0	<1.0	<30	<30	<30	<1.0	<1.0
Zinc	µg/L	<5	<5	<1	<1	<1	<1	1	5	<1.0	<5	<5	6	1	1
Dissolved Metals															
Aluminum	µg/L	29	20					34	98	77	149	141	159	11	53
Antimony	µg/L	<0.1	<0.1					<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.05	<0.05
Arsenic	µg/L	<0.1	0.3					<1.0	<1.0	<1.0	0.1	<0.1	0.6	<1.0	<1.0
Barium	µg/L	<10	<10					2.15	2.27	2.28	<10	<10	<10	1.38	1.76
Beryllium	µg/L	<5	<5					<0.5	<0.5	<0.5	<5	<5	<5	<0.5	<0.5
Bismuth	µg/L	<100	<100					<0.5	<0.5	<0.5	<100	<100	<100	<0.5	<0.5
Boron	µg/L	<100	<100					14	15	13	<100	<100	<100	14	17
Cadmium	µg/L	<0.2	<0.2					<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
Calcium	µg/L	5080	4920					3550	4830	4950	4010	4490	5190	3630	6160
Chromium	µg/L	<1	<1					0.7			<1	<1	<1	0.5	
Cobalt	µg/L	<1	<1					<0.1	<0.1	<0.1	<1	<1	<1	<0.1	<0.1
Copper	µg/L	1	1					0.9	1.2	1.2	2	2	2	0.8	0.7
Iron	µg/L	90	90					80	30	30	410	170	140	20	<1.00
Lead	µg/L	<1	<1					<0.05	0.05	<0.05	<1	<1	<1	<0.05	0.13
Lithium	µg/L	<10	<10					2			<10	<10	<10	2	
Magnesium	µg/L	3700	4050					3680	4740	4770	4540	4370	5470	3680	5100
Manganese	µg/L	<5	<5					10.8	0.15	0.13	23	<5	<5	0.78	<0.05
Mercury	µg/L		<0.05								<0.01		<0.05		
Molybdenum	µg/L	<1	<1					0.1	0.23	0.21	<1	<1	<1	0.05	0.11
Nickel	µg/L	<1	<1					0.4	1.4	1	1	<1	<1	0.3	0.3
Phosphorus	µg/L	<300	<300								<300	<300	<300		
Potassium	µg/L	1180	1500					1490	1980	2000	2030	1590	2500	1580	2250
Selenium	µg/L	<0.5	<0.5					0.8	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5
Silicon	µg/L	420	520					540	1120	910	1670	1290	1210	170	260
Silver	µg/L	<0.1	<0.1					<0.01	<0.01	0.02	<0.1	<0.1	<0.1	<0.01	<0.01
Sodium	µg/L	12600	13900					20000	21800	21000	22300	22400	28800	18500	27400
Strontium	µg/L	23	26					17.2	28.8	27.7	22	26	35	18.1	32.7
Thallium	µg/L	<100	<100					<0.05	<0.05	<0.05	<100	<100	<100	<0.05	<0.05
Tin	µg/L	<30	<30					<0.1	<0.1	<0.1	<30	<30	<30	<0.1	<0.1
Titanium	µg/L	<10	<10					<1.0	<1.0	<1.0	<10	<10	<10	<1.0	<1.0
Uranium	µg/L							<0.02	<0.01	<0.01				<0.01	<0.01
Vanadium	µg/L	<30	<30					0.2	0.6	0.3	<30	<30	<30	0.2	0.6
Zinc	µg/L	<5	<5					<1.0	1	<1.0	<5	<5	<5	1	<1.0

Appendix A9. Analytical results for water quality samples from Doris Hinge streams, 1996-2000.

Parameter	Unit	Patch Outflow					Windy Outflow							L. Roberts O.	
		Rep B 23-Aug 1996	Rep B-2 23-Aug 1996	19-Jun 1997	18-Jul 1997	21-Aug 1997	22-Jun 1996	23-Aug 1996	18-Jun 1997	Rep 1 18-Jul 1997	Rep 2 18-Jul 1997	Rep 1 20-Aug 1997	Rep 2 20-Aug 1997	24-Jun 1996	23-Aug 1996
Physical Parameters															
Conductivity	µS/cm	263		153	245	262	116	410	70	404	407	422	423	142	286
Total Dissolved Solids	mg/L	144		90	136	139	61	210	34	210	193	211	201	82	189
Hardness ($CaCO_3$)	mg/L	38		25.3	44.9	41.7	18	57	12.4	67.7	67	64.8	60	21	53
pH	units	7.7		6.73	7.08	7.49	7.2	7.8	7.09	7.26	7.35	7.61	7.61	7.2	7.4
Total Suspended Solids	mg/L	19		6	2	4	<1	<1	2	28	16	3	<1	4	18
Turbidity	NTU	26		8.8	3.4	7.4	1.1	4.5	2.6	24.8	13.6	1.8	1.2	13	18
Dissolved Anions															
Acidity ($CaCO_3$)	mg/L	2		3	2	212	2.2	2	2	2	<1	3	2	1.8	2
AlkalinityTotal ($CaCO_3$)	mg/L			20	33	31			10	49	48	49	49		
Alkalinity to pH 4.5	mg/L	30					15	44						16	24
Bicarbonate Alkalinity	mg/L	30						44							24
Carbonate Alkalinity	mg/L	<1						<1							<1
Chloride	mg/L	65.1		32.1	53.4	56.6	21.2	102	12.2	90	89	92.1	93.2	29	73.6
Fluoride	mg/L	0.07		0.05	0.07	0.1	0.04	0.07	0.03	0.08	0.07	0.12	0.13	0.05	0.06
Sulphate	mg/L	2.1		3	2	2	2	11.2	2	7	7	6	6	1	8.4
Nutrients															
Ammonia Nitrogen	mg/L	<0.005		0.02	0.4804	0.2524	<0.005	<0.005	0.017	0.2971	0.2761	0.1935	0.2132	<0.005	<0.005
Dissolved Nitrate	mg/L	<0.005		0.001	0.002	0.0024	<0.005	<0.005	0.002	0.0031	0.0026	0.0052	0.0048	<0.005	0.026
Dissolved Nitrite	mg/L	<0.001		0.006	0.0046	0.0012	<0.001	<0.001	0.006	0.0012	0.0046	0.0328	0.0112	<0.001	<0.001
Dissolved Silicate	mg/L			0.3	0.0047	0.0079			0.052	0.0038	0.0038	0.009	0.0032		
Dissolved Phosphate	mg/L	0.008		0.008	<0.001	<0.001	0.004	0.006	0.004	<0.001	<0.001	<0.001	<0.001	0.008	0.006
Diss. ortho-Phosphate	mg/L	0.004					0.002	0.002						<0.002	<0.002
Total Phosphorus	mg/L	0.03		0.021	0.006	0.015	0.004	0.006	0.008	0.041	0.024	0.006	0.005	0.026	0.02
Total Organic Carbon	mg/L														
Total Metals															
Aluminum	µg/L	219	183	277	105	284	24	42	115	797	522	79	72	398	245
Antimony	µg/L	<0.05	0.06	0.1	0.1	<0.1	0.11	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05
Arsenic	µg/L	6	4	0.4	<0.1	0.5	<1.0	<1.0	0.1	0.3	0.2	0.7	0.6	<1.0	4
Barium	µg/L	3.71	3.84	<10	<10	<10	1.24	2.37	<10	10	<10	<10	<10	5.68	6.84
Beryllium	µg/L	<0.5	<0.5	<5	<5	<5	<0.5	<0.5	<5	<5	<5	<5	<5	<0.05	<0.05
Bismuth	µg/L	<0.5	<0.5	<100	<100	<100	<0.5	<0.5	<100	<100	<100	<100	<100	<0.05	<0.05
Boron	µg/L	17	17	<100	<100	<100	13	26	<100	<100	<100	<100	<100	14	14
Cadmium	µg/L	<0.05	<0.05	<0.2	<0.2	<0.2	0.15	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Calcium	µg/L	6210	6810	3870	7210	6790	3340	10700	2470	10800	10900	10800	10200	3390	12100
Chromium	µg/L			<1	<1	<1	0.6		<1	2	1	<1	<1	1.8	
Cobalt	µg/L	<0.1	<0.1	<1	<1	<1	<0.10	<0.10	<1	<1	<1	<1	<1	0.1	<0.1
Copper	µg/L	1.2	1.2	2	1	1	1	1.3	<1	2	2	<1	<1	1.9	2.3
Iron	µg/L	270	250	480	100	180	30	80	120	810	650	70	60	430	290
Lead	µg/L	0.14	0.14	<1	<1	<1	0.12	0.11	<1	<1	<1	<1	<1	0.32	0.08
Lithium	µg/L			<10	<10	<10	<1.0		<10	<10	<10	<10	<10	2	
Magnesium	µg/L	5410	5450	3870	5960	6070	2340	8140	1660	8980	8820	9260	8950	3380	5940
Manganese	µg/L	4.22	3.73	19	11	8	0.96	2.33	<5	10	9	<5	<5	8.5	8.41
Mercury	µg/L					<0.05						<0.05	<0.05		
Molybdenum	µg/L	0.13	0.12	<1	<1	<1	0.16	0.55	<1	<1	<1	<1	<1	0.14	0.24
Nickel	µg/L	0.6	0.8	1	<1	<1	0.2	1.4	<1	1	<1	<1	<1	0.9	1.5
Phosphorus	µg/L			<300	<300	<300			<300	<300	<300	<300	<300		
Potassium	µg/L	2530	2460	1770	2240	2990	1140	3670	750	3990	3790	4580	4590	1580	2250
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5
Silicon	µg/L	700	630	1390	520	610	250	670	540	2100	1500	320	310	1490	2210
Silver	µg/L	0.04	0.05	<0.1	<0.1	<0.1	<0.01	0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.07
Sodium	µg/L	29400	25200	16700	30800	30300	14100	46800	6810	51000	52000	54900	51900	16200	26800
Strontium	µg/L	34.2	35.2	21	42	45	15.6	59.5	12	56	57	59	57	23.1	108
Thallium	µg/L	<0.05	<0.05	<100	<100	<100	<0.05	<0.05	<100	<100	<100	<100	<100	<0.05	<0.05
Tin	µg/L	<0.1	<0.1	<30	<30	<30	<0.10	<0.10	<30	<30	<30	<30	<30	<0.1	<0.1
Titanium	µg/L	12	12	<10	<10	<10	<1.0	4	<10	50	40	<10	<10	13	10
Uranium	µg/L	0.01	<0.01				<0.01	0.16						0.05	0.01
Vanadium	µg/L	<1.0	2	<30	<30	<30	<1.0	<1.0	<30	<30	<30	<30	<30	<1	<1
Zinc	µg/L	<1.0	1	<5	<5	<5	1	<1.0	<5	<5	<5	<5	<5	2	4
Dissolved Metals															
Aluminum	µg/L	41		85	22	44	10	36	36	51	42	7	7	39	136
Antimony	µg/L	<0.05		<0.1	<0.1	<0.1	<0.05	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05
Arsenic	µg/L	<1.0		<0.1	<0.1	0.5	<1.0	<1.0	0.1	<0.1	0.1	0.6	0.7	<1.0	<1.0
Barium	µg/L	2.07		<10	<10	<10	0.83	2.05	<10	<10	<10	<10	<10	2.14	5.06
Beryllium	µg/L	<0.5		<5	<5	<5	<0.5	<0.5	<5	<5	<5	<5	<5	<0.5	<0.5
Bismuth	µg/L	<0.5		<100	<100	<100	<0.5	<0.5	<100	<100	<100	<100	<100	<0.5	<0.5
Boron	µg/L	15		<100	<100	<100	13	26	<100	<100	<100	<100	<100	13	12
Cadmium	µg/L	<0.05		<0.2	<0.2	<0.2	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05
Calcium	µg/L	6370		3830	7150	6780	3330	10100	2380	10600	10500	10700	9850	3390	11600
Chromium	µg/L			<1	<1	<1	0.3		<1	<1	<1	<1	<1	0.4	
Cobalt	µg/L	<0.1		<1	<1	<1	<0.1	<0.1	<1	<1	<1	<1	<1	<0.1	<0.1
Copper	µg/L	0.6		1	<1	1	0.6	1	<1	1	1	1	<1	1.2	2.3
Iron	µg/L	10		200	10	<30	10	20	40	30	20	<30	<30	50	60
Lead	µg/L	<0.05		<1	<1	<1	<0.05	<0.05	<1	<1	<1	<1	<1	<0.05	<0.05
Lithium	µg/L			<10	<10	<10	<1.0		<10	<10	<10	<10	<10	2	
Magnesium	µg/L	5420		3820	5820	6020	2310	7610	1570	8480	8360	9220	8600	3080	5840
Manganese	µg/L	<0.05		<5	<5	<5	<0.05	0.15	<5	<5	<5	<5	<5	1.08	0.53
Mercury	µg/L			<0.01		<0.05			<0.01			<0.05	<0.05		
Molybdenum	µg/L	0.09		<1	<1	<1	0.12	0.55	<1	<1	<1	<1	<1	0.07	0.21
Nickel	µg/L	0.7		<1	<1	<1	<0.1	0.3	<1	<1	<1	<1	<1	0.4	1.3
Phosphorus	µg/L			<300	<300	<300			<300	<300	<300	<300	<300		
Potassium	µg/L	2290		1580	2190	2880	1130	3600	720	3580	3480	4560	4610	1420	2170
Selenium	µg/L	<0.5		<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5
Silicon	µg/L	290		980	350	290	200	620	350	390	360	220	220	530	1580
Silver	µg/L	<0.01		<0.1	<0.1	<0.1	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	0.02
Sodium	µg/L	24000		16600	30400	30800	13000	43700	6640	50600	50500	55100	50300	15600	21000
Strontium	µg/L	31.7		19	42	45	16.1	56.8	11	54	54	59	54	22	97.5
Thallium	µg/L	<0.05		<100	<100	<100	<0.05	<0.05	<100	<100	<100	<100	<100	<0.05	<0.05
Tin	µg/L	<0.1		<30	<30	<30	<0.1	<0.1	<30	<30	<30	<30	<30	<0.1	<0.1
Titanium	µg/L	<1.0		<10	<10	<10	<1.0	<1.0	<10	<10	<10	<10	<10	<1.0	<1.0
Uranium	µg/L	<0.01					<0.01	0.01						0.01	<0.01
Vanadium	µg/L	<0.1		<30	<30	<30	0.2	<0.1	<30	<30	<30	<30	<30	0.2	<0.1
Zinc	µg/L	1		<5	<5	<5	1	<1.0	<5	<5	<5	<5	<5	1	2

Appendix A9. Analytical results for water quality samples from Doris Hinge streams, 1996-2000.

Parameter	Unit	Little Roberts Outflow					Pelvic Outflow						
		Rep 1 18-Jun 1997	Rep 2 18-Jun 1997	19-Jul 1997	Rep 1 19-Aug 1997	Rep 2 19-Aug 1997	18-Jun 1997	19-Jul 1997	21-Aug 1997	Rep 1 20-Jun 2000	Rep 2 20-Jun 2000	Rep 1 14-Sep 2000	Rep 2 14-Sep 2000
Physical Parameters													
Conductivity	µS/cm	230	230	183	227	223	140	175	208	88	87	231	231
Total Dissolved Solids	mg/L	124	127	108	116	123	74	100	110	51	51	139	139
Hardness ($CaCO_3$)	mg/L	37.6	36.1	35.5	35.7	29.7	21.4	30.9	26.9	14.4	14.6	35.3	34.7
pH	units	7.14	7.08	6.99	7.13	7.26	6.67	6.95	7.07	7	7.02	7.63	7.62
Total Suspended Solids	mg/L	10	12	4	4	3	4	3	2	<3	5	13	11
Turbidity	NTU	10.8	10.8	4.1	4.7	4.5	4.8	7.7	5.7	5.1	5.5	15.2	15.9
Dissolved Anions													
Acidity ($CaCO_3$)	mg/L	3	3	2	3	2	3	2	2	2	2	<1	1
AlkalinityTotal ($CaCO_3$)	mg/L	25	25	21	21	21	15	17	16	7	7	18	17
Alkalinity to pH 4.5	mg/L												
Bicarbonate Alkalinity	mg/L												
Carbonate Alkalinity	mg/L												
Chloride	mg/L	51.7	52	44	47.1	46.9	29.5	38.8	45.7	18.7	18.5	53.4	53.2
Fluoride	mg/L	0.06	0.06	0.05	0.09	0.08	0.04	0.05	0.09	0.04	0.04	0.08	0.07
Sulphate	mg/L	3	4	3	2	2	3	3	3	2	2	4	4
Nutrients													
Ammonia Nitrogen	mg/L	0.017	0.027	0.7003	0.6343	0.99	0.017	1.1231	0.5976	0.15	0.148	0.009	0.007
Dissolved Nitrate	mg/L	0.001	0.002	0.0029	0.0024	0.0023	0.001	0.0021	0.0046	<0.005	<0.005	<0.005	<0.005
Dissolved Nitrite	mg/L	0.005	0.006	0.0012	0.0046	0.0012	0.006	0.0012	0.0012	<0.001	0.001	<0.001	0.001
Dissolved Silicate	mg/L	0.506	0.692	0.0042	0.0076	0.0153	0.111	0.0031	0.008				
Dissolved Phosphate	mg/L	0.006	0.007	<0.001	<0.001	<0.001	0.007	<0.001	<0.001				
Diss. ortho-Phosphate	mg/L									0.005	0.012	<0.001	0.002
Total Phosphorus	mg/L	0.024	0.023	0.015	0.015	0.015	0.02	0.02	0.019			0.031	0.038
Total Organic Carbon	mg/L									6.1	6.1	6.5	6.3
Total Metals													
Aluminum	µg/L	211	235	134	65	70	124	172	92	99	100	184	175
Antimony	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05
Arsenic	µg/L	0.4	0.4	<0.1	0.5	0.5	0.3	0.2	0.5	0.2	0.2	0.4	0.5
Barium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	2.41	2.48	3.99	4.07
Beryllium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5
Bismuth	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	<0.5	<0.5	<0.5	<0.5
Boron	µg/L	<100	<100	<100	<100	<100	<100	<100	<100	8	8	23	22
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05
Calcium	µg/L	6200	5830	5160	5790	5700	2790	3510	3580	1890	1930	4440	4330
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5
Cobalt	µg/L	<1	<1	<1	<1	<1	<1	1	<1	0.2	0.2	<0.1	<0.1
Copper	µg/L	2	2	2	2	1	2	2	2	0.9	0.9	1.7	1.6
Iron	µg/L	390	420	190	140	140	270	240	130	160	160	140	140
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	0.1	0.1	0.16	0.15
Lithium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	1	1	3	2
Magnesium	µg/L	5460	5310	4700	5130	5100	3410	4440	4830	2400	2400	5900	5800
Manganese	µg/L	27	29	10	8	9	26	15	15	45.7	46.4	9.04	8.75
Mercury	µg/L				<0.05	<0.05			<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	0.06	0.07	0.19	0.19
Nickel	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	0.6	0.6	0.3	0.3
Phosphorus	µg/L	<300	<300	<300	<300	<300	<300	<300	<300				
Potassium	µg/L	2150	2200	1830	2400	2440	1460	1590	2190	<2000	<2000	2700	3400
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	<1
Silicon	µg/L	1650	1570	1030	650	660	1060	1240	790				
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01
Sodium	µg/L	26100	25200	24500	26500	26200	15400	22400	26400	10000	11000	26500	26800
Strontium	µg/L	36	35	35	43	43	19	28	32				
Thallium	µg/L	<100	<100	<100	<100	<100	<100	<100	<100				
Tin	µg/L	<30	<30	<30	<30	<30	<30	<30	<30				
Titanium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10				
Uranium	µg/L									0.02	0.02	0.05	0.05
Vanadium	µg/L	<30	<30	<30	<30	<30	<30	<30	<30	<1	<1	<1	<1
Zinc	µg/L	<5	<5	<5	<5	<5	<5	<5	6	<1	<1	<1	<1
Dissolved Metals													
Aluminum	µg/L	41	42	36	15	20	45	58	33				
Antimony	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
Arsenic	µg/L	0.3	0.2	<0.1	0.4	0.4	0.1	<0.1	0.5				
Barium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10				
Beryllium	µg/L	<5	<5	<5	<5	<5	<5	<5	<5				
Bismuth	µg/L	<100	<100	<100	<100	<100	<100	<100	<100				
Boron	µg/L	<100	<100	<100	<100	<100	<100	<100	<100				
Cadmium	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				
Calcium	µg/L	6190	5820	5100	5770	5130	2780	3380	3340				
Chromium	µg/L	<1	<1	<1	<1	<1	<1	<1	<1				
Cobalt	µg/L	<1	<1	<1	<1	<1	<1	<1	<1				
Copper	µg/L	2	2	2	1	<1	1	2	2				
Iron	µg/L	110	120	50	30	100	110	80	<30				
Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1				
Lithium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10				
Magnesium	µg/L	5390	5250	4650	5170	4110	3400	4280	4500				
Manganese	µg/L	<5	<5	<5	<5	<5	11	<5	<5				
Mercury	µg/L	<0.01	<0.01		<0.05	<0.05	<0.01		<0.05				
Molybdenum	µg/L	<1	<1	<1	<1	<1	<1	<1	<1				
Nickel	µg/L	<1	<1	<1	<1	<1	<1	<1	<1				
Phosphorus	µg/L	<300	<300	<300	<300	<300	<300	<300	<300				
Potassium	µg/L	2130	2080	1720	2370	1470	1370	1500	2120				
Selenium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5				
Silicon	µg/L	1190	1160	770	570	510	880	950	650				
Silver	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
Sodium	µg/L	26100	25200	24300	26900	14100	15400	21800	25000				
Strontium	µg/L	36	35	33	43	26	19	25	29				
Thallium	µg/L	<100	<100	<100	<100	<100	<100	<100	<100				
Tin	µg/L	<30	<30	<30	<30	<30	<30	<30	<30				
Titanium	µg/L	<10	<10	<10	<10	<10	<10	<10	<10				
Uranium	µg/L												
Vanadium	µg/L	<30	<30	<30	<30	<30	<30	<30	<30				
Zinc	µg/L	<5	<5	<5	<5	<5	<5	<5	6				

Appendix A10. Analytical results for water quality samples from Roberts Bay, 1996-1998.

Parameter	Unit	Station 1								Station 2					
				1 m	17 m	1 m Split 1	1 m Split 2	14 m Split 1	14 m Split 2		1 m	17 m	1 m Rep 1	1 m Rep 2	14 m
		28-Aug 1996	28-Aug 1996	23-Aug 1997	23-Aug 1997	20-Jul 1998	20-Jul 1998	20-Jul 1998	20-Jul 1998	28-Aug 1996	23-Aug 1997	23-Aug 1997	20-Jul 1998	20-Jul 1998	20-Jul 1998
Physical Parameters															
Secchi Depth	mg/L				6.5			7.5				6.5			7.0
Conductivity	µS/cm	30228		43900	46600	27200	27000	41400	41700	30683	42600	46600	31900	30200	40700
Total Dissolved Solids	mg/L	25046		22000	25100	19600	18000	27400	28100	25408	22300	25900	20800	20100	28700
Hardness ($CaCO_3$)	mg/L	4021		4210	4570	3410	3460	5190	5110	4120	3980	4530	3930	4000	5240
pH	units	7.90		7.92	7.85	7.77	7.82	7.87	7.87	7.90	7.82	7.89	7.91	7.91	7.89
Total Suspended Solids	mg/L	<1		9	14	2	20	<2	3	3	10	22	7	9	32
Salinity	$^{o}/_{oo}$					17	17	25	25				20	20	26
Turbidity	NTU	2.7		1.1	0.9	0.6	0.6	0.3	0.4	3.1	1.4	1.1	0.5	0.4	0.5
Dissolved Anions															
Acidity ($CaCO_3$)	mg/L	6		10	12	9	8	13	13	6	10	12	12	10	14
AlkalinityTotal ($CaCO_3$)	mg/L			92	101	84	83	113	113		93	102	89	90	113
Alkalinity to pH 4.5	mg/L	84								86					
Bicarbonate Alkalinity	mg/L	83								85					
Carbonate Alkalinity	mg/L	1								1					
Chloride	mg/L	14600		13400	15900	8760	10100	15000	15800	15000	14900	16000	10200	11600	14500
Silicate	mg/L														
Fluoride	mg/L	<20		0.64	0.67	0.61	0.61	0.8	0.78	<20	0.42	0.28	0.66	0.65	0.78
Sulphate	mg/L	1758		1440	1480	1160	1650	1690	1490	1816	1290	1330	1520	1140	1980
Nutrients															
Ammonia Nitrogen	mg/L	<5		0.0204	0.0072					<5	0.0057	0.003			
Dissolved Nitrate	mg/L	<5		0.0088	0.0021					<5	0.0006	0.0011			
Dissolved Nitrite	mg/L	<1		0.0017	<0.001					<1	<0.001	<0.001			
Dissolved Silicate	mg/L			0.137	0.210						0.312	0.272			
Dissolved Phosphate	mg/L			0.008	0.018						0.015	0.015			
Diss. ortho-Phosphate	mg/L	0.017								0.019					
Total Phosphorus	mg/L	0.027		0.025	0.026					0.025	0.022	0.03			
Total Metals															
Aluminum	µg/L	179	157							142					
Antimony	µg/L	0.15	<0.05							0.15					
Arsenic	µg/L	<5	<5							<5					
Barium	µg/L	3.62	3.73							3.23					
Beryllium	µg/L	<0.5	<0.5							<0.5					
Bismuth	µg/L	<0.5	<0.5							0.6					
Boron	µg/L	2790	2800							3060					
Cadmium	µg/L	2.45	2.78							5.06					
Calcium	µg/L	288000	276000							288000					
Chromium	µg/L	2.4	2.1							2.2					
Cobalt	µg/L	1.7	1.7							1.3					
Copper	µg/L	9.3	11.1							9.1					
Iron	µg/L	150	170							<10					
Lead	µg/L	0.48	0.39							0.64					
Magnesium	µg/L	826000	858000							860000					
Manganese	µg/L	2.80	2.61							2.79					
Molybdenum	µg/L	6.79	6.16							7.75					
Nickel	µg/L	21.3	25.2							15.5					
Potassium	µg/L	264000	276000							270000					
Selenium	µg/L	43.2	56.6							51.0					
Silicon	µg/L	6790	7530							6920					
Silver	µg/L	0.88	0.76							0.47					
Strontium	µg/L	4710	5260							4870					
Thallium	µg/L	0.23	0.22							0.39					
Tin	µg/L	1.7	1.5							2.3					
Titanium	µg/L	20	21							12					
Uranium	µg/L	1.36	1.37							1.19					
Vanadium	µg/L	<0.1	<0.1							<0.1					
Zinc	µg/L	6	5							6					
Dissolved Metals															
Aluminum	µg/L	174								81					
Antimony	µg/L	0.12		<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	0.1	<0.1	<0.1	<0.2		<0.2
Arsenic	µg/L	<5		0.7	0.6	0.6	0.7	0.8	0.9	<5	0.6	0.7	0.6		0.9
Barium	µg/L	3.14								3.2					
Beryllium	µg/L	<0.5								<0.5					
Bismuth	µg/L	<0.5								<0.5					
Boron	µg/L	2750								3050					
Cadmium	µg/L	2.27		0.04	0.04	0.04	0.04	0.08	0.03	4.88	0.04	0.05	0.03		0.03
Calcium	µg/L	281000		276000	297000	211000	217000	322000	319000	286000	260000	295000	247000		326000
Chromium	µg/L	2.3		<1	<1	<1	<1	<1	<1	2	<1	<1	<1		<1
Cobalt	µg/L	1.7		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.3	<0.05	<0.05	<0.05		<0.05
Copper	µg/L	7		0.78	0.56	0.67	0.62	0.67	0.37	8.6	0.58	0.7	0.55		0.49
Iron	µg/L	<10		<10	<10	<10	<10	<10	<10	<10	<10	10	<10		<10
Lead	µg/L	0.54		0.38	0.25	0.09	<0.05	0.07	<0.05	0.61	1.81	0.23	<0.05		<0.05
Magnesium	µg/L	806000		855000	930000	700000	710000	1060000	1050000	827000	809000	922000	805000		1070000
Manganese	µg/L	2.4		0.93	0.68	1.77	1.19	0.82	0.95	2.44	0.58	0.82	0.61		0.68
Mercury	µg/L			<0.01	<0.01	0.01	0.01	0.01	0.01		<0.01	<0.01	0.01		0.02
Molybdenum	µg/L	6.84		7	7	6	6	8	8	7.41	6	8	7		8
Nickel	µg/L	13.6		0.7	0.57	0.59	0.56	0.59	0.51	11.1	0.97	0.68	0.51		0.55
Potassium	µg/L	257000								264000					
Selenium	µg/L	21.8		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	31.4	<0.5	0.5	<0.5		<0.5
Silicon	µg/L	6710								6800					
Silver	µg/L	0.73		<1	<1	<1	<1	<1	<1	0.47	<1	<1	<1		<1
Strontium	µg/L	4640								4660					
Thallium	µg/L	0.08								0.35					
Tin	µg/L	1.6								2.3					
Titanium	µg/L	9								8					
Uranium	µg/L	1.3		0.516	0.93	0.54	0.94	1.45	2.13	1.19	1.07	0.132	1.83		1.78
Vanadium	µg/L	<10								<10					
Zinc	µg/L	6		1.2	0.7	1.1	1.1	1.7	<0.5	6	0.9	1.4	0.5		<0.5

Appendix A10. Analytical results for water quality samples from Roberts Bay, 1996-1998.

Parameter	Unit	Station 3							Station 4				Station 5		
				1 m	9 m	1 m	9 m	9 m		1 m	1 m	1 m		1 m	0.5 m
			Rep				Rep 1	Rep 2			Split 1	Split 2			
		28-Aug	28-Aug	23-Aug	23-Aug	20-Jul	20-Jul	20-Jul	28-Aug	23-Aug	21-Jul	21-Jul	28-Aug	23-Aug	21-Jul
		1996	1996	1997	1997	1998	1998	1998	1996	1997	1998	1998	1996	1997	1998
Physical Parameters															
Secchi Depth	mg/L				5.0		6.4								
Conductivity	µS/cm	31433	30610	42300	49900	26900	39000		31172	41100	29100	30500	30967	6610	30600
Total Dissolved Solids	mg/L	25931	25827	21900	22700	19400	28000		36134	21700	20000	19700	26028	3750	20700
Hardness ($CaCO_3$)	mg/L	4284		4030	4000	3570	5050		4112	4000	3490	3520	4106	797	3850
pH	units	7.90	7.90	7.88	7.89	7.92	7.92		7.90	7.93	7.94	7.93	7.90	7.75	7.95
Total Suspended Solids	mg/L	2	1	13	8	14	32		1	10	24	10	<1	8	28
Salinity	$^{o}/_{oo}$					19	26				19	19			20
Turbidity	NTU	1.3	1.5	2.3	1.3	0.7	0.7		1	2.1	0.7	0.6	0.8	7.9	1
Dissolved Anions															
Acidity ($CaCO_3$)	mg/L	6	5	10	10	11	14		6	12	9	8	6	2	8
AlkalinityTotal ($CaCO_3$)	mg/L			93	94	86	108			93	87	88		43	90
Alkalinity to pH 4.5	mg/L	86	86						84				86		
Bicarbonate Alkalinity	mg/L	85	85						83				85		
Carbonate Alkalinity	mg/L	1	1						1				1		
Chloride	mg/L	15600		14400	14200	10800	15300		15300	14900	11000	9560	15600	2040	11100
Silicate	mg/L														
Fluoride	mg/L	<20	0.06	0.42	0.63	0.62	0.77		<20	0.42	0.63	0.62	<20	0.17	0.63
Sulphate	mg/L	1888		1570	1640	1230	1490		1859	1440	1480	1010	1886	193	1580
Nutrients															
Ammonia Nitrogen	mg/L	<5	<0.005	0.0052	0.0035				<5	0.0069			<5	0.0021	
Dissolved Nitrate	mg/L	<5		0.0024	0.0013				<5	0.0027			<5	0.0018	
Dissolved Nitrite	mg/L	<1		<0.001	<0.001				<1	<0.001			<1	0.0009	
Dissolved Silicate	mg/L			0.158	0.202					0.145				0.536	
Dissolved Phosphate	mg/L			0.018	0.015					0.011				0.005	
Diss. ortho-Phosphate	mg/L	0.025							0.021				0.019		
Total Phosphorus	mg/L	0.027		0.021	0.024				0.024	0.023			0.024	0.012	
Total Metals															
Aluminum	µg/L	200							166				108		
Antimony	µg/L	0.85							0.57				0.35		
Arsenic	µg/L	<5							<5				<5		
Barium	µg/L	4.69							5.16				4.17		
Beryllium	µg/L	<0.5							<0.5				<0.5		
Bismuth	µg/L	0.6							<0.5				0.7		
Boron	µg/L	3440							3420				3090		
Cadmium	µg/L	4.04							2.58				3.48		
Calcium	µg/L	286000							278000				297000		
Chromium	µg/L	3.1							2.6				2.7		
Cobalt	µg/L	1.4							1.9				1.5		
Copper	µg/L	11.5							12.8				15.5		
Iron	µg/L	10							10				<10		
Lead	µg/L	0.7							1.25				2.13		
Magnesium	µg/L	877000							883000				847000		
Manganese	µg/L	2.85							2.63				2.26		
Molybdenum	µg/L	10.40							9.99				8.79		
Nickel	µg/L	18.2							21.8				21.5		
Potassium	µg/L	278000							279000				270000		
Selenium	µg/L	74.4							81.8				113.0		
Silicon	µg/L	6760							6930				6890		
Silver	µg/L	1.14							1.41				0.6		
Strontium	µg/L	4860							5160				5080		
Thallium	µg/L	0.27							0.65				0.13		
Tin	µg/L	2.5							3				2.8		
Titanium	µg/L	4							18				9		
Uranium	µg/L	1.9							1.47				1.97		
Vanadium	µg/L	<0.1							<0.1				<0.1		
Zinc	µg/L	7							7				9		
Dissolved Metals															
Aluminum	µg/L	<20							97				<20		
Antimony	µg/L	0.79		<0.1	<0.1	<0.2	<0.2	<0.2	0.31	<0.1	<0.2	<0.2	0.34	<0.1	<0.2
Arsenic	µg/L	<5		0.5	0.6	0.6	0.8	0.9	<5	0.6	0.7	0.7	<5	0.1	0.6
Barium	µg/L	3.35							4.33				3.24		
Beryllium	µg/L	<0.5							<0.5				<0.5		
Bismuth	µg/L	<0.5							<0.5				<0.5		
Boron	µg/L	2870							2790				2840		
Cadmium	µg/L	3.11		0.06	0.04	0.03	0.03	0.06	2.18	0.06	0.16	0.05	3.44	<0.02	0.06
Calcium	µg/L	286000		262000	262000	223000	314000	317000	263000	260000	219000	219000	282000	55000	240000
Chromium	µg/L	3		<1	<1	<1	<1	<1	2.6	<1	<1	<1	2.7	<1	<1
Cobalt	µg/L	1.1		<0.05	<0.05	<0.05	<0.05	0.05	0.5	<0.05	<0.05	<0.05	1.5	<0.05	<0.05
Copper	µg/L	9.1		0.72	0.8	0.45	0.41	0.61	12.3	0.91	1.02	0.66	13.8	1.03	0.54
Iron	µg/L	<10		<10	<10	<10	<10	<10	10	<10	<10	<10	<10	10	<10
Lead	µg/L	0.6		5.03	0.3	<0.05	<0.05	<0.05	1.2	0.47	0.13	<0.05	1.1	0.06	0.05
Magnesium	µg/L	867000		821000	812000	733000	1040000	1040000	839000	815000	715000	723000	826000	160000	789000
Manganese	µg/L	2.55		0.77	0.99	1.74	1.19	1.01	2.55	1.14	1.93	1.35	2.23	0.42	1.94
Mercury	µg/L			<0.01	<0.01	0.01	<0.01	<0.01		<0.01	0.01	0.01		<0.01	<0.01
Molybdenum	µg/L	10.1		7	10	6	8	8	6.9	6	6	6	6.9	2	6
Nickel	µg/L	11.5		0.65	0.61	0.49	0.52	0.66	16.2	0.62	0.81	0.5	16.4	0.57	0.49
Potassium	µg/L	277000							268000				262000		
Selenium	µg/L	39.9		<0.5	<0.5	<0.5	<0.5	<0.5	47.0	<0.5	<0.5	<0.5	56.0	<0.5	<0.5
Silicon	µg/L	6660							6670				6560		
Silver	µg/L	0.7		<1	<1	<1	<1	<1	1.15	<1	<1	<1	0.46	<1	<1
Strontium	µg/L	4720							4840				4800		
Thallium	µg/L	0.26							0.44				0.11		
Tin	µg/L	1.4							1.9				2.5		
Titanium	µg/L	4							10				4		
Uranium	µg/L	1.78		0.715	1.17	1.04	1.32	1.58	1.14	0.919	1.29	1.23	1.92	0.247	1.34
Vanadium	µg/L	<10							<10				<10		
Zinc	µg/L	5		1.6	2.3	0.9	<0.5	1	7	0.7	1.4	0.7	6	1.4	<0.5

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	DORIS LAKE											
	28-Aug-96			18-Jul-97			22-Aug-97			24-Jul-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta												
Centrales												
Cyclotella	17.8	35.6	<28.4	27.2	<27.3		<54.5	36.4	<27.3	<17.8	<17.8	<17.8
Melosira italica												
Melosira	53.3	106.7	28.4							<17.8	<17.8	<17.8
Melosira granulata v. angustissima				<27.3	<27.3		109.0	54.5	136.4			
Rhizoselenia eriensis							109.0		54.5			
Rhizosolenia												
Stephanodiscus												
Pennales												
Achnanthes minutissima	<17.8		<28.4		54.5	81.8	545.4		27.3	<17.8		<17.8
Achnanthes		<17.8										
Amphora ovalis							<54.5					
Amphiphora												
Amphora	<17.8	<17.8										
Asterionella formosa	88.9	53.3	85.3	27.2	272.7	<27.3		54.5	27.3	71.2	<17.8	124.6
Ceratoneis										<17.8		<17.8
Cocconeis placentula							<54.5					
Cocconeis	<17.8		<28.4							<17.8	<17.8	<17.8
Cymatopleura solea												
Cymatopleura	<17.8											
Cymbella	<17.8	<17.8					54.5		<27.3			
Diatoma tenue v. elongatum				709.0	518.1	381.8	109.0	109.1	81.9			
Diatoma vulgare					<27.3							
Diatoma	53.3	106.7	<28.4							<17.8	<17.8	<17.8
Diploneis decipiens							<54.5					
Epithemia	<17.8											
Eunotia	<17.8										<17.8	
Fragilaria crotonensis				<27.3								
Fragilaria	35.6	17.8	28.4		54.5	27.3	<54.5	18.2	<27.3	<17.8	35.6	<17.8
Gomphonema intricatum							<54.5					
Gomphonema		<17.8			54.5				<27.3		<17.8	
Navicula radiosa												
Navicula	<17.8	17.8	<28.4				<54.5	18.2	<27.3	<17.8	<17.8	17.8
Neidium												
Nitzschia dissipata												
Nitzschia palea												
Nitzschia sigma												
Nitzschia		<17.8										
Pleurosigma / Gyrosigma	<17.8	<17.8	<28.4								<17.8	<17.8
Surirella ovata								<18.2				
Surirella	17.8	<17.8										
Synedra ulna							<54.5					
Synedra					<27.3					<17.8	<17.8	<17.8
Tabellaria fenestrata							<54.5					
Tabellaria flocculosa	<17.8						<54.5					
Unidentified										<17.8		<17.8
Chlorophyta												
Chlorococcales												
Ankistrodesmus falcatus	17.8	17.8	<28.4	27.2	<27.3		109.0	18.2	54.5			
Ankistrodesmus						<27.3				35.6		35.6
Botryococcus braunii	<17.8	<17.8	<28.4							<17.8	<17.8	<17.8
Crucigenia quadrata												
Crucigenia rectangularis												
Crucigenia tetrapedia	<17.8	<17.8										
Dictyosphaerium	<17.8	<17.8										
Elakatothrix gelatinosa												
Elakatothrix		<17.8										
Lagerheimia												
Nephrocytium	<17.8	<17.8										
Oocystis										<17.8		<17.8
Pediastrum	<17.8							<18.2				
Scenedesmus	<17.8	35.6	<28.4						<27.3	<17.8	<17.8	<17.8
Schroederia												
Schroederia ?												
Sphaerocystis schroeteri												
Tetraderon cf minimum										<17.8	<17.8	<17.8
Tetraedron	<17.8	<17.8								<17.8		
Treubaria										<17.8		<17.8
Euglenales												
Euglena		<17.8								<17.8	<17.8	<17.8
Phacus												

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	DORIS LAKE											
	28-Aug-96			18-Jul-97			22-Aug-97			24-Jul-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Phacus ?										<17.8		
Trachelomonas												
Oedogoniales												
Oedogonium												
Tetrasporales												
Gloeocystis ampla												
Ulothricales												
Geminella					<27.3							
Ulothrix												
Volvocales												
Carteria								<18.2				
Chlamydomonas	<17.8	<17.8	<28.4							<17.8		<17.8
Eudorina												
Zygnematales												
Arthrodesmus												
Closteriopsis		<17.8										
Closterium												
Cosmarium							<54.5					
Euastrum												
Gonatozygon												
Mougeotia							<54.5					
Spondylosium planum	<17.8	<17.8								17.8		<17.8
Staurastrum												
Xanthidium		<17.8									<17.8	
Zygnema	<17.8											
Unidentified												
Unidentified flagellate												
Chrysophyta												
Ochromonadales												
Dinobryon bavaricum					81.8	<27.3				124.6	178.0	106.8
Dinobryon cylindricum poss.												
Dinobryon divergens											<17.8	
Dinobryon elegantissimum											<17.8	
Dinobryon sertularia				<27.3		27.3				<17.8		17.8
Dinobryon sociale								36.4	<27.3			
Dinobryon	<17.8	17.8	<28.4	54.5	54.5	163.6	54.5	18.2		89.0	160.2	106.8
Mallomonas												
Ochromonas				54.5	54.5	27.3	<54.5	18.2	300.0			
Prymnesiales												
Synura												
Cyanophyta												
Chroococcales												
Anacystis										<17.8		<17.8
Gomphosphaeria												
Anabaena affinis												
Anabaena flos-aquae												
Anabaena	<17.8	<17.8					<54.5		218.2	<17.8		<17.8
Aphanizomenon flos-aquae	13,796	12,569	10,439									
Aphanizomenon ?										4,610	1,869	2,848
Pseudanabaena catenata												
Pseudanabaena ?												
Unidentified											<17.8	<17.8
Oscillatoriales												
Lyngbya limnetica	4,693	3,111	2,105	654.5	163.6	1,255				3,471	7,280	4,539
Lyngbya												
Oscillatoria cf tenuis	54,702	38,453	46,052							29,459	24,386	25,454
Oscillatoria				21,271	14,726	14,726	27,816	8,726	15,271	<17.8	<17.8	<17.8
Pyrrophyta												
Cryptomonadales												
Chroomonas acuta	35.6	35.6	28.4			27.3			27.3	53.4	53.4	17.8
Cryptomonas ovata / erosa										89.0	<17.8	53.4
Cryptomonas borealis												
Cryptomonas	17.8	35.6	<28.4	<27.3		<27.3	<54.5	54.5	27.3	17.8	<17.8	<17.8
Cryptomonas ovata												
Gymnodinium									<27.3			
Dinokontae												
Peridinium inconspicuum		<17.8								<17.8	<17.8	<17.8
Peridinium				27.3	27.3			<18.2	<27.3			
Peridinium / Glenodinium	<17.8		<28.4							<17.8		<17.8
TOTAL	73,529	54,614	58,766	22,852	16,062	16,717	28,906	9,163	16,226	38,039	33,962	33,322

? = Identification uncertain

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	TAIL LAKE								
	26-Aug-96			16-Jul-97			19-Jul-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta									
Centrales									
Cyclotella	<2.8	2.8	8.5		2.0	1.0	2.8	<2.8	<2.8
Melosira italica									
Melosira									
Melosira granulata v. angustissima									
Rhizoselenia eriensis									
Rhizosolenia									
Stephanodiscus									
Pennales									
Achnanthes minutissima							2.8	<2.8	<2.8
Achnanthes		<2.8	<2.8	<1.0	<1.0				
Amphora ovalis									
Amphiphora									
Amphora	<2.8								
Asterionella formosa	2,190	2,187	2,406	32.0	38.0	36.0	8.4	28.0	39.2
Ceratoneis	<2.8	2.8	<2.8	<1.0					
Cocconeis placentula									
Cocconeis									
Cymatopleura solea									
Cymatopleura			<2.8						
Cymbella		<2.8	2.8						
Diatoma tenue v. elongatum									
Diatoma vulgare									
Diatoma	<2.8	<2.8	<2.8				5.6	<2.8	<2.8
Diploneis decipiens									
Epithemia		<2.8							
Eunotia	<2.8	<2.8							
Fragilaria crotonensis			<2.8				<2.8	<2.8	56.0
Fragilaria		<2.8		<1.0	6.0	2.0		<2.8	<2.8
Gomphonema intricatum									
Gomphonema	<2.8								
Navicula radiosa									
Navicula	<2.8	<2.8	5.7			<1.0	<2.8	<2.8	<2.8
Neidium									
Nitzschia dissipata									
Nitzschia palea									
Nitzschia sigma									
Nitzschia			<2.8						
Pleurosigma / Gyrosigma		<2.8	<2.8		<1.0	<1.0	<2.8	<2.8	<2.8
Surirella ovata									
Surirella			<2.8	<1.0					
Synedra ulna									
Synedra		<2.8							
Tabellaria fenestrata	<2.8						<2.8	<2.8	<2.8
Tabellaria flocculosa	<2.8	<2.8	17.1	23.0	1.0		11.2	53.2	50.4
Unidentified									
Chlorophyta									
Chlorococcales									
Ankistrodesmus falcatus		<2.8							
Ankistrodesmus					<1.0		5.6	2.8	<2.8
Botryococcus braunii	<2.8	<2.8	<2.8						
Crucigenia quadrata		<2.8	45.5						
Crucigenia rectangularis									
Crucigenia tetrapedia									
Dictyosphaerium									
Elakatothrix gelatinosa							5.6	5.6	11.2
Elakatothrix	17.1	14.2	5.7						
Lagerheimia									
Nephrocytium		<2.8							
Oocystis	<2.8	5.7							
Pediastrum							<2.8	<2.8	<2.8
Scenedesmus									
Schroederia			<2.8						
Schroederia ?							<2.8		
Sphaerocystis schroeteri									
Tetraderon cf minimum									
Tetraedron									
Treubaria									
Euglenales									
Euglena							<2.8	<2.8	<2.8
Phacus									

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	TAIL LAKE								
	26-Aug-96			16-Jul-97			19-Jul-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Phacus ?									
Trachelomonas									
Oedogoniales									
Oedogonium	<2.8								
Tetrasporales									
Gloeocystis ampla									
Ulothricales									
Geminella									
Ulothrix									
Volvocales									
Carteria									
Chlamydomonas		<2.8							
Eudorina									
Zygnematales									
Arthrodesmus					<1.0		<2.8	2.8	<2.8
Closteriopsis		<2.8	<2.8						
Closterium	<2.8	<2.8	<2.8						
Cosmarium									
Euastrum							<2.8	<2.8	<2.8
Gonatozygon	<2.8								
Mougeotia									
Spondylosium planum		<2.8					<2.8	<2.8	<2.8
Staurastrum		<2.8					<2.8	<2.8	<2.8
Xanthidium	<2.8	2.8		<1.0			<2.8		
Zygnema									
Unidentified	<2.8								
Unidentified flagellate									
Chrysophyta									
Ochromonadales									
Dinobryon bavaricum						6.0	39.2	50.4	53.2
Dinobryon cylindricum poss.		11.4							
Dinobryon divergens	<2.8	2.8	<2.8				42.0	36.4	<2.8
Dinobryon elegantissimum									
Dinobryon sertularia				<1.0	<1.0		<2.8	<2.8	
Dinobryon sociale				20.0	16.0	35.0			
Dinobryon							<2.8	<2.8	<2.8
Mallomonas				<1.0	1.0	<1.0			
Ochromonas				3.0	3.0	3.0			
Prymnesiales									
Synura					12.0	20.0			
Cyanophyta									
Chroococcales									
Anacystis									
Gomphosphaeria			<2.8						
Anabaena affinis									
Anabaena flos-aquae									
Anabaena	34.1	122.3	<2.8			<1.0			
Aphanizomenon flos-aquae									
Aphanizomenon ?									
Pseudanabaena catenata									
Pseudanabaena ?							<2.8		<2.8
Unidentified								<2.8	
Oscillatoriales									
Lyngbya limnetica						26.0	<2.8		
Lyngbya								<2.8	<2.8
Oscillatoria cf tenuis		<2.8	<2.8						
Oscillatoria						<1.0			
Pyrrophyta									
Cryptomonadales									
Chroomonas acuta	<2.8	2.8	2.8	31.0	17.0	23.0	5.6	2.8	2.8
Cryptomonas ovata / erosa							<2.8	<2.8	<2.8
Cryptomonas borealis									
Cryptomonas	<2.8	<2.8	2.8	4.0		4.0	<2.8	<2.8	<2.8
Cryptomonas ovata									
Gymnodinium									
Dinokontae									
Peridinium inconspicuum									
Peridinium									
Peridinium / Glenodinium	<2.8	<2.8	<2.8				<2.8	<2.8	<2.8
TOTAL	2,241	2,355	2,497	113	96	156	129	182	213

? = Identification uncertain

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	OGAMA LAKE						PATCH LAKE					
	27-Aug-96			16-Jul-97			26-Aug-96			17-Jul-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta												
Centrales												
Cyclotella	< 17.8	< 17.8	< 17.8	<7.3			4.3	1.4	<1.4	1.6	<0.8	
Melosira italica							8.5	2.8	2.8			
Melosira	106.7	< 17.8	106.7							1.6	6.6	
Melosira granulata v. angustissima				<7.3	<5.5	21.8						
Rhizoselenia eriensis												
Rhizosolenia		< 17.8	< 17.8									
Stephanodiscus	< 17.8	< 17.8	< 17.8				7.1	11.4	8.5			
Pennales												
Achnanthes minutissima				43.6			7.1	5.7	8.5			
Achnanthes			< 17.8		5.5			<1.4	<1.4	4.0	<0.8	<0.8
Amphora ovalis												
Amphiphora					5.5							
Amphora	< 17.8	< 17.8						<1.4	<1.4			
Asterionella formosa	53.3	< 17.8	< 17.8	14.5	<5.5	<5.5	22.8	17.1	55.5	9.7	10.0	17.4
Ceratoneis								<1.4	<1.4			
Cocconeis placentula				<7.3	<5.5	<5.5					<0.8	
Cocconeis	< 17.8	< 17.8					1.4		1.4			
Cymatopleura solea						<5.5						
Cymatopleura		< 17.8	< 17.8						<1.4			
Cymbella	< 17.8	< 17.8	< 17.8	7.3			1.4	<1.4	<1.4			
Diatoma tenue v. elongatum				1,236	790	752				33.2	33.2	11.6
Diatoma vulgare				<7.3								
Diatoma		< 17.8						1.4	<1.4			
Diploneis decipiens										<0.8		
Epithemia	< 17.8											
Eunotia	17.8	< 17.8	< 17.8									
Fragilaria crotonensis			< 17.8									
Fragilaria	< 17.8	17.8	35.6	36.4	21.8	16.4	4.3	<1.4	4.3	1.6	1.7	1.7
Gomphonema intricatum												
Gomphonema				7.3			1.4	<1.4	<1.4			
Navicula radiosa												
Navicula	< 17.8	17.8	< 17.8	7.3	<5.5		<1.4	4.3	8.5			<0.8
Neidium				<7.3								
Nitzschia dissipata										0.8		<0.8
Nitzschia palea										2.4		
Nitzschia sigma												
Nitzschia	< 17.8		< 17.8								0.8	
Pleurosigma / Gyrosigma	< 17.8	< 17.8	< 17.8	7.3	<5.5		<1.4	1.4				
Surirella ovata						<5.5						
Surirella	< 17.8	< 17.8	< 17.8		<5.5							
Synedra ulna						<5.5				0.8		
Synedra	< 17.8	< 17.8	< 17.8		<5.5							
Tabellaria fenestrata			< 17.8						<1.4			
Tabellaria flocculosa		< 17.8	< 17.8					<1.4				
Unidentified												
Chlorophyta												
Chlorococcales												
Ankistrodesmus falcatus	< 17.8	< 17.8	35.6			<5.5	<1.4	<1.4	7.1		<0.8	3.3
Ankistrodesmus				7.3	5.5	10.9				<0.8	1.7	1.7
Botryococcus braunii	< 17.8	< 17.8	< 17.8				68.3	<1.4	<1.4			
Crucigenia quadrata		< 17.8	< 17.8				<1.4	<1.4	<1.4			
Crucigenia rectangularis											<0.8	
Crucigenia tetrapedia	71.1	< 17.8										
Dictyosphaerium	< 17.8	< 17.8	< 17.8									
Elakatothrix gelatinosa										1.6		
Elakatothrix	35.6	53.3	53.3				7.1	4.3	8.5			
Lagerheimia												
Nephrocytium												
Oocystis							11.4	21.3	11.4			
Pediastrum	< 17.8	< 17.8							<1.4			
Scenedesmus	< 17.8	< 17.8	< 17.8									
Schroederia												
Schroederia ?												
Sphaerocystis schroeteri						<5.5	<1.4	<1.4				
Tetraderon cf minimum												
Tetraedron		< 17.8						1.4				
Treubaria												
Euglenales												
Euglena	< 17.8	< 17.8	< 17.8									
Phacus		< 17.8	< 17.8									

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	OGAMA LAKE						PATCH LAKE					
	27-Aug-96			16-Jul-97			26-Aug-96			17-Jul-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Phacus ?												
Trachelomonas									<1.4			
Oedogoniales												
Oedogonium												
Tetrasporales												
Gloeocystis ampla							8.5	10.0	2.8			
Ulothricales												
Geminella												
Ulothrix	< 17.8	< 17.8	< 17.8									
Volvocales												
Carteria												
Chlamydomonas	< 17.8	< 17.8							<1.4			
Eudorina						<5.5						
Zygnematales												
Arthrodesmus	< 17.8											
Closteriopsis	< 17.8								<1.4			
Closterium		< 17.8	< 17.8					<1.4	<1.4			
Cosmarium										0.8	<0.8	
Euastrum							<1.4					
Gonatozygon												
Mougeotia												
Spondylosium planum	17.8	< 17.8	17.8				2.8	1.4	2.8			
Staurastrum	< 17.8	< 17.8	< 17.8	7.3	<5.5	<5.5						
Xanthidium			< 17.8									
Zygnema												
Unidentified												
Unidentified flagellate			< 17.8					<1.4				
Chrysophyta												
Ochromonadales												
Dinobryon bavaricum					54.5	<5.5						
Dinobryon cylindricum poss.	106.7	195.6	106.7									
Dinobryon divergens												
Dinobryon elegantissimum												
Dinobryon sertularia												
Dinobryon sociale				36.4	32.7					87.5	83.0	91.3
Dinobryon	< 17.8	< 17.8	< 17.8	<7.3	10.9	<5.5	5.7	2.8	2.8	1.6	5.8	0.8
Mallomonas	< 17.8	< 17.8	< 17.8									
Ochromonas					<5.5						<0.8	2.5
Prymnesiales												
Synura												
Cyanophyta												
Chroococcales												
Anacystis			< 17.8									
Gomphosphaeria		< 17.8										
Anabaena affinis						<5.5				4.9		24.9
Anabaena flos-aquae			< 17.8									
Anabaena	< 17.8	< 17.8	< 17.8	625.2	523.2	<5.5	<1.4	<1.4	11.4		10.0	28.2
Aphanizomenon flos-aquae												
Aphanizomenon ?												
Pseudanabaena catenata	373.3	320.0	< 17.8									
Pseudanabaena ?												
Unidentified												
Oscillatoriales												
Lyngbya limnetica	551.1	< 17.8	< 17.8				149.3	76.8	41.2		5.0	32.4
Lyngbya												
Oscillatoria cf tenuis	14,045	14,631	18,827									
Oscillatoria				436	981	1,036				16.2	24.9	24.9
Pyrrophyta												
Cryptomonadales												
Chroomonas acuta				14.5	21.8	27.3		<1.4	1.4			
Cryptomonas ovata / erosa												
Cryptomonas borealis												
Cryptomonas	< 17.8	< 17.8	53.3	<7.3	5.5	16.4	1.4	8.5	1.4	1.6	1.7	1.7
Cryptomonas ovata												
Gymnodinium						<5.5				1.6		0.8
Dinokontae												
Peridinium inconspicuum	35.6	35.6	< 17.8					4.3	1.4			
Peridinium												
Peridinium / Glenodinium							1.4	<1.4	<1.4			
TOTAL	15,414	15,271	19,236	2,487	2,458	1,880	314	176	182	172	184	243

? = Identification uncertain

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	WOLVERINE LAKE			WINDY LAKE					
	16-Jul-97			29-Aug-96			17-Jul-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta									
Centrales									
Cyclotella				5.7	5.7	4.3	1.8	3.6	3.6
Melosira italica									
Melosira									
Melosira granulata v. angustissima									
Rhizoselenia eriensis									
Rhizosolenia									
Stephanodiscus				<1.4	<1.9				
Pennales									
Achnanthes minutissima				<1.4	<1.9				
Achnanthes	5.5	5.5	<3.6				1.8	4.8	1.2
Amphora ovalis									
Amphiphora									
Amphora									
Asterionella formosa				<1.4					
Ceratoneis									
Cocconeis placentula									<0.6
Cocconeis									
Cymatopleura solea									
Cymatopleura				<1.4					
Cymbella	<5.5					<1.4		<0.6	
Diatoma tenue v. elongatum	779.4	675.8	473.2				4.2	6.0	1.2
Diatoma vulgare									
Diatoma				<1.4					
Diploneis decipiens									
Epithemia									
Eunotia									
Fragilaria crotonensis									
Fragilaria	<5.5		<3.6		3.8		1.2	1.8	0.6
Gomphonema intricatum									
Gomphonema									
Navicula radiosa									
Navicula	<5.5			1.4	1.9	1.4	0.6		
Neidium									
Nitzschia dissipata									
Nitzschia palea							0.6		
Nitzschia sigma									
Nitzschia	5.5		3.6		<1.9			1.2	0.6
Pleurosigma / Gyrosigma				1.4	<1.9	<1.4			
Surirella ovata									
Surirella				<1.4	1.9				
Synedra ulna									
Synedra				<1.4		<1.4			
Tabellaria fenestrata									
Tabellaria flocculosa									
Unidentified									
Chlorophyta									
Chlorococcales									
Ankistrodesmus falcatus				<1.4	1.9				
Ankistrodesmus	5.5	<5.5	3.6					<0.6	
Botryococcus braunii				<1.4	<1.9	<1.4			
Crucigenia quadrata									
Crucigenia rectangularis								<0.6	
Crucigenia tetrapedia									
Dictyosphaerium									
Elakatothrix gelatinosa									
Elakatothrix				4.3	1.9	2.8			
Lagerheimia									
Nephrocytium									
Oocystis									
Pediastrum									
Scenedesmus								<0.6	
Schroederia									
Schroederia ?									
Sphaerocystis schroeteri									
Tetraderon cf minimum									
Tetraedron				<1.4					
Treubaria									
Euglenales									
Euglena				<1.4	<1.9	<1.4			
Phacus									

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	WOLVERINE LAKE			WINDY LAKE					
	16-Jul-97			29-Aug-96			17-Jul-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Phacus ?									
Trachelomonas				<1.4					
Oedogoniales									
Oedogonium									
Tetrasporales									
Gloeocystis ampla									
Ulothricales									
Geminella									
Ulothrix									
Volvocales									
Carteria									
Chlamydomonas									
Eudorina									
Zygnematales									
Arthrodesmus		<5.5						1.2	
Closteriopsis									
Closterium									
Cosmarium		<5.5							
Euastrum									
Gonatozygon									
Mougeotia				<1.4	<1.9				
Spondylosium planum									
Staurastrum									
Xanthidium									
Zygnema						<1.4			
Unidentified									
Unidentified flagellate									
Chrysophyta									
Ochromonadales									
Dinobryon bavaricum	119.9	38.2	29.1						
Dinobryon cylindricum poss.									
Dinobryon divergens									
Dinobryon elegantissimum									
Dinobryon sertularia	<5.5								
Dinobryon sociale	32.7	65.4	21.8						
Dinobryon	10.9	5.5	3.6	<1.4	1.9	<1.4	0.6	0.6	<0.6
Mallomonas									
Ochromonas		<5.5							
Prymnesiales									
Synura	<5.5								
Cyanophyta									
Chroococcales									
Anacystis						<1.4			
Gomphosphaeria									
Anabaena affinis									
Anabaena flos-aquae									
Anabaena								<0.6	
Aphanizomenon flos-aquae				5.7	20.9	<1.4			
Aphanizomenon ?									
Pseudanabaena catenata									
Pseudanabaena ?									
Unidentified									
Oscillatoriales									
Lyngbya limnetica		54.5		52.7	55.0	<1.4		<0.6	
Lyngbya									
Oscillatoria cf tenuis				155.0	221.9	184.9			
Oscillatoria							<0.6	12.0	12.0
Pyrrophyta									
Cryptomonadales									
Chroomonas acuta	<5.5	<5.5	7.3			1.4			
Cryptomonas ovata / erosa									
Cryptomonas borealis									
Cryptomonas	65.4	27.3	21.8						
Cryptomonas ovata	38.2	10.9	3.6						
Gymnodinium									
Dinokontae									
Peridinium inconspicuum				<1.4	1.9				
Peridinium	<5.5	5.5	<3.6				0.6	0.6	<0.6
Peridinium / Glenodinium									
TOTAL	1,063	889	568	226	319	195	11	32	19

? = Identification uncertain

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	LITTLE ROBERTS LAKE						PELVIC LAKE					
	27-Aug-96			15-Jul-97			17-Jul-97			24-Jul-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta												
Centrales												
Cyclotella	<17.8	<35.6	124.4	5.5	21.8	14.5						
Melosira italica	266.7	426.7	195.6									
Melosira				130.9	359.7	399.9				142.4	71.2	<35.6
Melosira granulata v. angustissima					43.6	29.1	54.5	<27.3	<27.3			
Rhizoselenia eriensis												
Rhizosolenia	<17.8	<35.6	<17.8									
Stephanodiscus												
Pennales												
Achnanthes minutissima							27.3		<27.3			
Achnanthes	17.8	71.1	<17.8		<10.9				<27.3			
Amphora ovalis												
Amphiphora												
Amphora										<35.6		
Asterionella formosa	<17.8	106.70	<17.8	<5.5	98.1	<7.3	<27.3	<27.3	<27.3	<35.6	<35.6	249.2
Ceratoneis												
Cocconeis placentula					<10.9	<7.3						
Cocconeis												
Cymatopleura solea												
Cymatopleura										<35.6	<35.6	
Cymbella	<17.8	<35.6	<17.8	5.5								
Diatoma tenue v. elongatum				141.8	828.4	727.0	2,673	2,891	2,782			
Diatoma vulgare												
Diatoma	71.1	<35.6	71.1							462.8	391.6	<35.6
Diploneis decipiens												
Epithemia												
Eunotia												
Fragilaria crotonensis			<17.8			7.3				71.2	35.6	35.6
Fragilaria	<17.8	106.7	17.8	10.9	10.9	7.3	<27.3				<35.6	<35.6
Gomphonema intricatum					<10.9							
Gomphonema	<17.8		<17.8		<10.9							
Navicula radiosa									<27.3			
Navicula	<17.8	<35.6	35.6			<7.3				<35.6	<35.6	<35.6
Neidium						<7.3						
Nitzschia dissipata												
Nitzschia palea												
Nitzschia sigma								<27.3				
Nitzschia	17.8	<35.6	<17.8		10.9					<35.6		<35.6
Pleurosigma / Gyrosigma										<35.6	<35.6	<35.6
Surirella ovata						<7.3						
Surirella	<17.8	<35.6								<35.6	<35.6	
Synedra ulna						<10.9						
Synedra		<35.6	<17.8			<10.9						
Tabellaria fenestrata	<17.8	<35.6										
Tabellaria flocculosa	142.2	<35.6	<17.8			<10.9						
Unidentified										<35.6		<35.6
Chlorophyta												
Chlorococcales												
Ankistrodesmus falcatus	71.1	<35.6	<17.8		<10.9							
Ankistrodesmus				<5.5		7.3	27.3	81.8	27.3	35.6	<35.6	35.6
Botryococcus braunii	<17.8	<35.6	<17.8							<35.6	<35.6	<35.6
Crucigenia quadrata												
Crucigenia rectangularis												
Crucigenia tetrapedia												
Dictyosphaerium	<17.8	<35.6	<17.8									
Elakatothrix gelatinosa												
Elakatothrix		<35.6	<17.8									
Lagerheimia		<35.6										
Nephrocytium	<17.8		<17.8									
Oocystis												
Pediastrum		<35.6										
Scenedesmus	<17.8						<27.3			<35.6	<35.6	<35.6
Schroederia												
Schroederia ?												
Sphaerocystis schroeteri							872.7					
Tetraderon cf minimum												
Tetraedron	<17.8											
Treubaria												
Euglenales												
Euglena			<17.8							<35.6	<35.6	<35.6
Phacus	<17.8											

Appendix B1. Phytoplankton abundance (cells/mL) in Doris Hinge lakes, 1996-2000.

Taxa / Species	LITTLE ROBERTS LAKE						PELVIC LAKE					
	27-Aug-96			15-Jul-97			17-Jul-97			24-Jul-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Phacus ?												
Trachelomonas												
Oedogoniales												
Oedogonium												
Tetrasporales												
Gloeocystis ampla												
Ulothricales												
Geminella												
Ulothrix		<35.6										
Volvocales												
Carteria												
Chlamydomonas	<17.8		<17.8									
Eudorina	<17.8											
Zygnematales												
Arthrodesmus												
Closteriopsis	<17.8	<35.6	<17.8									
Closterium	<17.8		<17.8									
Cosmarium					<10.9							
Euastrum												
Gonatozygon												
Mougeotia		<35.6										
Spondylosium planum	17.8	35.6	<17.8									
Staurastrum			<17.8									
Xanthidium												
Zygnema												
Unidentified	<17.8											
Unidentified flagellate												
Chrysophyta												
Ochromonadales												
Dinobryon bavaricum					21.8	58.2	109.1	<27.3	518.1	356.0	320.4	284.8
Dinobryon cylindricum poss.												
Dinobryon divergens												
Dinobryon elegantissimum												
Dinobryon sertularia										71.2	35.6	106.8
Dinobryon sociale				49.1		29.1						
Dinobryon	71.1	35.6	<17.8	<5.5	<10.9	21.8	245.4	27.3	<27.3	249.2	391.6	427.2
Mallomonas												
Ochromonas				10.9	10.9	21.8	27.3	<27.3				
Prymnesiales												
Synura												
Cyanophyta												
Chroococcales												
Anacystis	<17.8	<35.6	<17.8									
Gomphosphaeria	<17.8	<35.6	<17.8									
Anabaena affinis	<17.8											
Anabaena flos-aquae												
Anabaena		<35.6	<17.8	<5.5					<27.3	<35.6	<35.6	
Aphanizomenon flos-aquae	7,840	9,565	12,498									
Aphanizomenon ?										3,275	2,812	2,706
Pseudanabaena catenata												
Pseudanabaena ?												
Unidentified												<35.6
Oscillatoriales												
Lyngbya limnetica	3,058	7,573	2,809	163.6		189.0			<27.3	3,560	3,204	3,916
Lyngbya												
Oscillatoria cf tenuis	23,218	26,205	23,467							57,316	61,232	49,484
Oscillatoria				5,014	13,734	8,651	11,317	12,272	38,996			
Pyrrophyta												
Cryptomonadales												
Chroomonas acuta	106.7	35.6	177.8	5.5	21.8	58.2	463.6	109.1	327.2	106.8	35.6	106.8
Cryptomonas ovata / erosa										142.4	71.2	71.2
Cryptomonas borealis								<27.3	54.5			
Cryptomonas	<17.8	35.6	35.6	<5.5		7.3	81.8	27.3	<27.3	71.2		35.6
Cryptomonas ovata				<5.5	10.9	14.5	<27.3					
Gymnodinium				10.9		21.8	<27.3	81.8				
Dinokontae												
Peridinium inconspicuum	<17.8	<35.6	<17.8									
Peridinium						<7.3	<27.3					
Peridinium / Glenodinium	<17.8									<35.6	<35.6	<35.6
TOTAL	34,898	44,196	39,431	5,549	15,173	10,265	15,899	15,489	42,705	65,860	68,601	57,458

? = Identification uncertain

Appendix B2. Abundance (cells/mL) and percent composition of main taxa of phytoplankton in Doris Hinge lakes, 1996-2000.

Lake	Date	No.	Bacillariophyta			Chlorophyta			Chrysophyta			Cyanophyta			Pyrrophyta			All Taxa	
		Repl.	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Doris	28-Aug-96	3	**249**	57	*0.4*	**23.7**	15.7	*0.0*	**5.9**	5.9	*0.0*	**61,973**	5,755	*99.5*	**51.0**	12.4	*0.1*	**62,303**	5,740
	18-Jul-97	3	**736**	134	*4.0*	**9.1**	9.1	*0.0*	**172.7**	32.8	*0.9*	**17,598**	2,186	*94.9*	**27.3**	0.0	*0.1*	**18,544**	2,162
	22-Aug-97	3	**515**	206	*2.8*	**60.6**	26.4	*0.3*	**142.4**	79.0	*0.8*	**17,344**	5,588	*95.8*	**36.4**	18.2	*0.2*	**18,098**	5,776
	24-Jul-00	3	**83**	31	*0.2*	**29.7**	15.7	*0.1*	**261.1**	38.9	*0.7*	**34,639**	1,464	*98.7*	**94.9**	33.0	*0.3*	**35,108**	1,477
Tail	27-Aug-96	3	**2,275**	83	*96.2*	**30.3**	10.6	*1.3*	**4.7**	4.7	*0.2*	**52**	36	*2.2*	**2.8**	1.6	*0.1*	**2,365**	72
	16-Jul-97	3	**47**	5	*38.6*				**39.7**	12.4	*32.6*	**9**	9	*7.1*	**26.3**	5.2	*21.6*	**122**	18
	19-Jul-00	3	**86**	33	*49.2*	**11.2**	0.0	*6.4*	**73.7**	10.4	*42.2*				**3.7**	0.9	*2.1*	**175**	25
Ogama	27-Aug-96	3	**119**	43	*0.7*	**94.8**	21.4	*0.6*	**136.3**	29.6	*0.8*	**16,249**	1,289	*97.6*	**41.5**	5.9	*0.2*	**16,640**	1,298
	16-Jul-97	3	**991**	185	*43.6*	**10.3**	2.6	*0.5*	**44.8**	28.6	*2.0*	**1,200**	152	*52.8*	**28.5**	8.5	*1.3*	**2,275**	197
Patch	26-Aug-96	3	**64**	13	*28.8*	**56.4**	20.9	*25.2*	**3.8**	1.0	*1.7*	**93**	29	*41.5*	**6.6**	3.1	*2.9*	**224**	45
	17-Jul-97	3	**46**	8	*23.2*	**3.0**	1.0	*1.5*	**90.8**	1.9	*45.5*	**57**	27	*28.6*	**2.5**	0.4	*1.2*	**200**	22
Wolverine	16-Jul-97	3	**650**	92	*77.3*	**3.0**	1.6	*0.4*	**109.0**	31.5	*13.0*	**18**	18	*2.2*	**60.0**	22.0	*7.1*	**840**	145
Windy	29-Aug-96	3	**9**	2	*3.7*	**3.6**	0.4	*1.5*	**0.6**	0.6	*0.3*	**232**	34	*94.1*	**1.1**	0.6	*0.4*	**247**	37
	17-Jul-97	3	**12**	3	*55.8*	**0.4**	0.4	*1.9*	**0.4**	0.2	*1.9*	**8**	4	*38.5*	**0.4**	0.2	*1.9*	**21**	6
Little Roberts	27-Aug-96	3	**557**	80	*1.4*	**41.5**	25.8	*0.1*	**35.6**	20.5	*0.1*	**38,744**	2,664	*98.1*	**130.4**	42.7	*0.3*	**39,508**	2,685
	15-Jul-97	3	**951**	333	*9.2*	**2.4**	2.4	*0.0*	**74.5**	29.3	*0.7*	**9,251**	2,479	*89.6*	**50.3**	26.2	*0.5*	**10,329**	2,778
Pelvic	17-Jul-97	3	**2,809**	42	*11.4*	**336.4**	282.3	*1.4*	**309.1**	146.3	*1.3*	**20,862**	9,071	*84.5*	**381.8**	94.5	*1.5*	**24,698**	9,004
	24-Jul-00	3	**487**	113	*0.8*	**747.6**	41.1	*1.2*	**23.7**	11.9	*0.0*	**62,502**	3,321	*97.7*	**213.6**	61.7	*0.3*	**63,973**	3,352

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	DORIS OUTFLOW										
	22-Aug-96			19-Jul-97		20-Aug-97			16-Aug-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta											
Centrales											
Cyclotella glomerata	10,400	49,788	22,680								
Cyclotella	10,400	16,596	4,536	<381	<309	<446	990	<484	377	764	1,338
Melosira islandica											
Melosira italica				<381	926	2,228	1,485	484			
Melosira varians											
Melosira	62,400	33,192	22,680		<309	446	<495		377	1,529	446
Rhizosolenia		<8,298							377		
Stephanodiscus	<10,400	8,298	4,536		<309	<446	<495	<484	<152	<154	
Pennales											
Achnanthes minutissima	291,200	207,450	77,112		<309	6,684	6,434	9,684	9,608	14,906	3,123
Achnanthes	52,000	8,298	4,536		<309	6,684	12,373	10,168	13,565	32,105	13,384
Amphipleura pellucida							<495				
Amphiprora									<152		
Amphora	20,800	24,894	13,608		<309	446	<495	484	2,261	3,058	2,677
Asterionella formosa *	10,400	24,894			<309		990		<152	461	<180
Caloneis										<154	<180
Cocconeis	10,400	16,596	9,072			446	495		754	1,529	1,338
Cymatopleura solea									<152	<154	
Cymatopleura						<446	<495				
Cymbella sinuata	10,400	<8,298	<4,536								
Cymbella	83,200	16,596	27,216		309	1,782	2,969	4,842	1,507	3,822	3,123
Denticula								<484	303	<154	
Diatoma elongatum	52,000	49,788	27,216	15,220	46,892	48,570	37,612	45,031	6,406	4,969	5,353
Diatoma	<10,400				<309	891				154	2,231
Diatomella							<495				
Diploneis	10,400	<8,298	4,536		<309	<446	<495			764	
Epithemia sorex	<10,400	<8,298	4,536			446	495	<484		1,147	359
Epithemia turgida	41,600	8,298	18,144		<309	<446	495	<484	152	154	<180
Epithemia									<152	<154	180
Eunotia	<10,400	8,298	<4,536			<446				154	<180
Fragilaria crotonensis									<152	1,911	1,338
Fragilaria	426,400	232,344	127,008	<381	<309	5,793	7,918	11,137	9,043	29,806	23,643
Frustulia							<495		<152		<180
Gomphonema	20,800	24,894	13,608			7,130	5,444	3,389	377	1,529	446
Meridion circulare						<446		<484			
Navicula radiosa						<446	<495	968	152	382	180
Navicula	114,400	33,192	13,608	381	309	891	6,434	2,421	2,261	3,822	3,123
Nedium	10,400						<495		<152	<154	<180
Nitzschia acicularis						1,782	5,939	1,453	754	1,147	359
Nitzschia	145,600	82,980	18,144	381		4,010	2,475	2,421	1,884	4,969	3,569
Pinnularia				<381	309		<495	2,421		764	180
Pleurosigma / Gyrosigma						<446	<495	<484		154	<180
Rhoicosphenia curvata											
Rhopalodia gibba	<10,400	<8,298	<4,536		<309	<446	<495	<484		<154	180
Stauroneis	10,400	<8,298	<4,536			<446	<495		152	154	<180
Surirella	<10,400					<446	<495	<484	<152	<154	180
Synedra ulna	135,200	74,682	81,648	<381	<309	6,238	12,867	7,747	9,043	7,644	18,068
Synedra					309	2,228	1,980	968	1,884	3,058	1,784
Tabellaria fenestrata				<381	<309	<446		<484	<152	<154	
Tabellaria flocculosa	20,800	8,298	27,216	<381	<309	<446	<495	<484	1,213	382	1,784
Tabellaria											
Unidentified		8,298							1,130	1,147	1,338
Chlorophyta											
Chaetophorales											
Caespitella											
Draparnaldia											
Stigeoclonium ?											
Unidentified flagellate											
Chlorococcales											
Ankistrodesmus falcatus	10,400	8,298	13,608	<381	309	891	495	484	1,507	615	892
Ankistrodemus spiralis							<495	<484	<152		180
Botryococcus braunii											
Crucigenia tetrapedia											
Crucigenia											
Dictyosphaerium											
Elakatothrix											
Euastropsis											
Lagerheimia											
Oocystis											
Pediastrum	<10,400	<8,298	<4,536	<381		<446	<495	<484		<154	<180
Quadrigula											
Scenedesmus	41,600	82,980	18,144		<309	1,782	<495	<484	606	308	<180
Schroederia							1,980				
Sphaerocystis schroeteri											
Sphaerocystis schroeteri ?											
Tetraedron		<8,298	4,536			<446		<484	377		446
Euglenales											
Euglena				<381		<446					
Phacus											
Trachelomonas	10,400	16,596	<4,536		309	<446		484			
Unidentified										<154	
Oedogoniales											
Bulbochaete											
Oedogonium	72,800	<8,298	<4,536			<446	<495		455	154	
Siphonocladales											
Rhizoclonium											
Tetrasporales											
Gloeocystis ampla			<4,536								
Gloeocystis											
Tetraspora											
Tetraspora ?											
Ulothricales											
Microspora											180
Stigeoclonium poss.											

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	DORIS OUTFLOW										
	22-Aug-96			19-Jul-97		20-Aug-97			16-Aug-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Volvocales											
Chlamydomonas									<152	<154	
Chlamydomonas ?											
Zygnematales											
Arthrodesmus											
Closterium	<10,400		<4,536	<381		<446		<484	<152	<154	180
Cosmarium	10,400	<8,298	<4,536			<446	495	<484	377	308	1,338
Euastrum								<484			
Gonatozygon											
Hyalotheca											
Mougeotia	<10,400	<8,298	<4,536				495	<484		<154	<180
Penium											
Pleurotaenium		<8,298									
Roya											
Sphaerozosma											
Spirogyra											180
Spondylosium planum											
Staurastrum	<10,400						<495	<484		<154	
Teilingia granulata											
Xanthidium											
Zygnema			<4,536					<484		2,615	1,795
Unidentified											
Chrysophyta											
Chromulinales											
Kephyrion											
Mischococcales											
Mischococcus											
Ochromonadales											
Dinobryon bavaricum					1,543			<484	<152	<154	180
Dinobryon cylindricum poss.									<152	<154	
Dinobryon divergens					<309						
Dinobryon sociale					<309						
Dinobryon sertularia				<381		<446					
Dinobryon *	<10,400			<381			495			764	<180
Epixys ramosa											
Hyalobryon sp.											
Kephyrion/Pseudokephyrion											
Mallomonas					<309		<495				
Unidentified cyst									1,696	2,675	2,677
Unidentified flagellate										1,147	2,008
Unidentified unicellular									754	1,720	446
Rhizochrysidales											
Diceras phaseolus									3,014	2,293	7,138
Tribonematales											
Tribonema											
Tribonema											
Unidentified filamentous											
Unidentified flagellate											<180
Unidentified colonial									1,819	1,147	1,784
Unidentified unicellular									754	3,439	2,231
Cyanophyta											
Chamaesiphonales											
Clastidium setiferum						2,674	495	968			
Clastidium setigerum									2,638	154	2,231
Chroococcales											
Agmenellum tenuissima											
Agmenellum											
Anacystis aeruginosa											
Aphanocapsa									<152	<154	2,677
Aphanothece									<152		
Anacystis		<8,298					<495	<484			
Coccochloris											
Chroococcus											<180
Merismopedia sp.											
Dactylococcopsis	<10,400	8,298	<4,536								
Dactylococcopsis ?											
Gomphosphaeria nagelianum					<309			<484			
Gomphosphaeria											
Unidentified											1,784
Nostocales											
Anabaena *	499,200	580,860	335,664		<309	2,674	<495	14,042			
Anabaena / Pseudoanabaena									7,428	790	3,569
Aphanizomenon flos-aquae											
Aphanizomenon									7,277	1,846	5,026
Gloeotrichia ?											
Nostoc			<4,536								
Pseudanabaena catenata									20,347	38,978	15,614
Tolypothrix	<10,400										
Unidentified											
Oscillatoriales											
Lyngbya limnetica											
Lyngbya		207,450							2,638		
Oscillatoria tenuis	2,516,800	6,082,434	2,086,560	316,196	161,346	55,254	21,776	156,881	2,122	7,262	13,383
Oscillatoria poss. claricentrosa	301,600	566,338	263,088								
Oscillatoria	<10,400	188,779	22,680	6,849	5,862	14,259	6,929	8,231	44,086	25,607	16,506
Spirulina											
Unidentified											
Pyrrophyta											
Cryptomonadales											
Cryptomonas										<154	180
Dinokontae											
Peridinium / Glenodinium		<8,298	<4,536	<381	<309	<446	<495		377	154	446
Rhodophyta											
Audouinella violacea											
Unidentified flagellate									377	2,293	2,008
Unidentified unicellular									3,956	4,012	5,354
Total	5,012,800	8,679,707	3,265,920	339,027	218,423	174,229	140,555	284,708	166,182	220,662	180,150

* In poor condition.

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	TAIL OUTFLOW								
	19-Jul-97			19-Aug-97			16-Aug-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta									
Centrales									
Cyclotella glomerata									
Cyclotella	<1608	<1299	<656	<274	<354				
Melosira islandica									
Melosira italica									
Melosira varians									
Melosira									
Rhizosolenia									
Stephanodiscus									
Pennales									
Achnanthes minutissima	<1608	1,299	656	1,370	6,372	9,367	66,526	45,158	14,348
Achnanthes		<1299	<656	9,316	20,178	21,199	32,410	63,221	23,479
Amphipleura pellucida									
Amphiprora									
Amphora									
Asterionella formosa *	3,216	6,495	7,872	<274	<354	<493			
Caloneis									
Cocconeis									
Cymatopleura solea									
Cymatopleura									
Cymbella sinuata									
Cymbella	3,216	<1299	<656	548	708	493	9,098	12,042	3,478
Denticula		<1299							
Diatoma elongatum	237,984	171,468	275,520	1,370	6,726	3,944	27,293	36,126	6,087
Diatoma	1,608	1,299	<656						
Diatomella									
Diploneis									
Epithemia sorex									
Epithemia turgida									
Epithemia									
Eunotia	1,608	3,897	<656		<354	493	3,412	6,021	870
Fragilaria crotonensis									
Fragilaria	4,824	6,495	2,624	2,466	2,478	986	3,412	4,014	1,739
Frustulia									
Gomphonema		<1299	656			493	32,410	93,326	33,914
Meridion circulare									
Navicula radiosa		<1299					458	808	350
Navicula	1,608	2,598	656	274	354	<493	5,686	6,021	1,739
Nedium									
Nitzschia acicularis	<1608	1,299	656						
Nitzschia	1,608	5,196	656	548	2,478	493	2,274	4,014	870
Pinnularia			<656	<274	<354		458	808	
Pleurosigma / Gyrosigma									
Rhoicosphenia curvata									
Rhopalodia gibba									
Stauroneis		<1299	<656						
Surirella									
Synedra ulna	3,216	2,598	656	274	708	<493	40,939	60,210	6,957
Synedra	11,256	7,794	5,248	1,644	2,832	493	35,822	57,200	45,654
Tabellaria fenestrata	1,608	1,299	656	274	<354	<493	458	<807.6	
Tabellaria flocculosa	33,768	50,661	10,496	4,110	708	4,437	14,784	10,035	1,739
Tabellaria									
Unidentified							2,274	4,014	2,609
Chlorophyta									
Chaetophorales									
Caespitella									
Draparnaldia									
Stigeoclonium ?					<354	<493			
Unidentified flagellate							3,203	10,035	<350.0
Chlorococcales									
Ankistrodesmus falcatus	<1608	<1299		274	<354	493	12,509	10,035	3,478
Ankistrodemus spiralis						<493	<457.6	3,230	
Botryococcus braunii				<274					
Crucigenia tetrapedia									
Crucigenia									
Dictyosphaerium				<274					
Elakatothrix							<457.6		
Euastropsis									
Lagerheimia									
Oocystis	<1608	1,299							
Pediastrum	<1608			<274	<354				
Quadrigula							<457.6		<350.0
Scenedesmus				<274	<353				
Schroederia									
Sphaerocystis schroeteri									
Sphaerocystis schroeteri ?		<1299	<656	<274		<493			
Tetraedron			<656				<457.6		
Euglenales									
Euglena									
Phacus									
Trachelomonas	1,608	<1299	1,312				<457.6		
Unidentified									
Oedogoniales									
Bulbochaete									
Oedogonium	<1608	<1299	<656	<274	<354	<493	<457.6	<807.6	700
Siphonocladales									
Rhizoclonium									
Tetrasporales									
Gloeocystis ampla					<354				
Gloeocystis				<274					
Tetraspora				<274					<350.0
Tetraspora ?									
Ulothricales									
Microspora	1,608	<1299	<656	1,918	2,124	2,465		<807.6	
Stigeoclonium poss.									

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	TAIL OUTFLOW								
	19-Jul-97			19-Aug-97			16-Aug-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Volvocales									
Chlamydomonas									
Chlamydomonas ?									
Zygnematales									
Arthrodesmus	<1608			<274					
Closterium	3,216	1,299	656	<274	<354	<493	2,274	2,423	700
Cosmarium	3,216	1,299	656	584	354	<493	4,549	12,042	1,400
Euastrum		<1299	<656	<274	<354	<493	915	808	350
Gonatozygon	<1608	1,299	<656						
Hyalotheca	<1608	<1299	<656	<274	<354	<493			
Mougeotia	12,864	27,279	4,592	<274	<354	<493	3,412	4,846	
Penium									
Pleurotaenium		<1299							
Roya	<1608	<1299	<656	<274					
Sphaerozosma	<1608	<1299		<274	354	<493			
Spirogyra	<1608	1,299	<656						
Spondylosium planum		<1299	<656	<274					
Staurastrum	<1608	<1299	<656	274	<354	<493	1,137	808	350
Teilingia granulata							<457.6	808	350
Xanthidium		<1299		274					
Zygnema	<1608	<1299	<656	<274	<354				
Unidentified	1,608	<1299							
Chrysophyta									
Chromulinales									
Kephyrion									
Mischococcales									
Mischococcus									
Ochromonadales									
Dinobryon bavaricum		<1299	<656						
Dinobryon cylindricum poss.		<1299							
Dinobryon divergens		<1299							
Dinobryon sociale									
Dinobryon sertularia			<656						
*Dinobryon **	<1608	<1299	<656				<457.6		
Epixys ramosa							<457.6		
Hyalobryon sp.							915	<807.6	
Kephyrion/Pseudokephyrion							458	2,007	
Mallomonas									
Unidentified cyst							2,274	2,007	870
Unidentified flagellate							3,412	6,021	870
Unidentified unicellular							6,823	12,042	1,739
Rhizochrysidales									
Diceras phaseolus							36,390	12,042	10,435
Tribonematales									
Tribonema									
Tribonema			<656						
Unidentified filamentous							15,921	22,077	9,566
Unidentified flagellate								<807.6	<350.0
Unidentified colonial							4,549	<807.6	1,400
Unidentified unicellular							<457.6	3,011	2,609
Cyanophyta									
Chamaesiphonales									
Clastidium setiferum				87,680	167,442	124,236			
Clastidium setigerum							27,293	22,077	3,478
Chroococcales									
Agmenellum tenuissima									
Agmenellum				<274					
Anacystis aeruginosa				<274	<354				
Aphanocapsa									
Aphanothece							18,195	12,922	870
Anacystis		<1299	<656	<274	14,160	<493			
Coccochloris		<1299							
Chroococcus								<807.6	
Merismopedia sp.									
Dactylococcopsis									
Dactylococcopsis ?									
Gomphosphaeria nagelianum			<656	<274					
Gomphosphaeria								<807.6	
Unidentified									
Nostocales									
*Anabaena **				<274		<493			
Anabaena / Pseudoanabaena							5,949	<807.6	<350.5
Aphanizomenon flos-aquae									
Aphanizomenon									
Gloeotrichia ?									
Nostoc									
Pseudanabaena catenata							61,409	117,410	45,219
Tolypothrix									
Unidentified									
Oscillatoriales									
Lyngbya limnetica									
Lyngbya				4,658	10,266	4,930	34,320	24,084	16,522
Oscillatoria tenuis	<1608		<656						
Oscillatoria poss. claricentrosa									
Oscillatoria	54,672	11,691	17,056	16,988	4,248	20,213	13,646	<807.6	13,914
Spirulina									
Unidentified				3,288	12,390	19,227			
Pyrrophyta									
Cryptomonadales									
Cryptomonas								808	
Dinokontae									
Peridinium / Glenodinium	1,608	<1299	<656	<274	<354				
Rhodophyta									
Audouinella violacea									
Unidentified flagellate							1,706	6,021	3,478
Unidentified unicellular							15,352	45,158	9,131
Total	385,920	307,863	330,624	138,132	254,880	213,962	554,324	735,734	271,263

* In poor condition.

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	OGAMA OUTFLOW								PATCH OUTFLOW					
	22-Aug-96			18-Jul-97		20-Aug-97			23-Aug-96			21-Aug-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta														
Centrales														
Cyclotella glomerata														
Cyclotella				<6607			<1581		6,148			<675	<489	682
Melosira islandica	189,720	328,752	339,240											
Melosira italica				26,427	11,311	5,296	<1581	1,877				<675	<489	
Melosira varians														
Melosira										<1,251				
Rhizosolenia														
Stephanodiscus		18,264			<5656				<3,074					
Pennales														
Achnanthes minutissima	94,864	100,452	237,468			37,070	36,363	17,828		7,506	5,798	29,700	12,225	35,464
Achnanthes		9,132		<6607	11,311	47,661	31,620	7,506			2,899	10,125	3,912	7,502
Amphipleura pellucida				<6607					3,074	<1,251	2,899		<489	
Amphiprora				<6607	<5656									
Amphora	13,552	9,132	<16,962	<6607	11,311	<5296	<1581				5,798	<675		<682
Asterionella formosa *	54,208	82,188	<16,962	6,607	28,278	5,296	1,581	<938				<675	<489	
Caloneis				<6607	<5656							<675		
Cocconeis						5,296	3,162	<938	<3,074	<1,251	<2,899	<675		<682
Cymatopleura solea														
Cymatopleura	<13,552	<9,132	<16,962	<6607	<5656	<5296	<1581	<938					<489	
Cymbella sinuata														
Cymbella	27,104	155,244	135,696	6,607	5,656	15,887	6,324	2,815	3,074	1,251	17,394	2,700	<489	4,774
Denticula														
Diatoma elongatum	13,552	27,396	152,658	4,314,240	984,074	460,726	116,994	27,211	33,814	7,506	20,293	38,475	53,790	97,526
Diatoma	13,552	<9,132		59,461	28,278	<5296	1,581	<938	3,074		5,798	<675	<489	<682
Diatomella														<682
Diploneis	<13,552	18,264	<16,962	13,214	11,311		<1581		<3,074					<682
Epithemia sorex			16,962						3,074	<1,251	8,697	<675		<682
Epithemia turgida		9,132	33,924	<6607		<5296	<1581	<938				<675	<489	<682
Epithemia	40,656													
Eunotia	<13,552	<9,132	16,962	<6607	5,656				<3,074	<1,251	<2,899		<489	<682
Fragilaria crotonensis														
Fragilaria	176,176	283,752	508,860	6,607	16,967	15,887	7,905	1,877	27,666	6,255	26,091	4,050	1,467	3,410
Frustulia														
Gomphonema	<13,552	9,132	16,962	<6607	<5656	127,097	28,458	25,334		<1,251	<2,899	6,750	4,401	10,912
Meridion circulare	<13,552		<16,962											
Navicula radiosa				<6607	<5656	<5296	<1581	<938				<675	<489	<682
Navicula	67,760	109,584	186,582	19,820	28,278	15,887	3,162	938	18,444	2,502	20,293	2,700	2,445	2,046
Nedium		<9,132		<6607					3,074	<1,251	<2,899			
Nitzschia acicularis				19,820	5,656	5,296	4,743	938				1,350	<489	2,728
Nitzschia	81,312	63,924	84,810	<6607	16,967	5,296		<938	9,222	1,251	8,697	3,375	1,467	682
Pinnularia	13,552			<6607	<5656						<2,899		<489	<682
Pleurosigma / Gyrosigma	<13,552	<9,132	16,962	<6607	<5656	<5296								<682
Rhoicosphenia curvata									<3,074					
Rhopalodia gibba		<9,132							<3,074		2,899	<675	<489	<682
Stauroneis				<6607	<5656									<682
Surirella	13,552	36,528	16,962	26,427	16,967	10,591	3,162	938						<682
Synedra ulna	13,552	18,264	16,962	26,427	5,656	31,774	15,810	2,815			<2,899	675	<489	682
Synedra				33,034	28,278	5,296	1,581		<3,074	<1,251		6,075	978	3,410
Tabellaria fenestrata	40,656	<9,132		<6607	<5656							<675		<682
Tabellaria flocculosa		<9,132	16,962	13,214	<5656	10,591	<1581	<938		<1,251	14,495	<675	<489	<682
Tabellaria									<3,074					
Unidentified	40,656	45,660							3,074		5,798			
Chlorophyta														
Chaetophorales														
Caespitella														
Draparnaldia														
Stigeoclonium ?														
Unidentified flagellate														
Chlorococcales														
Ankistrodesmus falcatus			<16,962	<6607	<5656	<5296	<1581	<938				<675	<489	<682
Ankistrodemus spiralis						<5296	<1581							
Botryococcus braunii										<1,251				
Crucigenia tetrapedia								<938						
Crucigenia	54,208													
Dictyosphaerium														
Elakatothrix										<1,251				
Euastropsis														
Lagerheimia				<6607								<675		<682
Oocystis														
Pediastrum	<13,552	<9,132	<16,962	<6607	<5656	<5296	<1581	<938					<489	<682
Quadrigula														
Scenedesmus	13,552	54,792	<16,962	<6607	<5656	<5296	<1581						<489	<682
Schroederia														
Sphaerocystis schroeteri						<5296	<1581							
Sphaerocystis schroeteri ?					<5656							<675	<489	
Tetraedron	13,552	45,660	<16,962	<6607		<5296	1,581	<938				<675		
Euglenales														
Euglena							<1481	<938						<682
Phacus				<6607				<938						
Trachelomonas	27,104	63,924	16,962	6,607	5,656	<5296		<938	<3,074			<675	<489	<682
Unidentified														
Oedogoniales														
Bulbochaete										<1,251	14,495	<675		
Oedogonium		<9,132	203,544	<6607	<5656	<5296	<1581	1,877		<1,251	474	<675	<489	<682
Siphonocladales														
Rhizoclonium			<16,962		<5656									
Tetrasporales														
Gloeocystis ampla	<13,552	<9,132	<16,962						12,296					<682
Gloeocystis														
Tetraspora						<5296	<1581	<938						
Tetraspora ?													<489	
Ulothricales														
Microspora			<16,962				<1581	<938			<2,899			
Stigeoclonium poss.														

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	OGAMA OUTFLOW								PATCH OUTFLOW					
	22-Aug-96			18-Jul-97		20-Aug-97			23-Aug-96			21-Aug-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Volvocales														
Chlamydomonas							<1581							
Chlamydomonas ?														
Zygnematales														
Arthrodesmus														
Closterium				<6607	<5656	<5296	<1581	<938					<489	<682
Cosmarium	<13,552	36,528	16,962	<6607	<5656	5,296	<1581	<938	3,074	<1,251	5,798	<675	<489	<682
Euastrum														
Gonatozygon											<2,899			
Hyalotheca			<16,962	<6607	<5656									
Mougeotia								<938	15,370	<1,251	2,899	<675	<489	<682
Penium														
Pleurotaenium											<2,899			
Roya														
Sphaerozosma														
Spirogyra				<6607	<5656	<5296	<1581			<1,251	108			<682
Spondylosium planum														
Staurastrum		9,132	<16,962	<6607	<5656	<5296	<1581	<938						
Teilingia granulata														
Xanthidium														
Zygnema								<938			361			<682
Unidentified					<5656								<489	
Chrysophyta														
Chromulinales														
Kephyrion														
Mischococcales														
Mischococcus														
Ochromonadales														
Dinobryon bavaricum					5,656							<675		
Dinobryon cylindricum poss.														
Dinobryon divergens														
Dinobryon sociale														
Dinobryon sertularia													<489	
Dinobryon *	54,208	91,320	50,886	<6607	11,311					<1,251		<675	<489	<682
Epixys ramosa														
Hyalobryon sp.														
Kephyrion/Pseudokephyrion														
Mallomonas														
Unidentified cyst														
Unidentified flagellate														
Unidentified unicellular														
Rhizochrysidales														
Diceras phaseolus														
Tribonematales														
Tribonema														
Tribonema														
Unidentified filamentous														
Unidentified flagellate	81,312													
Unidentified colonial														
Unidentified unicellular														
Cyanophyta														
Chamaesiphonales														
Clastidium setiferum						5,296	1,581	9,383				4,050	1,467	6,820
Clastidium setigerum														
Chroococcales														
Agmenellum tenuissima				<6607										
Agmenellum		109,584												
Anacystis aeruginosa														
Aphanocapsa														
Aphanothece														
Anacystis	108,416	36,528		26,427					61,480			2,700		<682
Coccochloris														
Chroococcus														
Merismopedia sp.														
Dactylococcopsis	27,104	45,660	16,962						<3,074					
Dactylococcopsis ?							<1581							
Gomphosphaeria nagelianum				79,282			<1581							
Gomphosphaeria	338,800		<16,962											
Unidentified														
Nostocales														
Anabaena *		<9,132	797,214			<5296	<1581	<938	762,352	<1,251	66,677	<675	<489	<682
Anabaena / Pseudoanabaena														
Aphanizomenon flos-aquae														
Aphanizomenon														
Gloeotrichia ?									6,148	270,216	142,051			
Nostoc														
Pseudanabaena catenata														
Tolypothrix														
Unidentified														
Oscillatoriales														
Lyngbya limnetica			169,620						562,542	90,072				<682
Lyngbya						503,092	494,853	410,037	<3,074			6,075	<489	
Oscillatoria tenuis	569,184	1,269,348	1,255,188	270,879	180,979	26,479	86,955	14,075						
Oscillatoria poss. claricentrosa														
Oscillatoria				<6607	<5656	90,027	25,296	3,753	<3,074		<2,899	7,425	10,758	11,594
Spirulina														
Unidentified							11,067	<938						<682
Pyrrophyta														
Cryptomonadales														
Cryptomonas										<1,251				
Dinokontae														
Peridinium / Glenodinium		<9,132	<16,962	<6607							<2,899		<489	
Rhodophyta														
Audouinella violacea										<1,251				
Unidentified flagellate														
Unidentified unicellular														
Total	2,181,864	3,087,276	4,325,310	4,955,100	1,419,557	1,435,137	883,779	529,202	1,537,000	386,559	380,712	126,225	92,910	188,232

* In poor condition.

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	WINDY OUTFLOW								
	23-Aug-96			18-Jul-97			21-Aug-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta									
Centrales									
Cyclotella glomerata									
Cyclotella	13,387	<4,573	4,794	<257	<215	142	<279	<669	624
Melosira islandica									
Melosira italica									
Melosira varians	<13,387								
Melosira		<4,573					<279		
Rhizosolenia									
Stephanodiscus				<257	<215	<142			
Pennales									
Achnanthes minutissima	93,709	4,573			<215	<142	1,953	669	1,872
Achnanthes				257		142	1,395	1,338	4,368
Amphipleura pellucida									
Amphiprora							<279		
Amphora	13,387	<4,573	<4,794	<257	<215	142			
Asterionella formosa *									
Caloneis				<257				<669	
Cocconeis			<4,794	257		<142			
Cymatopleura solea									
Cymatopleura							<279		
Cymbella sinuata									
Cymbella	80,322	9,146	4,794	257	215	<142	279	1,338	624
Denticula						<142			
Diatoma elongatum	294,514	32,011	23,970	29,041	44,075	102,950	41,571	53,520	62,400
Diatoma		9,146	<4,794	1,028	215	142	<279	<669	<624
Diatomella						<142			
Diploneis	<13,387		<4,794				<279		<624
Epithemia sorex		<4,573							
Epithemia turgida									
Epithemia	13,387		<4,794	<257	<215	<142	<279	<669	<624
Eunotia	13,387		<4,794	<257			<279		<624
Fragilaria crotonensis									
Fragilaria	200,805	41,157	47,940	514	430	852	1,675	6,021	4,368
Frustulia									
Gomphonema	<13,387			514			279	<669	1,248
Meridion circulare									
Navicula radiosa				<257		<142	<279	<669	<624
Navicula	93,709	9,146	19,176	1,028	645	852	279	1,338	1,248
Nedium		<4,573							
Nitzschia acicularis								<669	624
Nitzschia	227,579	13,719	28,764	257	1,075	426	558	2,007	3,744
Pinnularia				257	<215	<142		<669	<624
Pleurosigma / Gyrosigma	13,387			<257	<215	<142	<279	<669	
Rhoicosphenia curvata				<257					
Rhopalodia gibba	<13,387					<142		<669	
Stauroneis	<13,387		<4,794	<257	<215	<142	<279	<669	
Surirella	<13,387	4,573						<669	
Synedra ulna	26,774	<4,573	9,588	257	<215	<146	279	<669	<624
Synedra				1,285	430		279	2,007	3,120
Tabellaria fenestrata	26,774	<4,573	<4,794	257	215	142	279	<669	<624
Tabellaria flocculosa	<13,387	4,573		<257	<215	<142	<279		
Tabellaria									
Unidentified									
Chlorophyta									
Chaetophorales									
Caespitella							<297	2,007	5,616
Draparnaldia									
Stigeoclonium ?									<624
Unidentified flagellate									
Chlorococcales									
Ankistrodesmus falcatus	<13,387		<4,794						
Ankistrodemus spiralis									
Botryococcus braunii									
Crucigenia tetrapedia									
Crucigenia									
Dictyosphaerium									
Elakatothrix									
Euastropsis									
Lagerheimia									
Oocystis									
Pediastrum									
Quadrigula									
Scenedesmus	53,548		<4,794						<624
Schroederia									
Sphaerocystis schroeteri									
Sphaerocystis schroeteri ?				<257					
Tetraedron			<4,794						
Euglenales									
Euglena									
Phacus									
Trachelomonas							<279		<624
Unidentified									
Oedogoniales									
Bulbochaete									
Oedogonium	107,096	<4,573		<257	<215	<142	<279	<669	<624
Siphonocladales									
Rhizoclonium									
Tetrasporales									
Gloeocystis ampla									
Gloeocystis									
Tetraspora									
Tetraspora ?									
Ulothricales									
Microspora						<142	279		
Stigeoclonium poss.		<4,573	<4,794						

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	WINDY OUTFLOW								
	23-Aug-96			18-Jul-97			21-Aug-97		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Volvocales									
Chlamydomonas									
Chlamydomonas ?									
Zygnematales									
Arthrodesmus									
Closterium	<13,387						<279		
Cosmarium	<13,387	4,573	<4,794	<257			<279		<624
Euastrum									
Gonatozygon	<13,387	<4,573	<4,794			<142	<279		<624
Hyalotheca				<257	<215				
Mougeotia	107,096	50,303	33,558	<257	<215	<142	<279	669	1,248
Penium									
Pleurotaenium									
Roya									
Sphaerozosma									
Spirogyra	26,774	<4,573	<4,794	<257	<215	<142	<279	<669	<624
Spondylosium planum									
Staurastrum	<13,387	4,573	<4,794						<624
Teilingia granulata									
Xanthidium									
Zygnema	40,161	<4,573		<257	<215	<142		<669	<624
Unidentified									
Chrysophyta									
Chromulinales									
Kephyrion									
Mischococcales									
Mischococcus									<624
Ochromonadales									
Dinobryon bavaricum									
Dinobryon cylindricum poss.									
Dinobryon divergens									
Dinobryon sociale									
Dinobryon sertularia									
*Dinobryon **	13,387	9,146				<142			<624
Epixys ramosa									
Hyalobryon sp.									
Kephyrion/Pseudokephyrion									
Mallomonas									
Unidentified cyst									
Unidentified flagellate									
Unidentified unicellular									
Rhizochrysidales									
Diceras phaseolus									
Tribonematales									
Tribonema				<257					
Tribonema									
Unidentified filamentous									
Unidentified flagellate									
Unidentified colonial									
Unidentified unicellular									
Cyanophyta									
Chamaesiphonales									
Clastidium setiferum							<279	<669	3,744
Clastidium setigerum									
Chroococcales									
Agmenellum tenuissima									
Agmenellum									
Anacystis aeruginosa									
Aphanocapsa									
Aphanothece									
Anacystis				<257			<279	<669	
Coccochloris									
Chroococcus									
Merismopedia sp.									
Dactylococcopsis	53,548		<4,794						
Dactylococcopsis ?									
Gomphosphaeria nagelianum									
Gomphosphaeria									
Unidentified									
Nostocales									
*Anabaena **	240,966	<4,573	33,558	<257			<279	<669	
Anabaena / Pseudoanabaena									
Aphanizomenon flos-aquae									
Aphanizomenon									
Gloeotrichia ?	455,158	640,220	9,161,334						
Nostoc	<13,387		479,400	<257					
Pseudanabaena catenata									
Tolypothrix									
Unidentified									
Oscillatoriales									
Lyngbya limnetica	<13,387	<4,573	119,850						
Lyngbya		<4,573			<257				
Oscillatoria tenuis									
Oscillatoria poss. claricentrosa									
Oscillatoria	133,870	68,595	263,670	<257	860	<142	1,675	<669	5,616
Spirulina									
Unidentified									
Pyrrophyta									
Cryptomonadales									
Cryptomonas									
Dinokontae									
Peridinium / Glenodinium									
Rhodophyta									
Audouinella violacea									
Unidentified flagellate									
Unidentified unicellular									
Total	2,342,725	905,454	10,230,396	35,209	48,160	105,790	50,780	70,914	100,464

* In poor condition.

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	LITTLE ROBERTS OUTFLOW								PELVIC OUTFLOW						
	23-Aug-96			19-Jul-97		19-Aug-97			19-Jul-97	21-Aug-97			16-Aug-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Bacillariophyta															
Centrales															
Cyclotella glomerata															
Cyclotella		<1,565		386	1,722	1,909	3,297	1,610		<1,071			950		
Melosira islandica															
Melosira italica				1,928	6,890	20,042	42,861	27,368	<386	<1,071	3,136	1,684			
Melosira varians															
Melosira	18,138	10,955	4,576	<386	<1722	<954	<1649						21,244	315	15,358
Rhizosolenia								<1,610					787		<386
Stephanodiscus				771	5,167	954	4,946	1,610							<386
Pennales															
Achnanthes minutissima	6,046	1,565	16,016	<386	1,722	3,188	4,946	1,610		19,269	25,090	30,308	10,622	315	4,800
Achnanthes	<3,023			386		12,407	14,837	12,879	771	17,128	81,544	50,514	25,964	788	38,875
Amphipleura pellucida					<1722	<954	<1649	<1,610							
Amphiprora								<1,610					<317	<32	
Amphora		<1,565		<386	1,722	1,909	<1649	<1,610			<3,136		2,360	158	2,880
Asterionella formosa *	<3,023		<2,288	386		1,909	1,649	3,220	<386				6,294	473	4,800
Caloneis						<954					<3,136			<32	<386
Cocconeis				<386	1,722		<1649						<317	<32	<386
Cymatopleura solea															
Cymatopleura				<386	<1722	<954	<1649	<1,610							
Cymbella sinuata															
Cymbella	6,046	6,260	4,576	771	<1722	3,188	3,297	4,830	386	6,423	25,090	10,103	7,081	630	9,599
Denticula													317	<32	<386
Diatoma elongatum	15,115	12,520	9,152	45,886	253,193	97,349	143,420	164,210	144,214	24,622	166,224	26,941	7,868	158	10,559
Diatoma		<1,565		386	1,722	954	1,649	<1,610	1,928	<1,071	6,273	6,735	1,574	63	2,880
Diatomella													<317		
Diploneis				<386	<1722	954	1,649	1,610			<3,136	<1,684	317		<386
Epithemia sorex	3,023					<954	<1649					<1,684	1,583	<32	1,545
Epithemia turgida				<386	<1722	954	<1649	<1,610		<1,071	<3,136	<1,684	317	<32	1,920
Epithemia			<2,288										1,900	63	5,793
Eunotia		<1,565		386	<1722	<954		<1,610		4,282	6,273	3,368	633	32	1,545
Fragilaria crotonensis				<386	<1722								2,360	<32	2,880
Fragilaria	18,138	14,085	4,576	4,627	8,612	16,225	28,025	19,319	4,242	2,141	15,682	8,419	62,551	1,734	23,998
Frustulia													<317		
Gomphonema	3,023		<2,288	<386	1,722	954	1,649	1,610	1,157	1,071	9,409	13,470	633	32	386
Meridion circulare									<386						
Navicula radiosa									<386	<1,071	3,136	1,684	5,508	<32	1,159
Navicula	15,115	12,520	11,440	1,542	6,890	15,270	28,025	11,269	386	4,282	9,409	5,051	28,325	630	12,479
Nedium						<954	<1649	<1,610					<317		<386
Nitzschia acicularis				3,856	24,114	56,310	54,401	93,374			<3,136	3,368	1,574		960
Nitzschia	9,069	12,520	13,728	1,928	10,334	20,997	28,025	24,149	386	<1,071	18,818	8,419	31,865	946	19,198
Pinnularia				<386	<1722	<954	1,649	<1,610	<386	<1,071		<1,684	<317	<32	<386
Pleurosigma / Gyrosigma		<1,565		<386	<1722	<954	<1649	<1,610						<32	<386
Rhoicosphenia curvata															
Rhopalodia gibba	<3,023	<1,565	<2,288	<386	<1722	<954	<1649	<1,610			<3,136		317	<32	386
Stauroneis			<2,288	<386	<1722	<954	<1649	<1,610					<317		
Surirella	<3,023	<1,565	<2,288	386	1,722	954	1,649	1,610			<3,136	<1,684	950	<32	772
Synedra ulna	<3,023			771	3,445	1,909	3,297	1,610	<386	3,212	59,590	13,470	1,583	32	960
Synedra				2,317	10,334	1,909	11,540	4,830	771	4,282	21,954	15,154	3,147	63	3,840
Tabellaria fenestrata		<1,565		386	<1722	<954	3,297	<1,610	<386	2,141	9,409	5,051	<317		<386
Tabellaria flocculosa	<3,023	3,130	<2,288	771	3,445	1,909	1,649	3,220	4,627	40,679	53,317	97,660	3,147	158	5,759
Tabellaria															
Unidentified													2,360	158	2,880
Chlorophyta															
Chaetophorales															
Caespitella														<32	
Draparnaldia										<1,071		<1,684			
Stigeoclonium ?											<3,136	<1,684			
Unidentified flagellate										<1,071	<3,136				
Chlorococcales															
Ankistrodesmus falcatus	<3,023	3,130		<386	1,722	4,772	4,946	11,269	<386	2,141	21,954	10,103	1,900	32	960
Ankistrodemus spiralis						<954	<1649	<1,610			<3,136	<1,684	<317	<32	1,545
Botryococcus braunii															
Crucigenia tetrapedia											<3,136				
Crucigenia															
Dictyosphaerium															
Elakatothrix															
Euastropsis						<954					<3,136				
Lagerheimia					1,722			<1,610							
Oocystis															
Pediastrum					<1722	<954	<1649	<1,610	<386		<3,136	<1,684	317		<386
Quadrigula															
Scenedesmus		<1,565		<386	<1722	3,818	6,594	<1,610	<386	<1,071	<3,136	<1,684	950		<386
Schroederia															
Sphaerocystis schroeteri															
Sphaerocystis schroeteri ?						<954	<1649	<1,610	<386	<1,071	<3,136	<1,684			
Tetraedron				<386		<954			<386		<3,136	<1,684			
Euglenales															
Euglena						<954				<1,071	<3,136				
Phacus															
Trachelomonas				386	<1722	1,909		<1,610	386	<1,071	3,136	<1,684			
Unidentified															
Oedogoniales															
Bulbochaete											<3,136	<1,684	<317		<386
Oedogonium				1,928		<954	<1649	<1,610	<386	3,212	3,136	6,735	2,533	127	12,745
Siphonocladales															
Rhizoclonium								<1,610							
Tetrasporales															
Gloeocystis ampla															
Gloeocystis															
Tetraspora										<1,071	<3,136	<1,684			
Tetraspora ?															
Ulothricales															
Microspora									<386						
Stigeoclonium poss.															

Appendix B3. Periphyton abundance (cells/cm^2) in Doris Hinge streams, 1996-2000.

Species List	LITTLE ROBERTS OUTFLOW								PELVIC OUTFLOW						
	23-Aug-96			19-Jul-97		19-Aug-97			19-Jul-97	21-Aug-97			16-Aug-00		
	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Volvocales															
Chlamydomonas	<3,023												787		
Chlamydomonas ?											<3,136				
Zygnematales															
Arthrodesmus													<317		
Closterium		<1,565	<2,288	386	<1722	1,909	1,649	1,610	<386	<1,071	<3,136	1,684	<317		
Cosmarium		<1,565	<2,288	<386	1,722	<954	1,649	1,610	<386	1,071	3,136	<1,684	950	63	727
Euastrum							<1649	<1,610	<386	<1,071	<3,136	<1,684			
Gonatozygon						954	1,649	<1,610				<1,684			
Hyalotheca											<3,136				
Mougeotia		<1,565		<386	3,445	<954	4,946	1,610	<386	2,141	25,090	13,470		<32	
Penium							<1649								
Pleurotaenium											<3,136	<1,684			<386
Roya									<386						
Sphaerozosma						<954	<1649					<1,684			
Spirogyra						1,909	<1649	<1,610	<386	<1,071	6,273	<1,684			
Spondylosium planum						<954		<1,610							
Staurastrum				<386		<954	<1649	<1,610		<1,071	<3,136	<1,684	317	<32	772
Teilingia granulata															
Xanthidium															
Zygnema				<386			<1649	<1,610	<386	<1,071	<3,136	<1,684			
Unidentified															
Chrysophyta															
Chromulinales															
Kephyrion						<954									
Mischococcales															
Mischococcus															
Ochromonadales															
Dinobryon bavaricum				<386	1,722	1,909		1,610	<386						
Dinobryon cylindricum poss.															
Dinobryon divergens				<386	5,167										
Dinobryon sociale					<1722	<954	<1649	<1,610	<386						
Dinobryon sertularia				1,157	<1722	2,863	1,649	<1,610	<386						
Dinobryon *	<3,023	<1,565	2,288						<386						
Epixys ramosa															
Hyalobryon sp.															
Kephyrion/Pseudokephyrion															
Mallomonas						954	<1649				<3,136				
Unidentified cyst													6,294	315	8,639
Unidentified flagellate															
Unidentified unicellular														158	1,920
Rhizochrysidales															
Diceras phaseolus															
Tribonematales															
Tribonema															
Tribonema										<1,071		<1,684			
Unidentified filamentous															
Unidentified flagellate				386									<317		2,880
Unidentified colonial													1,266	<32	1,545
Unidentified unicellular															960
Cyanophyta															
Chamaesiphonales															
Clastidium setiferum						1,909		3,220		<1,071	<3,136				
Clastidium setigerum														380	3,840
Chroococcales															
Agmenellum tenuissima															
Agmenellum								<1,610							
Anacystis aeruginosa															
Aphanocapsa													7,868		1,545
Aphanothece															
Anacystis						3,818	13,188	6,440			12,545	6,735			
Coccochloris															
Chroococcus															
Merismopedia sp.													<317		<386
Dactylococcopsis	<3,023		<2,288												
Dactylococcopsis ?															
Gomphosphaeria nagelianum						<954	<1649	<1,610			<3,136	<1,684			
Gomphosphaeria				<386							<3,136		5,066		
Unidentified															<386
Nostocales															
Anabaena *	57,437	62,600	38,896	<386	10,334	13,362	16,485	25,758	<386		9,409	<1,684	950		386
Anabaena / Pseudoanabaena													1,900	222	<386
Aphanizomenon flos-aquae								<1,610							
Aphanizomenon													4,432	571	6,565
Gloeotrichia ?	<3,023	25,040	20,592												
Nostoc						<954				<1,071					
Pseudanabaena catenata						<954	8,243						5,508	4,255	15,358
Tolypothrix															
Unidentified															<386
Oscillatoriales															
Lyngbya limnetica															
Lyngbya	30,230	15,650								<1,071			7,081	761	4,248
Oscillatoria tenuis	640,876	358,385	704,704	65,938	60,284	40,085	70,886	57,956	265,293	63,160	47,045	107,763	21,244	10,461	145,905
Oscillatoria poss. claricentrosa															
Oscillatoria	51,391	12,520	43,472	5,784	<1722	11,453	18,134	72,446	3,856	26,763	18,818	18,522	28,325	793	12,479
Spirulina				<386					<386						
Unidentified															
Pyrrophyta															
Cryptomonadales															
Cryptomonas						<954	<1649							<32	772
Dinokontae															
Peridinium / Glenodinium				<386			<1649	<1,610	<386		<3,136	<1,684	317	<32	386
Rhodophyta															
Audouinella violacea															
Unidentified flagellate													1,574	63	960
Unidentified unicellular													7,081	315	15,838
Total	873,647	550,880	874,016	143,835	430,596	353,778	535,775	563,467	428,403	228,020	664,896	466,411	340,786	25,263	417,183

* In poor condition.

Appendix B4. Abundance (cells/cm^2) and percent composition of main taxa of periphyton and in Doris Hinge streams, 1996-2000.

Stream	Sample Date	No. Repl.	Bacillariophyta			Chlorophyta			Chrysophyta			Cyanophyta			Pyrrophyta			All Taxa [a]		Chlorophyll a
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	(µg/cm^2)
Doris Outflow	22 Aug 1996	3	**1,002,971**	298,537	*17.7*	**96,587**	32,056	*1.7*				**4,553,250**	1,550,473	*80.5*				**5,652,809**	1,595,251	
	19 Jul 1997	2	**32,518**	16,536	*11.7*	**309**	309	*0.1*	**772**	772	*0.3*	**245,127**	77,919	*87.9*				**278,725**	60,302	
	20 Aug 1997	3	**102,569**	3,133	*51.3*	**2,369**	737	*1.2*	**165**	165	*0.1*	**94,728**	44,685	*47.4*				**199,831**	43,538	194 [b]
	16 Aug 2000	3	**91,894**	17,010	*48.6*	**7,895**	1,016	*4.2*	**4,688**	1,156	*2.5*	**78,135**	6,271	*41.3*	**385**	136	*0.2*	**188,998**	16,337	0.53 [c]
Tail Outflow	19 Jul 1997	3	**291,423**	14,515	*85.3*	**21,703**	7,761	*6.4*				**27,806**	13,522	*8.1*	**536**	536	*0.2*	**341,469**	23,176	
	19 Aug 1997	3	**36,045**	6,933	*17.8*	**3,038**	148	*1.5*				**163,242**	27,811	*80.7*				**202,325**	34,201	66.9 [b]
	16 Aug 2000	3	**274,854**	74,833	*52.8*	**46,498**	14,242	*8.9*	**13,146**	5,382	*2.5*	**158,725**	34,235	*30.5*	**269**	269	*0.1*	**520,440**	135,147	0.31 [c]
Ogama Outflow	22 Aug 1996	3	**1,339,065**	260,929	*41.9*	**185,307**	39,252	*5.8*	**92,575**	24,440	*2.9*	**1,581,203**	350,289	*49.4*				**3,198,150**	621,238	
	18 Jul 1997	2	**2,893,930**	1,677,975	*90.8*	**6,132**	476	*0.2*	**8,484**	8,484	*0.3*	**278,784**	97,805	*8.7*				**3,187,329**	1,767,772	
	20 Aug 1997	3	**385,823**	215,388	*40.6*	**2,918**	1,192	*0.3*				**560,631**	61,710	*59.1*				**949,373**	263,569	669 [b]
Patch Outflow	23 Aug 1996	3	**95,953**	36,206	*12.5*	**18,292**	9,342	*2.4*				**653,846**	371,920	*85.1*				**768,090**	384,459	
	21 Aug 1997	3	**118,826**	26,521	*87.5*							**16,963**	2,428	*12.5*				**135,789**	27,930	46.3 [b]
Windy Outflow	23 Aug 1996	3	**459,397**	325,877	*10.2*	**142,561**	96,348	*3.2*	**7,511**	3,950	*0.2*	**3,883,390**	3,087,623	*86.4*				**4,492,858**	2,898,617	
	18 Jul 1997	3	**62,766**	21,793	*99.5*							**287**	287	*0.5*				**63,053**	21,693	
	21 Aug 1997	3	**67,101**	10,239	*90.6*	**3,273**	1,924	*4.4*				**3,678**	2,882	*5.0*				**74,053**	14,428	27.5 [b]
Little Roberts Outflow	23 Aug 1996	3	**77,111**	8,742	*10.1*	**1,043**	1,043	*0.1*	**763**	763	*0.1*	**687,264**	106,835	*89.7*				**766,181**	107,651	
	19 Jul 1997	2	**206,174**	138,304	*71.8*	**5,656**	2,956	*2.0*	**4,216**	2,673	*1.5*	**71,170**	552	*24.8*				**287,216**	143,381	
	19 Aug 1997	3	**342,616**	40,266	*70.7*	**17,601**	1,931	*3.6*	**2,995**	1,366	*0.6*	**121,128**	27,633	*25.0*				**484,340**	65,769	61.8 [b]
Pelvic Outflow	19 Jul 1997	1	**158,868**		*37.1*	**386**		*0.1*				**269,149**		*62.8*				**428,403**		
	21 Aug 1997	3	**315,095**	111,299	*69.5*	**34,427**	15,682	*7.6*				**103,587**	14,729	*22.9*				**453,109**	126,290	680[b]
	16 Aug 2000	3	**139,028**	68,221	*53.3*	**10,458**	6,366	*4.0*	**5,775**	2,923	*2.2*	**96,714**	50,420	*37.0*	**492**	346	*0.2*	**261,077**	119,952	0.60 [c]

[a] Total numbers for 2000 study year also include Rhodophyta and unidentified groups (see Appendix B3)

[b] Represents results of one replicate.

[c] Mean of three replicates, raw data not available.

Appendix C1. Zooplankton abundance (organisms/m^3) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	DORIS LAKE											
		28-Aug-96			18-Jul-97			22-Aug-97			19-Jul-00		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA													
Kellicottia longispina		5,800	2,800	4,700	6,835	7,015	10,882	4,358	2,551	4,145	16,977	5,200	7,255
Keratella cochlearis		200	300	200	450	719	540		531	106	698	200	196
Keratella quadrata						90					233		20
Conochilus	colony										233	200	196
Conochilus unicornis	colony*	10	10	10	2,248	2,788	5,846			21			
Polyarthra													
Filinia												200	
Asplanchna						90					233		
Lepadella													
Brachionus													
Trichotriidae													
Unidentified							180		213	213			
CLADOCERA													
Holopedium gibberum					540	540	1,079	213	276	223	1,698	1,800	3,333
Daphnia middendorffiana													
Daphnia rosea													
Daphnia longiremis													
Bosmina longirostris		10	1	10	18	18	54						
Chydorus sphaericus			20	20	9	9	117						
Alona guttata													
Alona rectangulata													
Alona rustica													
Alonella sp.	juvenile												
COPEPODA													
Calanoida													
Diaptomus pribilofensis	male												
Diaptomus pribilofensis	female												
Diaptomus ashlandi	male												
Diaptomus ashlandi	female												
Diaptomus spp.	cop. V												
Diaptomus spp.	cop. IV												
Diaptomus spp.	cop. III												
Diaptomus spp.	cop. II												
Diaptomus spp.	cop. I												
Limnocalanus macrurus	male	270	280	370	1			287	489	351	767	680	725
Limnocalanus macrurus	female	350	440	360	1			372	606	478	907	740	902
Limnocalanus macrurus	cop. V				279	369	54	11			1,395	1,600	1,059
Limnocalanus macrurus	cop. IV				630	216	90				116	80	157
Limnocalanus macrurus	cop. III				63	99	27				47	20	78
Limnocalanus macrurus	cop. II				9	27	9				47	20	59
Limnocalanus macrurus	cop. I					18					23	400	
Leptodiaptomus	cop. V												
Leptodiaptomus	cop. IV												
Leptodiaptomus	cop. III												
Leptodiaptomus	cop. II												
Leptodiaptomus	cop. I										23		
Epischura lacustris	male												
Epischura lacustris	female												
Epischura lacustris	cop. V												
Epischura lacustris	cop. IV												
Epischura lacustris	cop. I												
Epischura nevadensis	cop. V												
Unidentified Calanoida	nauplius				270	450	1,889	106	213	213	1,395	600	196
Cyclopoida													
Cyclops bicuspidatus thomasi	male				153	63	171			11	163	20	118
Cyclops bicuspidatus thomasi	female						27				23	40	20
Cyclops scutifer	male	2	2		99	162	189				140	220	39
Cyclops scutifer	female	4	5	4	81	27	54				372	420	314
Cyclops capillatus	male												
Cyclops capillatus	female												
Cyclops sp.	male												
Cyclopoida	copepodite	6,800	4,200	4,600	630	809	1,709	2,657	3,508	3,720	698	60	98
Eucyclops agilis	male												
Lichomolgidae (parasitic)	copepodite												
Lichomolgidae (parasitic)	nauplius	200	300	100									
Unidentified Cyclopoida	nauplius				90	270	450				2,093	2,600	2,353
Harpacticoida													
MALACOSTRACA													
Gammarus lacustris								213	276	223			
Mysis relicta	female												
TOTAL		13,646	8,358	10,374	12,404	13,778	23,366	8,216	8,663	9,704	28,279	15,100	17,118

** Conochilus numbers are estimates.*

Appendix C1. Zooplankton abundance (organisms/m^3) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	TAIL LAKE								
		27-Aug-96			16-Jul-97			19-Jul-00		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA										
Kellicottia longispina		5,900	4,000	4,100	3,637	9,094	7,795	23,125	48,889	58,889
Keratella cochlearis		400	200					625	556	1,667
Keratella quadrata		100			260			625		
Conochilus	colony							3,125	1,111	556
Conochilus unicornis	colony*	25	10	10						
Polyarthra										
Filinia								625	1,111	1,667
Asplanchna		800	900	210	130	1,559	156	6,875	3,333	5,556
Lepadella										
Brachionus										
Trichotriidae										
Unidentified					520	1,559	1,559			
CLADOCERA										
Holopedium gibberum		20					29			
Daphnia middendorffiana		17	15	5	13	34	0	269	156	44
Daphnia rosea										
Daphnia longiremis		8,800	7,900	9,800	15,589	16,628	15,849	56,875	30,000	22,778
Bosmina longirostris		370	170	230	779	78		375	667	500
Chydorus sphaericus		20		20	26					
Alona guttata										
Alona rectangulata										
Alona rustica										
Alonella sp.	juvenile									
COPEPODA										
Calanoida										
Diaptomus pribilofensis	male	80	70	140						
Diaptomus pribilofensis	female	140	120	90						
Diaptomus ashlandi	male									
Diaptomus ashlandi	female									
Diaptomus spp.	cop. V									
Diaptomus spp.	cop. IV									
Diaptomus spp.	cop. III									
Diaptomus spp.	cop. II									
Diaptomus spp.	cop. I									
Limnocalanus macrurus	male	1								
Limnocalanus macrurus	female									
Limnocalanus macrurus	cop. V									
Limnocalanus macrurus	cop. IV									
Limnocalanus macrurus	cop. III									
Limnocalanus macrurus	cop. II									
Limnocalanus macrurus	cop. I									
Leptodiaptomus	cop. V							19	28	28
Leptodiaptomus	cop. IV							31	56	28
Leptodiaptomus	cop. III							125	167	111
Leptodiaptomus	cop. II							563	444	722
Leptodiaptomus	cop. I				26			7,500	3,222	5,556
Epischura lacustris	male									
Epischura lacustris	female									
Epischura lacustris	cop. V									
Epischura lacustris	cop. IV									
Epischura lacustris	cop. I									
Epischura nevadensis	cop. V									
Unidentified Calanoida	nauplius				2,338	2,598	2,598	250	2,778	2,389
Cyclopoida										
Cyclops bicuspidatus thomasi	male									
Cyclops bicuspidatus thomasi	female									
Cyclops scutifer	male	50	20	40	1,819	4,417	2,079	313	2,778	1,778
Cyclops scutifer	female	120	130	120	4,157	5,976	5,716	313	4,444	3,222
Cyclops capillatus	male									
Cyclops capillatus	female					5	3		6	
Cyclops sp.	male									
Cyclopoida	copepodite	150	150	120	8,054	8,054	8,574	1,250	722	1,167
Eucyclops agilis	male									
Lichomolgidae (parasitic)	copepodite									
Lichomolgidae (parasitic)	nauplius	4,200	2,800	3,200						
Unidentified Cyclopoida	nauplius				260	104	260	3,125	6,111	5,556
Harpacticoida										
MALACOSTRACA										
Gammarus lacustris							29			
Mysis relicta	female				13	34				
TOTAL		21,193	16,485	18,085	37,622	50,140	44,645	106,006	106,578	112,211

** Conochilus numbers are estimates.*

Appendix C1. Zooplankton abundance (organisms/m^3) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	OGAMA LAKE						PATCH LAKE					
		27-Aug-96			16-Jul-97			26-Aug-96			17-Jul-97		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA													
Kellicottia longispina		2,200	4,900	5,000	9,548	2,767	1,598	2,700	3,600	3,100	3,079	10,523	20,266
Keratella cochlearis						39					351	195	
Keratella quadrata					585	585	117					351	117
Conochilus	colony												
Conochilus unicornis	colony*												39
Polyarthra													
Filinia						78	39						
Asplanchna													
Lepadella													
Brachionus													
Trichotriidae													
Unidentified													
CLADOCERA													
Holopedium gibberum			2	1	156	94	117				1,169	818	1,052
Daphnia middendorffiana													
Daphnia rosea								70	100	30			
Daphnia longiremis		2,800	6,100	4,200	2,144	663	429	2,600	2,600	3,100	78		156
Bosmina longirostris		1,400	2,900	1,800	273	234	351						
Chydorus sphaericus		10		10					10			39	39
Alona guttata		20	10	10									
Alona rectangulata													
Alona rustica													
Alonella sp.	juvenile												
COPEPODA													
Calanoida													
Diaptomus pribilofensis	male												
Diaptomus pribilofensis	female												
Diaptomus ashlandi	male												
Diaptomus ashlandi	female												
Diaptomus spp.	cop. V												
Diaptomus spp.	cop. IV												
Diaptomus spp.	cop. III												
Diaptomus spp.	cop. II												
Diaptomus spp.	cop. I												
Limnocalanus macrurus	male				4	8	8	160	100	80	273	273	195
Limnocalanus macrurus	female				4		8	220	180	170	234	156	234
Limnocalanus macrurus	cop. V				35	43	31				702	585	702
Limnocalanus macrurus	cop. IV				23	78	8				273	312	156
Limnocalanus macrurus	cop. III				4						156	117	117
Limnocalanus macrurus	cop. II										117	78	78
Limnocalanus macrurus	cop. I										78	156	39
Leptodiaptomus	cop. V												
Leptodiaptomus	cop. IV												
Leptodiaptomus	cop. III												
Leptodiaptomus	cop. II												
Leptodiaptomus	cop. I												
Epischura lacustris	male	14	16	7									
Epischura lacustris	female	2	7	4									
Epischura lacustris	cop. V												
Epischura lacustris	cop. IV												
Epischura lacustris	cop. I												
Epischura nevadensis	cop. V												
Unidentified Calanoida	nauplius	20			1,949	1,442	1,091				1,442	195	312
Cyclopoida													
Cyclops bicuspidatus thomasi	male	390	480	1,000	5,846	896	2,144				663	663	624
Cyclops bicuspidatus thomasi	female	310	370	600	78	39	70				857	351	663
Cyclops scutifer	male				78						4		
Cyclops scutifer	female				39	39	4						
Cyclops capillatus	male												
Cyclops capillatus	female												
Cyclops sp.	male												
Cyclopoida	copepodite	2,500	4,300	4,300	1,754	1,559	2,806	3,300	4,000	3,600	1,910	935	818
Eucyclops agilis	male												
Lichomolgidae (parasitic)	copepodite			170									
Lichomolgidae (parasitic)	nauplius	940	80										
Unidentified Cyclopoida	nauplius				195	117	156				78	390	156
Harpacticoida													
MALACOSTRACA													
Gammarus lacustris											1,169	818	1,052
Mysis relicta	female												
TOTAL		10,606	19,165	17,102	22,713	8,679	8,975	9,050	10,590	10,080	12,631	16,953	26,813

** Conochilus numbers are estimates.*

Appendix C1. Zooplankton abundance (organisms/m^3) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	WOLVERINE LAKE			WINDY LAKE					
		16-Jul-97			29-Aug-96			17-Jul-97		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA										
Kellicottia longispina		4,162	2,946	3,601	1,430	2,050	3,940	106	43	11
Keratella cochlearis		748	468	234					2	
Keratella quadrata				327				11	11	21
Conochilus	colony									
Conochilus unicornis	colony*							372	298	383
Polyarthra		94		234						
Filinia		187	94	327					11	
Asplanchna		281	234	327	1					
Lepadella										
Brachionus										
Trichotriidae										
Unidentified		2,011	1,497	1,917						
CLADOCERA										
Holopedium gibberum										
Daphnia middendorffiana										
Daphnia rosea										
Daphnia longiremis				23	6	3				
Bosmina longirostris		19	42	47		1				
Chydorus sphaericus		51	51	47						
Alona guttata										
Alona rectangulata										
Alona rustica										
Alonella sp.	juvenile									
COPEPODA										
Calanoida										
Diaptomus pribilofensis	male									
Diaptomus pribilofensis	female									
Diaptomus ashlandi	male									
Diaptomus ashlandi	female									
Diaptomus spp.	cop. V									
Diaptomus spp.	cop. IV									
Diaptomus spp.	cop. III									
Diaptomus spp.	cop. II									
Diaptomus spp.	cop. I									
Limnocalanus macrurus	male				5	13	10	202	172	204
Limnocalanus macrurus	female				12	15	15	188	180	232
Limnocalanus macrurus	cop. V				5	9	2	5	17	2
Limnocalanus macrurus	cop. IV			5	2	1	6			2
Limnocalanus macrurus	cop. III				3	2	3	2		1
Limnocalanus macrurus	cop. II						3	1		
Limnocalanus macrurus	cop. I								1	2
Leptodiaptomus	cop. V									
Leptodiaptomus	cop. IV									
Leptodiaptomus	cop. III									
Leptodiaptomus	cop. II									
Leptodiaptomus	cop. I		5	5						
Epischura lacustris	male									
Epischura lacustris	female									
Epischura lacustris	cop. V									
Epischura lacustris	cop. IV									
Epischura lacustris	cop. I									
Epischura nevadensis	cop. V									
Unidentified Calanoida	nauplius	2,432	2,198	2,011		2	30	3	3	4
Cyclopoida										
Cyclops bicuspidatus thomasi	male	94	56	136				5		
Cyclops bicuspidatus thomasi	female	19		23						
Cyclops scutifer	male		33							
Cyclops scutifer	female	5		5						1
Cyclops capillatus	male									
Cyclops capillatus	female									
Cyclops sp.	male									
Cyclopoida	copepodite	1,637	1,076	1,076	7	4	4	5		2
Eucyclops agilis	male									
Lichomolgidae (parasitic)	copepodite									
Lichomolgidae (parasitic)	nauplius				4	4	1			
Unidentified Cyclopoida	nauplius	2,666	2,058	2,385						2
Harpacticoida										1
MALACOSTRACA										
Gammarus lacustris										
Mysis relicta	female									
TOTAL		14,404	10,756	12,730	1,475	2,104	4,014	901	737	868

** Conochilus numbers are estimates.*

Appendix C1. Zooplankton abundance (organisms/m^3) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	LITTLE ROBERTS LAKE						PELVIC LAKE					
		27-Aug-96			15-Jul-97			17-Jul-97			19-Jul-00		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ROTIFERA													
Kellicottia longispina		1,570	2,280	2,160	764	2,416	1,091	3,173	3,424	2,589	8,571	12,000	10,000
Keratella cochlearis				40	23			668	418	251	5,918	5,250	3,800
Keratella quadrata		400	170	300	468	1,247	1,169	5,762	7,266	5,094	41,224	43,500	35,600
Conochilus	colony												
Conochilus unicornis	colony*	10	1	10	475	779	312	501	418	334			
Polyarthra											408		
Filinia								167			1,224	1,000	200
Asplanchna		80	100	40	23	31	8						
Lepadella		10	10										
Brachionus													
Trichotriidae													
Unidentified													
CLADOCERA													
Holopedium gibberum		280	360	120	717	935	390						
Daphnia middendorffiana													
Daphnia rosea													
Daphnia longiremis		270	220	100	55	55		125	109	75	6,327	5,250	4,000
Bosmina longirostris		230	350	200	39	55	16	334	75	125	61	275	1,000
Chydorus sphaericus		10		1		8	8						
Alona guttata													
Alona rectangulata													
Alona rustica													
Alonella sp.	juvenile												
COPEPODA													
Calanoida													
Diaptomus pribilofensis	male												
Diaptomus pribilofensis	female												
Diaptomus ashlandi	male	6	3	2									
Diaptomus ashlandi	female												
Diaptomus spp.	cop. V												
Diaptomus spp.	cop. IV												
Diaptomus spp.	cop. III												
Diaptomus spp.	cop. II												
Diaptomus spp.	cop. I												
Limnocalanus macrurus	male	2	7	4				5	4	8	4		
Limnocalanus macrurus	female	8	4	8				2	3	8	8		
Limnocalanus macrurus	cop. V				109	218	148			8	2		
Limnocalanus macrurus	cop. IV				117	140	109	134	25	17			
Limnocalanus macrurus	cop. III				39	55	62	33	42	58		25	
Limnocalanus macrurus	cop. II				23	55	47	84	8				
Limnocalanus macrurus	cop. I				8	23	23	167	167	8			
Leptodiaptomus	cop. V										41		20
Leptodiaptomus	cop. IV										20		40
Leptodiaptomus	cop. III										61		
Leptodiaptomus	cop. II									8			
Leptodiaptomus	cop. I												
Epischura lacustris	male												
Epischura lacustris	female												
Epischura lacustris	cop. V												
Epischura lacustris	cop. IV												
Epischura lacustris	cop. I												
Epischura nevadensis	cop. V										41		20
Unidentified Calanoida	nauplius	10	10	20	70	8	31	251	167	251	204	1,250	1,000
Cyclopoida													
Cyclops bicuspidatus thomasi	male	4	50	10	39	70	16	167	242	175	408	1,000	800
Cyclops bicuspidatus thomasi	female	1	2	1		23	8	175	276	200	2,449	500	1,400
Cyclops scutifer	male				86	156	164	134	192	217	1,020	3,000	1,800
Cyclops scutifer	female	2			109	249	210	67	134	50	1,633	1,500	800
Cyclops capillatus	male												
Cyclops capillatus	female												
Cyclops sp.	male						8						
Cyclopoida	copepodite	850	1,320	320	195	265	179	1,253	1,503	1,754	6,939	5,750	7,400
Eucyclops agilis	male												
Lichomolgidae (parasitic)	copepodite		150										
Lichomolgidae (parasitic)	nauplius	50		80									
Unidentified Cyclopoida	nauplius				86	312	156	501	251	251	1,224	1,500	1,400
Harpacticoida						8							
MALACOSTRACA													
Gammarus lacustris													
Mysis relicta	female												
TOTAL		3,793	5,037	3,416	3,445	7,109	4,154	13,703	14,723	11,482	77,790	81,800	69,280

** Conochilus numbers are estimates.*

Appendix C2. Abundance (organisms/m^3) and percent composition of main taxa of zooplankton in Doris Hinge lakes, 1996-2000.

Lake	Date	No.	Rotifera			Cladocera			Calanoida			Cyclopoida			Malacostraca			All Taxa	
		Repl.	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Doris	28-Aug-96	3	**4,677**	845	*43.3*	**20**	6	*0.2*	**690**	35	*6.4*	**5,406**	802	*50.1*				**10,793**	1,541
	18-Jul-97	3	**12,561**	2,466	*76.1*	**794**	228	*4.8*	**1,500**	285	*9.1*	**1,661**	476	*10.1*				**16,516**	3,448
	22-Aug-97	3	**4,046**	377	*45.7*	**237**	20	*2.7*	**1,042**	153	*11.8*	**3,299**	327	*37.2*	**237**	20	*2.7*	**8,861**	441
	19-Jul-00	3	**10,613**	3,917	*52.6*	**2,277**	529	*11.3*	**4,012**	450	*19.9*	**3,263**	165	*16.2*				**20,166**	4,098
Tail	27-Aug-96	3	**5,552**	867	*29.9*	**9,122**	571	*49.1*	**214**	12	*1.1*	**3,700**	424	*19.9*				**18,588**	1,382
	16-Jul-97	3	**8,756**	2,244	*19.8*	**16,342**	251	*37.0*	**2,520**	78	*5.7*	**16,492**	1,233	*37.4*	**25**	6	*0.1*	**44,135**	3,623
	19-Jul-00	3	**52,778**	9,686	*48.7*	**37,221**	10,377	*34.4*	**8,005**	663	*7.4*	**10,261**	2,716	*9.5*				**108,265**	1,980
Ogama	27-Aug-96	3	**4,033**	917	*25.8*	**6,421**	1,395	*41.1*	**23**	7	*0.1*	**5,147**	559	*32.9*				**15,624**	2,579
	16-Jul-97	3	**5,118**	2,556	*38.0*	**1,486**	544	*11.0*	**1,578**	252	*11.7*	**5,273**	1,542	*39.2*				**13,456**	4,629
Patch	26-Aug-96	3	**3,133**	260	*31.6*	**2,837**	147	*28.6*	**303**	39	*3.1*	**3,633**	203	*36.7*				**9,907**	453
	17-Jul-97	3	**11,640**	4,914	*61.9*	**1,117**	130	*5.9*	**2,325**	474	*12.4*	**2,703**	405	*14.4*	**1,013**	103	*5.4*	**18,799**	4,197
Wolverine	16-Jul-97	3	**6,563**	679	*52.0*	**94**	14	*0.7*	**2,218**	119	*17.6*	**3,755**	352	*29.7*				**12,630**	1,054
Windy	29-Aug-96	3	**2,474**	755	*97.7*	**3**	2	*0.1*	**46**	12	*1.8*	**8**	2	*0.3*				**2,531**	763
	17-Jul-97	3	**422**	36	*50.6*				**407**	22	*48.8*	**5**	3	*0.6*				**835**	50
Little Roberts	27-Aug-96	3	**2,394**	162	*58.6*	**714**	152	*17.5*	**28**	3	*0.7*	**947**	321	*23.2*				**4,082**	490
	15-Jul-97	3	**2,936**	805	*59.9*	**759**	186	*15.5*	**429**	38	*8.7*	**777**	163	*15.8*				**4,903**	1,122
Pelvic	17-Jul-97	3	**10,022**	949	*75.3*	**281**	89	*2.1*	**486**	95	*3.7*	**2,514**	110	*18.9*				**13,303**	957
	19-Jul-00	3	**56,232**	3,551	*73.7*	**5,638**	405	*7.4*	**912**	271	*1.2*	**13,508**	131	*17.7*				**76,290**	3,691

Appendix C3. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	DORIS LAKE																								
		28-Aug-96			18-Jul-97			18-Jul-97			22-Aug-97			22-Aug-97			24-Jul-00			24-Jul-00			24-Jul-00		
		16.5m			0-5 m			10+ m			0-5 m			10+ m			4.5m			7.5 m			14.9 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ARACHNIDA																										
Oribatidae																										
CLADOCERA																										
Bosmina longirostris																										
Alona																										
Daphnia																										
Daphnia longiremis																										
Macrothricidae																										
Chydorus sphaericus																		44								
COELENTERATA																										
Hydra																										
COPEPODA	Nauplius																									
Calanoida		89	133	89																		44				
Limnocalanus macrurus																	89									
Cyclopoida		89	44																44			44				
Cyclops scutifer																										
Harpacticoida																										
DIPTERA	Adult																									
Chironomidae	Larva					2,800				89			0													
Chironomidae	Pupa												44													
Chironomidae	Adult		44																							
Chironomidae	Juvenile																									
Chironomini	Larva					44																				
Chironomini	Pupa	44																								
Chironomus		1,911																								
Chironomus	Larva		2,311	1,733				89	400					44									1,378	1,200	1,244	
Chironomus	Pupa			44																			44		222	
Phaenopsectra																										
Phaenopsectra	Larva					44		400	489	1,111	2,755	1,733	1,600	978	667	755	667	356	444	1,111	489	311				
Phaenopsectra	Pupa											44														
Diamesinae																										
Monodiamesa																										
Monodiamesa	Larva										44	89	133	133	44		133	44	178	178	311	44				
Protanypus	Larva																									
Orthocladiinae																										
Orthocladiinae	Larva									44		44														
Orthocladiinae	Pupa										89															
Abiskomyia																										
Brillia																										
Cardiocladius																										
Corynoneura																										
Corynoneura	Larva						44																			
Cricotopus																										
Cricotopus	Larva																									
Eukiefferiella																										
Eukiefferiella	Larva																									
Heterotrissocladius	Larva																89	133	133	44		44				
Heterotrissocladius	Pupa																									
Orthocladius	Larva				44		44																			
Orthocladius	Pupa											89														
Paracricotopus	Larva																	44								
Parakiefferiella	Larva																89				89					
Parakiefferiella	Pupa																44									
Phycoidella sp.																										
Psectrocladius	Larva				89		44																			
Tanypodinae										44																
Procladius																										
Procladius	Larva						44	222	89	311	667	533	622	178		89	356	533	444	311	533	311		44		
Procladius	Pupa																									
Thienemannimyia																										
Tanytarsini	Larva						44			133																
Tanytarsini	Pupa																									
Micropsectra																										
Paratanytarsus	Larva				222		89										44	89								
Rheotanytarsus																										
Rheotanytarsus	Larva				133	133	133				133	133	89													
Rheotanytarsus	Pupa																									
Stempellina	Larva																									
Stempellina	Pupa																									

Appendix C3. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	DORIS LAKE																								
		28-Aug-96			18-Jul-97			18-Jul-97			22-Aug-97			22-Aug-97			24-Jul-00			24-Jul-00			24-Jul-00		
		16.5m			0-5 m			10+ m			0-5 m			10+ m			4.5m			7.5 m			14.9 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Stempellinella	Larva						44				356	178	133												
Stempellinella	Pupa											44													
Tanytarsus																									
Tanytarsus	Larva					44	44				178	178	222	222			133	133	89		89				
Tanytarsus	Pupa										44														
Zavrelia	Larva				44																				
Culicidae																									
Anopheles	Adult				44																44				
Simuliidae																									
Simulium	Adult								44																
Simulium	Larva																								
Simulium	Pupa																								
EPHEMEROPTERA																									
Baetidae	Larva																								
Baetis																									
GASTROPODA																									
Valvata sincera sincera										44															
HOMOPTERA																									
Cicadellidae	Adult																								
HYDRACARINA	Adult	44																							
Forelli	Adult																								
HYMENOPTERA																									
Braconidae	Adult																								
Scelionidae	Adult										44														
MALACOSTRACA																									
Gammaracanthus loricatus																		44							
Gammarus lacustris																									
Mysis relicta																		44							
Saduria entomon						800	44				89		44						44						
NEMATODA			44		89						44													89	
OLIGOCHAETA	Juvenile																								
Enchytraeidae																									
Lumbriculidae																									
Lumbriculus																									
Lumbriculus variegatus																									
Naididae																									
Chaetogaster																									
Tubificidae																									
Tubificidae	Juvenile		44														44	89	89	267	444	444			44
OSTRACODA																									
Candona																44									
Cypria																									
Cypris																									
Limnocythere																			44						
PELECYPODA																									
Sphaeriidae	Juvenile						44	44						89			222	311	444	44	178	178		44		
Pisidium												89					533	800	356	533	356	267			44
Sphaerium														44	44	44									
PISCES																									
Unidentified Fish Eggs																									
PLECOPTERA																									
Suwallia	Larva						89																		
PROTOZOA																									
Sarcodina		P	P																						
ROTIFERA		1,778	444																						
Dicranophorus																									
Kellicottia																									
Lecane																									
TARDIGRADA																									
TRICHOPTERA																									
Brachycentridae																									
Micrasema	Larva						44																		
Limnephilidae	Larva																								
Grensia praeterita																									
Grensia praeterita	Larva				44		44																		
TURBELLARIA																									
TOTAL		**2,000**	**2,400**	**1,778**	**667**	**3,866**	**800**	**755**	**978**	**1,778**	**4,400**	**3,155**	**2,889**	**1,689**	**755**	**933**	**2,356**	**2,622**	**2,267**	**2,489**	**2,489**	**1,600**	**1,422**	**1,378**	**1,556**

P = present

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C3. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	TAIL LAKE												OGAMA LAKE						PATCH LAKE						WOLVERINE L.		
		27-Aug-96			16-Jul-97			19-Jul-00			19-Jul-00			27-Aug-1996			16-Jul-97			26-Aug-96			17-Jul-97			16-Jul-97		
		4.5m			5-10 m			2.6 m			5.4 m			3.5m			0-5 m			11.5m			0-5 m			0-5 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ARACHNIDA																												
Oribatidae																	44											
CLADOCERA																												
Bosmina longirostris		44	44													133												
Alona																												
Daphnia		4,577	667	711										667	533													
Daphnia longiremis																				44	178	44						
Macrothricidae										44																		
Chydorus sphaericus																												
COELENTERATA																												
Hydra		89												44								44						
COPEPODA	Nauplius			444																								
Calanoida		133	89	89																133	178							
Limnocalanus macrurus																												
Cyclopoida		356	133	133				44		44			89	89	89	44				1,022		44						
Cyclops scutifer								89	178	267	178	178	400															
Harpacticoida														44						89								
DIPTERA	Adult																			44								
Chironomidae	Larva						44		44														133					
Chironomidae	Pupa						89		44					222	444	444							44						
Chironomidae	Adult																											
Chironomidae	Juvenile	622	44	89										44	89	44												
Chironomini	Larva																											
Chironomini	Pupa																											
Chironomus																												
Chironomus	Larva						133				1,778	1,378	1,778				89	44								44		
Chironomus	Pupa						44																					
Phaenopsectra		133	533	222										1,955	1,778	1,422				44	133	44						
Phaenopsectra	Larva					44	44																44		89			89
Phaenopsectra	Pupa																											
Diamesinae																												
Monodiamesa			133	89										267	222	222				44	44							
Monodiamesa	Larva				444			133	44	133													44		44			
Protanypus	Larva								44																			
Orthocladiinae																												
Orthocladiinae	Larva								133	44													44					
Orthocladiinae	Pupa								44		178																	
Abiskomyia																												
Brillia					44																							
Cardiocladius		44																										
Corynoneura																												
Corynoneura	Larva																											
Cricotopus		800		44					44	44												44						
Cricotopus	Larva																							44				
Eukiefferiella		178	133	89																								
Eukiefferiella	Larva				44																			44			89	44
Heterotrissocladius	Larva							89			222	89	400															
Heterotrissocladius	Pupa									89	622	222	178															
Orthocladius	Larva								44																			
Orthocladius	Pupa																											
Paracricotopus	Larva																											
Parakiefferiella	Larva																											
Parakiefferiella	Pupa																											
Phycoidella sp.																												
Psectrocladius	Larva					44	44				44		133										356		311			
Tanypodinae																												
Procladius		755	133	533										400	267	400					222	356						
Procladius	Larva				44			267	267	400	133	178	178				222	133	444				622	44	755		311	800
Procladius	Pupa																											
Thienemannimyia																				533								
Tanytarsini	Larva																	311	133									
Tanytarsini	Pupa																		44									
Micropsectra																												
Paratanytarsus	Larva								44		178		44				133	133	222							44	44	178
Rheotanytarsus														44	222	133												
Rheotanytarsus	Larva																										444	800
Rheotanytarsus	Pupa																											
Stempellina	Larva									133		44																
Stempellina	Pupa																											

Appendix C3. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	TAIL LAKE												OGAMA LAKE						PATCH LAKE						WOLVERINE L.		
		27-Aug-96			16-Jul-97			19-Jul-00			19-Jul-00			27-Aug-1996			16-Jul-97			26-Aug-96			17-Jul-97			16-Jul-97		
		4.5m			5-10 m			2.6 m			5.4 m			3.5m			0-5 m			11.5m			0-5 m			0-5 m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Stempellinella	Larva																	44										
Stempellinella	Pupa																											
Tanytarsus		755	222	489										1,689	2,578	2,044				667	356							
Tanytarsus	Larva				489	133	89				533	133	178										267		44		44	
Tanytarsus	Pupa																											
Zavrelia	Larva																											
Culicidae																												
Anopheles	Adult																							89	133		44	
Simuliidae																												
Simulium	Adult																											
Simulium	Larva																								667			
Simulium	Pupa																								44			
EPHEMEROPTERA																												
Baetidae	Larva																	44										
Baetis														44														
GASTROPODA																												
Valvata sincera sincera																										44	178	311
HOMOPTERA																												
Cicadellidae	Adult																				44							
HYDRACARINA	Adult	178	89	89				44	133	44																		
Forelli	Adult																											
HYMENOPTERA																												
Braconidae	Adult																											
Scelionidae	Adult																											
MALACOSTRACA																												
Gammaracanthus loricatus																												
Gammarus lacustris		711	89	133						44																		
Mysis relicta																												
Saduria entomon																												
NEMATODA		133		2,666				44	89	222	89	44		44	444	889			44	267	2,000	222						
OLIGOCHAETA	Juvenile																	44										
Enchytraeidae																				44		44						
Lumbriculidae																												
Lumbriculus						44		267	267	44		133															44	89
Lumbriculus variegatus		44	178	89																								
Naididae																												
Chaetogaster		1,200		1,822																								
Tubificidae						44	133											178		44	44	44						
Tubificidae	Juvenile										44				44	44												
OSTRACODA																												
Candona		89																		44								
Cypria								89	44	89	89																	89
Cypris				44																178							44	
Limnocythere								44	44	133																		
PELECYPODA																												
Sphaeriidae	Juvenile						44			44	267	44	311														267	889
Pisidium		311	222	400			444	133		44	667	267	844	178	133	44											1,067	3,200
Sphaerium					267	89											44	578	89			44						
PISCES																												
Unidentified Fish Eggs																												
PLECOPTERA																												
Suwallia	Larva																											
PROTOZOA																												
Sarcodina				P										P	P	P												
ROTIFERA		178		444										1,733	3,333	6,222												
Dicranophorus															89													
Kellicottia			44	889										178						44		44						
Lecane														89	44													
TARDIGRADA																												
TRICHOPTERA																												
Brachycentridae																												
Micrasema	Larva																											
Limnephilidae	Larva				44																							
Grensia praeterita		44	44					44	44	133			44															
Grensia praeterita	Larva					44	44																				44	
TURBELLARIA																												
TOTAL		**6,088**	**1,822**	**6,799**	**1,378**	**444**	**1,155**	**1,156**	**1,378**	**1,644**	**4,844**	**2,533**	**4,089**	**4,977**	**6,222**	**5,688**	**489**	**1,511**	**978**	**1,955**	**2,800**	**844**	**1,555**	**44**	**2,044**	**89**	**2,622**	**6,488**

P = present

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C3. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	WINDY LAKE									LITTLE ROBERTS LAKE						PELVIC LAKE											
		29-Aug-96			17-Jul-97			17-Jul-97			27-Aug-96			15-Jul-97			17-Jul-97			17-Jul-97			24-Jul-00			24-Jul-00			24-Jul-00		
		7.5m			0-5 m			10+ m			3 m			0-5 m			0-5 m			10+ m			3.6 m			7.4m			17.8m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
ARACHNIDA																													
Oribatidae																													
CLADOCERA																													
Bosmina longirostris																													
Alona												444																	
Daphnia																													
Daphnia longiremis																													
Macrothricidae																													
Chydorus sphaericus																													
COELENTERATA																													
Hydra												44																	
COPEPODA	Nauplius																												
Calanoida				89								44	44																
Limnocalanus macrurus																													
Cyclopoida											178	2,355	133																
Cyclops scutifer																													
Harpacticoida												667																	
DIPTERA	Adult																												
Chironomidae	Larva					44											444												
Chironomidae	Pupa																44								89				
Chironomidae	Adult																												
Chironomidae	Juvenile										1,111	5,688	889																
Chironomini	Larva																												
Chironomini	Pupa																												
Chironomus											933	1,467	400																
Chironomus	Larva													178	267					222	133	444						44		133
Chironomus	Pupa													44	44															
Phaenopsectra											489	1,911	400																
Phaenopsectra	Larva																222	44		44			2,089	1,289	533	1,644	844	533	44		
Phaenopsectra	Pupa																							44			44				
Diamesinae																													
Monodiamesa		44																											
Monodiamesa	Larva																	133					133	222	89	356	89	133			
Protanypus	Larva																												
Orthocladiinae		44		44																									
Orthocladiinae	Larva														89			89	133											
Orthocladiinae	Pupa								44																				
Abiskomyia											44		44																
Brillia																													
Cardiocladius																													
Corynoneura												578																	
Corynoneura	Larva																	44											
Cricotopus			44	89							489	7,866	667																
Cricotopus	Larva														44														
Eukiefferiella																													
Eukiefferiella	Larva							44	133	400					222														
Heterotrissocladius	Larva																											44	
Heterotrissocladius	Pupa																												
Orthocladius	Larva																												
Orthocladius	Pupa																												
Paracricotopus	Larva																												
Parakiefferiella	Larva																												44
Parakiefferiella	Pupa																												
Phycoidella sp.				44																									
Psectrocladius	Larva					89		89	222	356								89											
Tanypodinae																													
Procladius		44	44								1,333	1,289	978																
Procladius	Larva					44			178					44	133	44	44	133					222	89	178	356	133	178			
Procladius	Pupa																									44					
Thienemannimyia												44	44																
Tanytarsini	Larva																	1,511	133											
Tanytarsini	Pupa																	133	44											
Micropsectra													44																
Paratanytarsus	Larva													44	400			44												
Rheotanytarsus											444	3,689	533																
Rheotanytarsus	Larva																	89	44											
Rheotanytarsus	Pupa																		44											
Stempellina	Larva																								44		44	44		
Stempellina	Pupa																						89		133	44	89				

Appendix C3. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge lakes, 1996-2000.

Taxa / Species	Stage	WINDY LAKE									LITTLE ROBERTS LAKE						PELVIC LAKE																	
		29-Aug-96			17-Jul-97			17-Jul-97			27-Aug-96			15-Jul-97			17-Jul-97			17-Jul-97			24-Jul-00			24-Jul-00			24-Jul-00		
		7.5m			0-5 m			10+ m			3 m			0-5 m			0-5 m			10+ m			3.6 m			7.4m			17.8m		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3			
Stempellinella	Larva																	44					44		89	89	89	44					
Stempellinella	Pupa																						44		89	311	1,111	44					
Tanytarsus			44								12,888	35,774	6,755																				
Tanytarsus	Larva					44			89						178	44		222					3,956	1,111	1,556	1,467	44	1,467		44			
Tanytarsus	Pupa																								44	133		44					
Zavrelia	Larva																																
Culicidae																																	
Anopheles	Adult								311	44																							
Simuliidae																																	
Simulium	Adult																																
Simulium	Larva																																
Simulium	Pupa																																
EPHEMEROPTERA																																	
Baetidae	Larva																																
Baetis																																	
GASTROPODA																																	
Valvata sincera sincera																																	
HOMOPTERA																																	
Cicadellidae	Adult																																
HYDRACARINA	Adult										44	133	44		44			89															
Forelli	Adult																						44	133	89								44
HYMENOPTERA																																	
Braconidae	Adult																															44	
Scelionidae	Adult																																
MALACOSTRACA																																	
Gammaracanthus loricatus																																	
Gammarus lacustris																																	
Mysis relicta																										89							
Saduria entomon						44									133		44		44														
NEMATODA		267	711	89							311	5,644	1,155																				
OLIGOCHAETA	Juvenile																																
Enchytraeidae																																	
Lumbriculidae																																	
Lumbriculus																44																	
Lumbriculus variegatus											267	667	44																				
Naididae																																	
Chaetogaster											444																						
Tubificidae												178	44																				
Tubificidae	Juvenile																																
OSTRACODA												1,422																					
Candona												1,333																					
Cypria																																	
Cypris											44	5,599	89																				
Limnocythere																										44		44					
PELECYPODA																																	
Sphaeriidae	Juvenile													44				89	44				178		89	44	89	133					
Pisidium											1,422	1,778	978		400								44		44	311	400	222					
Sphaerium											844	1,378	667		133																		
PISCES																																	
Unidentified Fish Eggs												133	444																				
PLECOPTERA																																	
Suwallia	Larva																																
PROTOZOA																																	
Sarcodina											P	P	P																				
ROTIFERA											1,778	444	3,911																				
Dicranophorus																																	
Kellicottia																																	
Lecane																																	
TARDIGRADA											444																						
TRICHOPTERA																																	
Brachycentridae																																	
Micrasema	Larva																																
Limnephilidae	Larva																																
Grensia praeterita																																	
Grensia praeterita	Larva																																
TURBELLARIA																																	
TOTAL		**400**	**844**	**267**	**0**	**178**	**89**	**222**	**578**	**755**	**21,553**	**77,147**	**13,776**	**356**	**2,089**	**133**	**311**	**3,200**	**533**	**267**	**133**	**444**	**6,844**	**2,889**	**2,978**	**4,978**	**3,022**	**2,978**	**178**	**0**	**178**		

P = present

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates or non benthic forms and are excluded from the total.

Appendix C4. Abundance (organisms/m^2) and percent composition of main taxa of benthic invertebrates in Doris Hinge lakes, 1996-2000.

Lake	Depth (m)	Date	No. Repl.	Nematoda			Oligochaeta			Ostracoda			Malacostraca			Unident. Chironomidae			Chironomini		
				Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Doris	16.5	28-Aug-96	3	**15**	15	*0.7*	**15**	15	*0.7*									**2,015**	157	*97.8*
	0-5	18-Jul-97	3	**30**	30	*1.7*							**281**	260	*15.8*	**933**	933	*52.5*	**30**	30	*1.7*
	10+	18-Jul-97	3													**30**	30	*2.5*	**830**	182	*70.9*
	0-5	22-Aug-97	3	**15**	15	*0.4*							**44**	26	*1.3*	**15**	15	*0.4*	**2,044**	359	*58.7*
	10+	22-Aug-97	3							**15**	15	*1.3*							**815**	107	*72.4*
	4.5	24-Jul-00	3				**74**	15	*3.1*	**15**	15	*0.6*	**44**	26	*1.8*				**489**	93	*20.2*
	7.5	24-Jul-00	3				**385**	59	*17.6*										**637**	243	*29.1*
	14.9	24-Jul-00	3	**30**	30	*2.0*	**15**	15	*1.0*										**1,363**	82	*93.9*
Tail	4.5	27-Aug-96	3	**933**	867	*19.0*	**1,111**	505	*22.7*	**44**	26	*0.9*	**311**	200	*6.3*	**252**	186	*5.1*	**296**	121	*6.0*
	5-10	16-Jul-97	3				**74**	39	*7.5*							**44**	44	*4.5*	**89**	68	*9.0*
	2.6	19-Jul-00	3	**119**	53	*8.5*	**193**	74	*13.8*	**148**	39	*10.6*	**15**	15	*1.1*	**30**	30	*2.1*			
	5.4	19-Jul-00	3	**44**	26	*1.2*	**59**	39	*1.6*	**30**	30	*0.8*							**1,644**	133	*43.0*
Ogama	3.5	27-Aug-96	3	**459**	244	*8.2*	**30**	15	*0.5*							**430**	82	*7.6*	**1,718**	157	*30.5*
	0-5	16-Jul-97	3	**15**	15	*1.5*	**74**	74	*7.5*										**44**	26	*4.5*
Patch	11.5	26-Aug-96	3	**830**	585	*44.4*	**74**	15	*4.0*	**74**	74	*4.0*							**74**	30	*4.0*
	0-5	17-Jul-97	3													**59**	59	*4.9*	**44**	26	*3.7*
Wolverine	0-5	16-Jul-97	3				**44**	26	*1.4*	**44**	26	*1.4*							**44**	26	*1.4*
Windy	7.5	29-Aug-96	3	**356**	185	*70.6*															
	0-5	17-Jul-97	3										**15**	15	*16.7*	**15**	15	*16.7*			
	10+	17-Jul-97	3																		
Little Roberts	3.0	27-Aug-96	3	**2,370**	1,655	*6.3*	**548**	233	*1.5*	**2,829**	2,763	*7.5*				**2,563**	1,564	*6.8*	**1,866**	777	*5.0*
	0-5	15-Jul-97	3				**15**	15	*1.7*				**44**	44	*5.2*				**178**	93	*20.7*
Pelvic	0-5	17-Jul-97	3										**30**	15	*2.2*	**163**	163	*12.1*	**89**	68	*6.6*
	10+	17-Jul-97	3																**281**	90	*100.0*
	3.6	24-Jul-00	3																**1,319**	449	*31.1*
	7.4	24-Jul-00	3							**30**	15	*0.8*	**30**	30	*0.8*	**30**	30	*0.8*	**1,037**	335	*28.3*
	17.8	24-Jul-00	3																**74**	39	*62.5*

Lake	Depth (m)	Date	No. Repl.	Tanytarsini			Orthocladiinae			Diamesinae			Tanypodinae			Pelecypoda			Remaining Taxa			Total Number	
				Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Doris	16.5	28-Aug-96	3															**15**	15	*0.7*	**2,059**	182
	0-5	18-Jul-97	3	**296**	59	*16.7*	**104**	53	*5.8*				**15**	15	*0.8*	**15**	15	*0.8*	**74**	53	*4.2*	**1,778**	1,045
	10+	18-Jul-97	3	**44**	44	*3.8*	**15**	15	*1.3*				**222**	77	*19.0*	**15**	15	*1.3*	**15**	15	*1.3*	**1,170**	310
	0-5	22-Aug-97	3	**563**	78	*16.2*	**74**	39	*2.1*	**89**	26	*2.6*	**607**	39	*17.4*	**30**	30	*0.9*				**3,481**	466
	10+	22-Aug-97	3	**74**	74	*6.6*				**59**	39	*5.3*	**89**	51	*7.9*	**74**	30	*6.6*				**1,126**	286
	4.5	24-Jul-00	3	**163**	39	*6.7*	**178**	26	*7.4*	**119**	39	*4.9*	**444**	51	*18.4*	**889**	112	*36.8*				**2,415**	107
	7.5	24-Jul-00	3	**30**	30	*1.4*	**59**	15	*2.7*	**178**	77	*8.1*	**385**	74	*17.6*	**519**	39	*23.6*				**2,193**	296
	14.9	24-Jul-00	3										**15**	15	*1.0*	**30**	15	*2.0*				**1,452**	53
Tail	4.5	27-Aug-96	3	**489**	154	*10.0*	**430**	296	*8.8*	**74**	39	*1.5*	**474**	182	*9.7*	**311**	51	*6.3*	**178**	68	*3.6*	**4,903**	1,554
	5-10	16-Jul-97	3	**237**	127	*23.9*	**59**	15	*6.0*	**148**	148	*14.9*	**15**	15	*1.5*	**281**	116	*28.4*	**44**		*4.5*	**992**	281
	2.6	19-Jul-00	3	**59**	39	*4.3*	**178**	51	*12.8*	**119**	15	*8.5*	**311**	44	*22.3*	**74**	39	*5.3*	**148**	30	*10.6*	**1,393**	141
	5.4	19-Jul-00	3	**370**	171	*9.7*	**696**	218	*18.2*				**163**	15	*4.3*	**800**	253	*20.9*	**15**	15	*0.4*	**3,822**	680
Ogama	3.5	27-Aug-96	3	**2,237**	309	*39.7*				**237**	15	*4.2*	**356**	44	*6.3*	**119**	39	*2.1*	**44**	44	*0.8*	**5,629**	360
	0-5	16-Jul-97	3	**341**	107	*34.3*							**267**	93	*26.9*	**237**	171	*23.9*	**15**	15	*1.5*	**992**	295
Patch	11.5	26-Aug-96	3	**341**	193	*18.3*	**15**	15	*0.8*	**30**	15	*1.6*	**370**	90	*19.8*	**15**	15	*0.8*	**44**	26	*2.4*	**1,866**	566
	0-5	17-Jul-97	3	**104**	82	*8.5*	**267**	133	*21.9*	**30**	15	*2.4*	**474**	218	*39.0*				**237**	237	*19.5*	**1,215**	602
Wolverine	0-5	16-Jul-97	3	**518**	270	*16.9*	**44**	26	*1.4*				**370**	233	*12.1*	**1,807**	1,204	*58.9*	**193**	78	*6.3*	**3,066**	1,861
Windy	7.5	29-Aug-96	3	**15**	15	*2.9*	**89**	44	*17.6*	**15**	15	*2.9*	**30**	15	*5.9*							**504**	175
	0-5	17-Jul-97	3	**15**	15	*16.7*	**30**	30	*33.3*				**15**	15	*16.7*							**89**	51
	10+	17-Jul-97	3	**30**	30	*5.7*	**430**	180	*82.9*				**59**	59	*11.4*							**519**	157
Little Roberts	3	27-Aug-96	3	**20,042**	9,863	*53.5*	**3,229**	2,608	*8.6*				**1,230**	104	*3.3*	**2,355**	438	*6.3*	**459**	231	*1.2*	**37,492**	19,954
	0-5	15-Jul-97	3	**222**	178	*25.9*	**119**	119	*13.8*				**74**	30	*8.6*	**193**	171	*22.4*	**15**	15	*1.7*	**859**	618
Pelvic	0-5	17-Jul-97	3	**770**	642	*57.1*	**119**	59	*8.8*	**44**	44	*3.3*	**59**	39	*4.4*	**44**	26	*3.3*	**30**	30	*2.2*	**1,348**	928
	10+	17-Jul-97	3																			**281**	90
	3.6	24-Jul-00	3	**2,400**	900	*56.6*				**148**	39	*3.5*	**163**	39	*3.8*	**119**	65	*2.8*	**89**	26	*2.1*	**4,237**	1,304
	7.4	24-Jul-00	3	**1,689**	194	*46.2*	**15**	15	*0.4*	**193**	82	*5.3*	**237**	82	*6.5*	**400**	44	*10.9*				**3,659**	659
	17.8	24-Jul-00	3	**15**	15	*12.5*	**15**	15	*12.5*										**15**	15	*12.5*	**119**	59

NOTE: Terrestrial animals (e.g., adult Culicidae = mosquitoes) were excluded from these data but not from Rescan's original reports. In addition, non-benthic forms were removed (e.g., water fleas and most copepods).
Due to rounding, total numbers may not match the sum of the major taxonomic groups.

Appendix C5. Drift invertebrate abundance (org/m^3) in Doris Hinge streams, 1996-2000

Taxa / Species	Stage	DORIS OUTFLOW							TAIL OUTFLOW				
		19-Jul-97		20-Aug-97		23-Jul-00			19-Jul-97		20-Jul-00		
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3
ARACHNIDA													
Oribatidae		1.1	1.1							4.1	1.0	1.0	
CLADOCERA													
Bosmina longirostris		27.6	1.1							32.7			
Chydorus sphaericus												0.5	
Daphnia longiremis													
Daphnia middendorffiana													
Eurycercus glacialis				0.3									
Holopedium gibberum				0.3	7.0	5,217.4	587.0	2,433.3					
COELENTERATA													
Hydra					2.3	2.2	2.2	10.0		2.0		0.5	10.0
COLEOPTERA													
Carabidae	Adult												
Dytiscidae													
Agabus	Larva												
Hydroporus	Adult									1.0			
Hydroporus	Larva												
Elmidae	Larva												
Halplidae													
Haliplus	Adult												
Haliplus	Larva												
Staphylinidae	Adult									2.0			
COLLEMBOLA													
Entomobryidae		1.1	1.1						1.0		3.0		3.0
Hypogasturidae													
Anurida												0.5	
Isotomidae											4.0	1.0	
Isotoma		1.1								4.1			
Isotomura													
Sminthuridae													
Sminthurus	Adult											0.5	1.0
Sminthurus									4.1	4.1			
COPEPODA													
Calanoida													
Epischura nevadensis													
Leptodiaptomus													
Limnocalanus macrurus		1.1	3.3	0.9	239.9	4,565.2	1,326.1	966.7					
Canthocamptidae											20.0		
Cyclopoida													
Cyclops capillatus													
Cyclops scutifer		2.2	1.1	0.3	0.3	173.9	260.9	100.0					
Eucyclops agilis													
Harpacticoida										4.1			
DIPTERA	Adult												
	Pupa												
Ceratopogonidae	Pupa												
Bezzia	Larva												
Chironomidae	Larva	3.3		42.2	92.7	4.3		10.0		2.0			1.0
Chironomidae	Pupa	4.4	12.1	0.9	2.6				18.4	106.2			
Chironomini	Larva				4.4		0.4						
Chironomini	Pupa				0.3								
Dicrotendipes	Larva											0.5	
Dicrotendipes	Pupa							0.3					
Glyptotendipes	Larva												
Phaenopsectra	Larva												1.0
Polypedilum	Pupa												
Diamesinae	Larva												
Diamesa	Larva												
Diamesa	Pupa												
Pseudokiefferiella	Larva			4.7	8.8						1.0		
Pseudokiefferiella	Pupa												
Orthocladiinae	Adult										590.0	125.0	240.0
Orthocladiinae	Larva	8.8		40.5	118.5	8.7	32.6	20.0	1.0		20.0	9.0	10.0
Orthocladiinae	Pupa						17.4		6.1	242.1			
Corynoneura	Larva		1.1		1.2					5.1			2.0
Corynoneura	Pupa												
Cricotopus	Larva	1.1	6.6	0.6	0.3				1.0	11.2			
Cricotopus	Pupa			0.3	0.3		0.2						
Eukiefferiella	Larva			0.3		0.2	89.1	60.0	1.0	18.4	46.0	16.5	2.0
Eukiefferiella	Pupa			0.3			0.2	16.7				0.5	1.0
Heterotanytarsus	Larva												2.0
Orthocladius	Larva	1.1		1.2		23.9	23.9	26.7		4.1	15.0	24.0	3.0
Orthocladius	Pupa					13.0	6.5					7.5	24.0
Paracladius	Larva							0.7					
Psectrocladius	Larva	30.9	19.8	0.9		2.0	0.4			9.2	1.0	4.0	
Psectrocladius	Pupa							0.3	2.0	8.2			
Zavrelia	Larva												
Tanypodinae	Larva				1.2								130.0
Tanypodinae	Pupa						0.4						
Paramerina	Pupa									2.0			
Procladius	Larva												
Procladius	Pupa												
Thiennemannimyia	Larva			0.3	0.6		0.9	0.7				0.5	
Thiennemannimyia	Pupa											0.5	
Tanytarsini	Adult											0.5	
Tanytarsini	Larva			0.3					4.1		1.0		
Tanytarsini	Pupa									2.0			
Micropsectra	Larva										1.0		

Appendix C5. Drift invertebrate abundance (org/m^3) in Doris Hinge streams, 1996-2000

Taxa / Species	Stage	DORIS OUTFLOW							TAIL OUTFLOW				
		19-Jul-97		20-Aug-97		23-Jul-00			19-Jul-97		20-Jul-00		
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3
Micropsectra	Pupa						0.4	1.0					
Paratanytarsus	Larva							0.3			1.0		
Paratanytarsus	Pupa					0.2		0.7					
Rheotanytarsus	Larva			0.3		0.2			2.0	4.1		0.5	1.0
Rheotanytarsus	Pupa			0.3					1.0			1.0	6.0
Stempellina	Larva												1.0
Stempellina	Pupa											0.5	
Stempellinella	Larva												
Stempellinella	Pupa												
Tanytarsus	Larva								2.0	6.1		1.0	3.0
Tanytarsus	Pupa							0.7					
Culicidae													
Anopheles	Adult								2.0				
Dixidae	Larva												
Dixa	Larva								1.0				
Empididae	Adult					0.2							
Clinocera	Larva											0.5	
Ephydridae	Adult												
Simulidae	Larva												
Simulidae	Pupa			1.8	0.3				3.1	66.4			
Prosimulium	Larva					7.4	3.9	6.0					1.0
Simulium	Adult												
Simulium	Larva	1.1	2.2			6.7	4.3	3.0		38.8	5.0	30.0	10.0
Simulium	Pupa						0.4				1.0		1.0
Tipulidae	Adult												
Dicranota	Larva												
Hexatoma	Larva												
Hexatoma	Pupa												
Tipula	Larva				0.3							0.5	
EPHEMEROPTERA													
Baetidae	Larva	1.1								7.2			
Baetis bicaudatus	Larva												
Baetis tricaudatus	Larva										2.0	14.5	4.0
Ephemerellidae	Larva												
Ephemerella aurivilli	Larva												
Ephemerella inermis	Larva				0.3								
Heptageniidae	Larva									2.0			
HEMIPTERA	Adult												
	Larva												
HIRUDINEA													
Piscicola salmositica													
HOMOPTERA													
Aphididae	Adult										1.0		
Coccoidea													1.0
Jassidae	Adult												
HYDRACARINA			1.1	49.6	49.0	2.8	37.0	73.3	6.1	211.4	22.0	6.0	15.0
Forelli	Adult										3.0	0.5	1.0
HYMENOPTERA													
Braconidae	Adult									2.0	1.0		
Chalcoidea	Adult										1.0	0.5	
Scelionidae	Adult												
MALACOSTRACA													
Gammaracanthus loricatus													
Mysis relicta													
Saduria entomon				0.6	0.3								
NEMATODA		1.1			0.6	0.2			2.0	14.3	4.0	1.0	20.0
OLIGOCHAETA	Juvenile		1.1										
Enchytraeidae									4.1		2.0		
Naididae										2.0			
Naididae	Juvenile										1.0	1.0	
Chaetogaster										2.0			
Nais					1.2			3.3					
Tubificidae	Juvenile									2.0	2.0	1.0	
OSTRACODA													
Candona		1.1			1.2	1.1	3.5	3.3	8.2	26.6	2.0	12.5	90.0
Cypria					1.2	1.1	1.1			261.5	6.0	1.5	2.0
Cypris										2.0			
PELECYPODA													
Sphaeriidae	Juvenile									4.1			
Sphaerium					0.3								
Physidae													
Physa													
PISCES	Juvenile												
Pungitius pungitius												0.5	6.0
PLECOPTERA													
TRICHOPTERA													
	Larva				1.2					2.0			
Hydropsychidae	Larva												
Hydropsyche	Larva												
Leptoceridae	Larva												
Neureclipsis	Larva				0.3								
Limnephilidae	Larva												
Grensia praeterita	Larva									1.0			
Onocosmoecus	Larva									1.0	2.0		1.0
TOTAL		**87.1**	**50.7**	**146.6**	**536.4**	**10,030.7**	**2,398.9**	**3,737.0**	**68.4**	**1,115.4**	**165.0**	**138.0**	**346.0**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates and are excluded from the total.

Appendix C5. Drift invertebrate abundance (org/m^3) in Doris Hinge streams, 1996-2000

Taxa / Species	Stage	OGAMA OUTFLOW				PATCH OUTFLOW		WINDY OUTFLOW			
		18-Jul-97		20-Aug-97		21-Aug-97		18-Jul-97		21-Aug-97	
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
ARACHNIDA											
Oribatidae		6.5						0.3			
CLADOCERA											
Bosmina longirostris											
Chydorus sphaericus											
Daphnia longiremis											
Daphnia middendorffiana		1.3					0.7				
Eurycercus glacialis											
Holopedium gibberum											
COELENTERATA											
Hydra				1,609.1	1,500.2						
COLEOPTERA											
Carabidae	Adult										
Dytiscidae											
Agabus	Larva								0.6		
Hydroporus	Adult										
Hydroporus	Larva			1.2							
Elmidae	Larva										
Halplidae											
Haliplus	Adult								0.3		
Haliplus	Larva				1.2						
Staphylinidae	Adult										
COLLEMBOLA											
Entomobryidae									0.3		
Hypogasturidae											
Anurida											
Isotomidae											
Isotoma											
Isotomura											
Sminthuridae											
Sminthurus	Adult										
Sminthurus											
COPEPODA											
Calanoida											
Epischura nevadensis											
Leptodiaptomus											
Limnocalanus macrurus							0.7	2.6	12.8	257.5	10.4
Canthocamptidae											
Cyclopoida											
Cyclops capillatus											
Cyclops scutifer											
Eucyclops agilis				52.0	24.2						
Harpacticoida				12.1							
DIPTERA	Adult										
	Pupa										
Ceratopogonidae	Pupa							1.5	0.3		
Bezzia	Larva										
Chironomidae	Larva	45.7	26.1	387.1	641.2					31.1	
Chironomidae	Pupa	20.9	42.4					0.6		373.8	
Chironomini	Larva										
Chironomini	Pupa	0.7									2.1
Dicrotendipes	Larva										
Dicrotendipes	Pupa										
Glyptotendipes	Larva										
Phaenopsectra	Larva										
Polypedilum	Pupa										
Diamesinae	Larva							0.6			
Diamesa	Larva	0.7									
Diamesa	Pupa										
Pseudokiefferiella	Larva	10.4		14.5	72.6						
Pseudokiefferiella	Pupa	24.2									
Orthocladiinae	Adult										
Orthocladiinae	Larva	10.4	5.2	108.9	84.7	0.7	0.7	1.2	0.9		
Orthocladiinae	Pupa	31.3		36.3	229.9				1.2	20.8	
Corynoneura	Larva										
Corynoneura	Pupa		5.2								
Cricotopus	Larva	23.5	10.4			4.4	0.7	0.3		4.2	
Cricotopus	Pupa										
Eukiefferiella	Larva			18.1	60.5			0.3	0.9		
Eukiefferiella	Pupa			108.9	520.2					2.1	
Heterotanytarsus	Larva										
Orthocladius	Larva			1.2	12.1			1.5			
Orthocladius	Pupa				24.2			0.3			2.1
Paracladius	Larva										
Psectrocladius	Larva	74.4	16.3	35.1	84.7			6.7	5.8		
Psectrocladius	Pupa				84.7						
Zavrelia	Larva										
Tanypodinae	Larva										
Tanypodinae	Pupa										
Paramerina	Pupa										
Procladius	Larva				1.2						
Procladius	Pupa										
Thiennemannimyia	Larva	0.7						0.6	0.3		
Thiennemannimyia	Pupa	1.3						1.2	3.2		
Tanytarsini	Adult										
Tanytarsini	Larva			60.5	169.4			2.0			
Tanytarsini	Pupa		15.7					0.3			
Micropsectra	Larva							0.6			

Appendix C5. Drift invertebrate abundance (org/m^3) in Doris Hinge streams, 1996-2000

Taxa / Species	Stage	OGAMA OUTFLOW				PATCH OUTFLOW		WINDY OUTFLOW			
		18-Jul-97		20-Aug-97		21-Aug-97		18-Jul-97		21-Aug-97	
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2
Micropsectra	Pupa							0.6	3.8		
Paratanytarsus	Larva							2.9	0.9		
Paratanytarsus	Pupa									2.1	
Rheotanytarsus	Larva	2.6	5.6							2.1	2.1
Rheotanytarsus	Pupa	6,195.1	94.4		36.3					2.1	
Stempellina	Larva										
Stempellina	Pupa										
Stempellinella	Larva			1.2	121.0						
Stempellinella	Pupa										
Tanytarsus	Larva										
Tanytarsus	Pupa		5.2			0.7					
Culicidae											
Anopheles	Adult								0.3		
Dixidae	Larva										
Dixa	Larva										
Empididae	Adult										
Clinocera	Larva										
Ephydridae	Adult										
Simulidae	Larva										
Simulidae	Pupa	71.8	1.3	10.9	12.1				0.3	4.2	
Prosimulium	Larva					0.7		6.1	8.7		
Simulium	Adult										
Simulium	Larva	3,699.6	2,127.0	1.2	2.4			2.6	3.2		
Simulium	Pupa										
Tipulidae	Adult										
Dicranota	Larva				1.2						
Hexatoma	Larva							0.9	0.6		
Hexatoma	Pupa								0.3		
Tipula	Larva										
EPHEMEROPTERA											
Baetidae	Larva			2.4							
Baetis bicaudatus	Larva				1.2						
Baetis tricaudatus	Larva										
Ephemerellidae	Larva										
Ephemerella aurivilli	Larva		0.3								
Ephemerella inermis	Larva										
Heptageniidae	Larva										
HEMIPTERA	Adult										2.1
	Larva									2.1	
HIRUDINEA											
Piscicola salmositica											
HOMOPTERA											
Aphididae	Adult										
Coccoidea											
Jassidae	Adult										
HYDRACARINA		35.9	14.7	36.3	181.5			1.5	0.3	4.2	
Forelli	Adult										
HYMENOPTERA											
Braconidae	Adult										
Chalcoidea	Adult										
Scelionidae	Adult									2.1	
MALACOSTRACA											
Gammaracanthus loricatus											
Mysis relicta										2.1	22.8
Saduria entomon						0.7	1.5		0.3	201.4	143.3
NEMATODA		17.0									
OLIGOCHAETA	Juvenile									2.1	
Enchytraeidae											
Naididae											
Naididae	Juvenile										
Chaetogaster											
Nais				8.5	36.3			0.3			
Tubificidae	Juvenile					0.7		0.6	2.0		
OSTRACODA											
Candona				27.8	205.7					10.4	6.2
Cypria				10.9	48.4					2.1	
Cypris											
PELECYPODA											
Sphaeriidae	Juvenile										
Sphaerium		0.7	5.6								4.2
Physidae											
Physa									0.3		
PISCES											
	Juvenile							0.6			
Pungitius pungitius					1.2	0.7					2.1
PLECOPTERA											
TRICHOPTERA											
	Larva										
Hydropsychidae	Larva										
Hydropsyche	Larva	2.0									
Leptoceridae	Larva										
Neureclipsis	Larva		5.2								
Limnephilidae	Larva										
Grensia praeterita	Larva										
Onocosmoecus	Larva							0.3	0.3		
TOTAL		**10,270.1**	**2,380.6**	**2,544.3**	**4,157.0**	**8.2**	**4.4**	**35.8**	**47.5**	**924.1**	**195.2**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates and are excluded from the total.

Appendix C5. Drift invertebrate abundance (org/m^3) in Doris Hinge streams, 1996-2000

Taxa / Species	Stage	LITTLE ROBERTS OUTFLOW				PELVIC OUTFLOW						
		19-Jul-97		19-Aug-97		19-Jul-97		20-Aug-97		23-Jul-00		
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3
ARACHNIDA			0.5									
Oribatidae							4.1	11.0				
CLADOCERA												
Bosmina longirostris		5.8									12.5	13.3
Chydorus sphaericus											6.3	
Daphnia longiremis										8,235.3	200.0	1,066.7
Daphnia middendorffiana		3.9	3.9									
Eurycercus glacialis												
Holopedium gibberum				107.8	49.2					529.4	12.5	13.3
COELENTERATA												
Hydra				12.0	14.6							
COLEOPTERA												
Carabidae	Adult	0.5	0.5				0.3					
Dytiscidae												
Agabus	Larva											
Hydroporus	Adult											
Hydroporus	Larva											
Elmidae	Larva					1.0						
Halplidae												
Haliplus	Adult											
Haliplus	Larva											
Staphylinidae	Adult											
COLLEMBOLA												
Entomobryidae		45.2	31.1									
Hypogasturidae												
Anurida												
Isotomidae												
Isotoma		1.9										
Isotomura		1.9										
Sminthuridae												
Sminthurus	Adult											
Sminthurus												
COPEPODA												
Calanoida												
Epischura nevadensis										0.6		6.7
Leptodiaptomus												6.7
Limnocalanus macrurus		120.5	23.3	53.2	159.7							
Canthocamptidae												
Cyclopoida												
Cyclops capillatus											0.6	
Cyclops scutifer		13.6		2.7	4.0				44.0	1.2	6.3	6.7
Eucyclops agilis												
Harpacticoida								11.0	88.1			
DIPTERA	Adult	3.4	0.5			1.0	0.5				1.3	
	Pupa	0.5										
Ceratopogonidae	Pupa	9.7	15.5			1.0						
Bezzia	Larva	2.4										
Chironomidae	Larva	5.8	5.8	5.3	17.3	66.2		5,008.5	15,190.7	29.4	125.0	53.3
Chironomidae	Pupa	665.6	508.7	2.7		1,022.3	486.3	11.0	2.8	1.2	181.3	86.7
Chironomini	Larva										1.3	13.3
Chironomini	Pupa	2.4	1.9			20.7	0.5					
Dicrotendipes	Larva											
Dicrotendipes	Pupa											
Glyptotendipes	Larva	1.9										
Phaenopsectra	Larva											
Polypedilum	Pupa					6.2						
Diamesinae	Larva											
Diamesa	Larva											
Diamesa	Pupa			1.3								
Pseudokiefferiella	Larva			1.3	4.0			2.8		1.2	11.3	40.0
Pseudokiefferiella	Pupa				8.0						0.6	
Orthocladiinae	Adult											
Orthocladiinae	Larva	14.6		6.7	13.3	2.1		82.6	1,243.9	24.1	31.3	113.3
Orthocladiinae	Pupa	73.9	56.4		2.7	62.1	17.8	22.0	44.0	9.4	37.5	20.0
Corynoneura	Larva	7.8									1.3	
Corynoneura	Pupa	10.7	7.8			26.9						
Cricotopus	Larva	1.9	1.9					99.1	176.1			
Cricotopus	Pupa											
Eukiefferiella	Larva	0.5	3.9			25.9	4.4	44.0		22.9	87.5	173.3
Eukiefferiella	Pupa	1.9	5.8			17.6	13.5			14.7	50.0	46.7
Heterotanytarsus	Larva											
Orthocladius	Larva	0.5				1.0		33.0		22.4	68.8	93.3
Orthocladius	Pupa	8.3				2.1		11.0		17.6	25.0	20.0
Paracladius	Larva											
Psectrocladius	Larva	11.2	10.7		1.3		4.4			55.3	81.3	213.3
Psectrocladius	Pupa	1.0	16.5				0.5			0.6	2.5	1.3
Zavrelia	Larva							11.0				
Tanypodinae	Larva							44.0	264.2	1.8	12.5	6.7
Tanypodinae	Pupa					1.0						
Paramerina	Pupa											
Procladius	Larva	0.5										
Procladius	Pupa	0.5	1.9									
Thiennemannimyia	Larva	1.0	1.5				0.3				0.6	
Thiennemannimyia	Pupa		4.4								3.1	9.3
Tanytarsini	Adult											
Tanytarsini	Larva						4.1		1,106.3			
Tanytarsini	Pupa	12.1	38.9							1.8	31.3	
Micropsectra	Larva											

Appendix C5. Drift invertebrate abundance (org/m^3) in Doris Hinge streams, 1996-2000

Taxa / Species	Stage	LITTLE ROBERTS OUTFLOW				PELVIC OUTFLOW						
		19-Jul-97		19-Aug-97		19-Jul-97		21-Aug-97		23-Jul-00		
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3
Micropsectra	Pupa									0.6	1.3	
Paratanytarsus	Larva									0.6		
Paratanytarsus	Pupa									0.6	0.6	6.7
Rheotanytarsus	Larva	2.4			1.3	2.1	0.3	300.0	440.3	1.2	3.1	40.0
Rheotanytarsus	Pupa	23.3	33.5	1.3	4.0	223.5	29.7			1.2	87.5	126.7
Stempellina	Larva											
Stempellina	Pupa											
Stempellinella	Larva									0.6	0.6	
Stempellinella	Pupa									0.6		
Tanytarsus	Larva											
Tanytarsus	Pupa	33.5	15.5			4.1	1.3					0.7
Culicidae												
Anopheles	Adult	0.5					0.8				1.3	
Dixidae	Larva											
Dixa	Larva											
Empididae	Adult	1.9	0.5				0.3					
Clinocera	Larva											
Ephydridae	Adult										0.6	
Simulidae	Larva		7.3									
Simulidae	Pupa	0.5	0.5				11.9	2.8	2.8			
Prosimulium	Larva	27.2	6.8			303.2	33.1					
Simulium	Adult									0.6		
Simulium	Larva	33.5	6.3			535.0	335.3			2.9	243.8	226.7
Simulium	Pupa										8.8	3.3
Tipulidae	Adult	2.9										
Dicranota	Larva											
Hexatoma	Larva											
Hexatoma	Pupa											
Tipula	Larva	1.5		1.3								
EPHEMEROPTERA												
Baetidae	Larva		7.8			8.3	0.3					
Baetis bicaudatus	Larva				4.0							
Baetis tricaudatus	Larva											
Ephemerellidae	Larva											
Ephemerella aurivilli	Larva											
Ephemerella inermis	Larva											
Heptageniidae	Larva											
HEMIPTERA	Adult											
	Larva											
HIRUDINEA												
Piscicola salmositica								22.0		0.6		
HOMOPTERA												
Aphididae	Adult	1.0								0.6		
Coccoidea												
Jassidae	Adult									0.6		
HYDRACARINA		39.8	12.1		4.0	42.4	30.5	374.3	1,345.7	47.1	75.0	40.0
Forelli	Adult									294.1	112.5	393.3
HYMENOPTERA												
Braconidae	Adult											
Chalcoidea	Adult											
Scelionidae	Adult	11.7										
MALACOSTRACA												
Gammaracanthus loricatus			0.5									
Mysis relicta										0.6	0.6	
Saduria entomon												
NEMATODA		5.8				1.0				0.6		6.7
OLIGOCHAETA	Juvenile						0.3		44.0			
Enchytraeidae		1.9										6.7
Naididae												
Naididae	Juvenile											
Chaetogaster												
Nais				8.0	12.0			55.0	352.2			
Tubificidae	Juvenile											
OSTRACODA												
Candona		1.9		8.0	26.6		0.3	11.0		2.9	8.8	30.7
Cypria		60.2	31.1		2.7	988.2	930.5	1,210.9	572.4	5.9	0.6	1.3
Cypris							8.3	11.0				
PELECYPODA												
Sphaeriidae	Juvenile											
Sphaerium												
Physidae												
Physa												
PISCES	Juvenile											
Pungitius pungitius								5.5				
PLECOPTERA			0.5									
TRICHOPTERA												
	Larva								2.8			
Hydropsychidae	Larva											
Hydropsyche	Larva											
Leptoceridae	Larva											
Neureclipsis	Larva											
Limnephilidae	Larva											
Grensia praeterita	Larva											0.7
Onocosmoecus	Larva											
TOTAL		**1,258.9**	**861.9**	**211.6**	**328.7**	**3,364.0**	**1,913.5**	**7,366.9**	**20,920.2**	**9,329.4**	**1,533.1**	**2,887.3**

Shaded rows indicate terrestrial invertebrate or adult forms of aquatic invertebrates and are excluded from the total.

Appendix C6. Abundance (organisms/1000 m^3) and percent composition of main taxa of macroinvertebrate drift in Doris Hinge streams, 1996-2000.

Site	Sample Date	No.	Oligochaeta			Cladocera			Copepoda			Ostracoda			Hydracarina			Simuliidae			Unident. Chironomidae		
		Repl.	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Doris Outflow	19-Jul-97	2	**0.6**	0.6	*0.8*	**14.3**	13.2	*20.8*	**3.9**	0.6	*5.6*	**0.6**	0.6	*0.8*	**0.6**	0.6	*0.8*	**1.7**	0.6	*2.4*	**9.9**	2.2	*14.4*
	20-Aug-97	2	**0.6**	0.6	*0.2*	**3.8**	3.2	*1.1*	**120.7**	119.5	*35.3*	**1.2**	1.2	*0.3*	**49.3**	0.3	*14.4*	**1.0**	0.7	*0.3*	**69.2**	26.1	*20.3*
	23-Jul-00	3	**1.1**	1.1	*0.0*	**2,745.9**	1,345.8	*51.0*	**2,464.3**	1,147.3	*45.7*	**3.4**	0.7	*0.1*	**37.7**	20.4	*0.7*	**10.6**	1.8	*0.2*	**4.8**	2.9	*0.1*
Tail Outflow	19-Jul-97	2	**5.1**	1.0	*0.9*	**16.3**	16.3	*2.8*	**2.0**	2.0	*0.3*	**149.1**	141.0	*25.2*	**108.8**	102.7	*18.4*	**54.1**	51.1	*9.1*	**63.3**	44.9	*10.7*
	20-Jul-00	3	**2.3**	1.5	*1.1*	**0.2**	0.2	*0.1*	**6.7**	6.7	*3.1*	**38.0**	27.1	*17.6*	**15.8**	5.3	*7.3*	**16.0**	7.2	*7.4*	**0.3**	0.3	*0.2*
Ogama Outflow	18-Jul-97	2				**0.7**	0.7	*0.0*							**25.3**	10.6	*0.4*	**2,949.8**	821.6	*46.6*	**67.6**	1.0	*1.1*
	20-Aug-97	2	**22.4**	13.9	*0.7*				**44.2**	20.0	*1.3*	**146.4**	107.7	*4.4*	**108.9**	72.6	*3.2*	**13.3**	1.2	*0.4*	**514.2**	127.0	*15.3*
Patch Outflow	21-Aug-97	2	**0.4**	0.4	*5.9*	**0.4**	0.4	*5.9*	**0.4**	0.4	*5.9*							**0.4**	0.4	*5.9*			
Windy Outflow	18-Jul-97	2	**1.5**	0.6	*3.5*				**7.7**	5.1	*18.5*				**0.9**	0.6	*2.1*	**10.5**	1.7	*25.2*	**0.3**	0.3	*0.7*
	21-Aug-97	2	**1.0**	1.0	*0.2*				**133.9**	123.6	*23.9*	**9.3**	3.1	*1.7*	**2.1**	2.1	*0.4*	**2.1**	2.1	*0.4*	**202.5**	202.5	*36.2*
Little Roberts Outflow	19-Jul-97	2	**1.0**	1.0	*0.1*	**6.8**	2.9	*0.6*	**78.7**	55.4	*7.4*	**46.6**	15.5	*4.4*	**26.0**	13.8	*2.5*	**41.1**	20.2	*3.9*	**593.0**	78.5	*55.9*
	19-Aug-97	2	**10.0**	2.0	*3.7*	**78.5**	29.3	*29.1*	**109.8**	53.9	*40.6*	**18.6**	10.6	*6.9*	**2.0**	2.0	*0.7*			*0.0*	**12.6**	4.7	*4.7*
Pelvic Outflow	19-Jul-97	2	**0.1**	0.1	*0.0*							**963.6**	24.6	*36.5*	**36.5**	5.9	*1.4*	**609.2**	228.9	*23.1*	**787.4**	301.1	*29.8*
	21-Aug-97	2	**225.7**	170.6	*1.6*				**71.6**	60.5	*0.5*	**902.6**	330.2	*6.4*	**860.0**	485.7	*6.1*	**2.8**		*0.0*	**10,106.5**	5,087.0	*71.5*
	23-Jul-00	3	**2.2**	2.2	*0.0*	**3,363.1**	2,712.2	*73.4*	**9.5**	5.4	*0.2*	**16.7**	7.6	*0.4*	**320.7**	71.7	*7.0*	**161.8**	79.7	*3.5*	**158.9**	80.1	*3.5*

Site	Sample Date	No.	Tanypodinae			Tanytarsini			Chironomini			Orthocladinae			Diamesinae			Remaining Taxa			All Taxa	
		Repl.	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Doris Outflow	19-Jul-97	2										**34.7**	7.2	*50.4*				**2.8**	1.7	*4.0*	**68.9**	18.2
	20-Aug-97	2	**1.0**	0.7	*0.3*	**0.4**	0.4	*0.1*	**2.3**	2.3	*0.7*	**82.1**	38.1	*24.0*	**6.7**	2.1	*2.0*	**3.1**	2.5	*0.9*	**341.5**	194.9
	23-Jul-00	3	**0.7**	0.4	*0.0*	**1.2**	0.7	*0.0*	**0.2**	0.1	*0.0*	**114.2**	35.8	*2.1*				**4.9**	2.5	*0.1*	**5,388.9**	2,352.9
Tail Outflow	19-Jul-97	2	**1.0**	1.0	*0.2*	**10.7**	1.5	*1.8*				**154.7**	143.5	*26.1*				**26.6**	18.4	*4.5*	**591.9**	523.5
	20-Jul-00	3	**43.7**	43.2	*20.2*	**5.7**	2.7	*2.6*	**0.5**	0.3	*0.2*	**62.5**	11.0	*28.9*	**0.3**	0.3	*0.2*	**24.3**	7.4	*11.2*	**216.3**	65.3
Ogama Outflow	18-Jul-97	2	**1.0**	1.0	*0.0*	**3,159.3**	3,038.5	*49.9*	**0.3**	0.3	*0.0*	**88.5**	51.3	*1.4*	**17.6**	17.6	*0.3*	**15.3**	4.2	*0.2*	**6,325.4**	3,944.7
	20-Aug-97	2	**0.6**	0.6	*0.0*	**194.2**	132.5	*5.8*				**704.7**	396.2	*21.0*	**43.6**	29.0	*1.3*	**1,558.3**	54.4	*46.5*	**3,350.6**	806.4
Patch Outflow	21-Aug-97	2				**0.4**	0.4	*5.9*				**3.3**	1.9	*52.9*				**1.1**	0.4	*17.6*	**6.3**	1.8
Windy Outflow	18-Jul-97	2	**2.6**	0.9	*6.3*	**5.5**	0.9	*13.3*				**9.5**	0.7	*22.7*	**0.3**	0.3	*0.7*	**2.9**	0.3	*7.0*	**41.7**	5.8
	21-Aug-97	2				**4.2**	2.1	*0.7*	**1.0**	1.0	*0.2*	**14.5**	12.5	*2.6*				**189.0**	16.6	*33.8*	**559.7**	364.4
Little Roberts Outflow	19-Jul-97	2	**4.9**	2.9	*0.5*	**79.7**	8.3	*7.5*	**3.2**	1.2	*0.3*	**117.6**	14.6	*11.1*				**61.9**	6.6	*5.8*	**1,060.4**	198.5
	19-Aug-97	2				**3.3**	2.0	*1.2*				**12.0**	5.3	*4.4*	**7.3**	4.7	*2.7*	**16.0**	2.7	*5.9*	**270.1**	58.6
Pelvic Outflow	19-Jul-97	2	**0.6**	0.4	*0.0*	**132.6**	97.1	*5.0*	**13.7**	13.2	*0.5*	**89.1**	48.5	*3.4*				**5.9**	5.4	*0.2*	**2,638.9**	725.1
	21-Aug-97	2	**154.1**	110.1	*1.1*	**923.3**	623.3	*6.5*				**883.4**	580.7	*6.2*	**1.4**	1.4	*0.0*	**12.4**	9.6	*0.1*	**14,143.6**	6,776.7
	23-Jul-00	3	**11.3**	4.8	*0.2*	**101.8**	49.5	*2.2*	**4.9**	4.2	*0.1*	**411.1**	149.0	*9.0*	**17.7**	11.6	*0.4*	**3.2**	2.1	*0.1*	**4,583.1**	2,405.0

NOTE: Terrestrial animals (e.g., adult Culicidae = mosquitoes) were excluded from these data, but not from Rescan's original reports.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	DORIS OUTFLOW										
		25-Aug-96				19-Jul-97			20-Aug-97	16-Aug)-00		
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 1	Rep 2	Rep 3	Rep 1	Rep 1	Rep 2	Rep 3
BRYOZOA (ECTOPROCTA)												
Indetermined Colonial	Juvenile											
Statoblast												
CLADOCERA												
Bosminidae												
Bosmina longirostris												
Chydoridae	Juvenile											
Alona												
Alonella												
Alonella excisa												
Chydorus sphaericus												
Eurycercus (*Bullatifrons*)												
Daphniidae												
Daphnia												
Holopediidae												
Holopedium gibberum												
COELENTERATA												
Hydrozoa												
Hydra		9	11	7	7				49	25,778	7,833	22,344
Indetermined colonial												
COLEOPTERA												
Dytiscidae												
Hydaticus												
Elmidae	Larva											
Halplidae												
Haliplus	Larva											
Staphylinidae												
COLLEMBOLA	Adult											
Entomobryidae	Adult											
Hypogastruridae												
Hypogastrura												
Isotomidae												
Isotoma	Adult											
Isotoma												
Isotomurus												
Isotomurus palustris												
Poduridae												
Podura aquatica												
Sminthuridae												
Bourletiella spinata												
Sminthurides												
Sminthurus	Adult											
COPEPODA	Nauplius		45									
Calanoida		281	158	94	40							
Canthocamptidae												
Cyclopidae												
Cyclopoida												
Cyclops scutifer											11	
Eucyclops agilis												
Harpacticoida		2	2	7								
DIPTERA	Adult											
Canaceidae	Adult											
Ceratopogonidae												
Bezzia	Larva											
Chironomidae	Adult											
Chironomidae	Juvenile	33	45	241	683							
Chironomidae	Larva								176	164,556	187,778	162,222
Chironomidae	Pupa				2				59			
Chironominae	Pupa											
Chironomini	Larva									111		
Chironomini	Pupa											
Chironomus	Larva											
Dicrotendipes	Larva											
Lauterborniella	Larva											
Phaenopsectra	Larva											
Diamesinae												
Diamesa				22	116							
Diamesa	Larva											
Monodiamesa	Larva											
Potthastia	Larva					20	39	20				
Pseudokiefferiella	Larva									11		
Pseudokiefferiella	Pupa							20				
Orthocladiinae	Adult											
Orthocladiinae	Juvenile											
Orthocladiinae	Larva					20	20	29	78	2,000	1,556	1,333
Orthocladiinae	Pupa					10	10					
Corynoneura												
Corynoneura	Larva											
Corynoneura	Pupa											
Cricotopus		567	31	283	982							
Cricotopus	Larva						20					
Cricotopus	Pupa											
Eukiefferiella		36	16	69	272							
Eukiefferiella	Larva									456	267	433
Eukiefferiella	Pupa					10				256	356	178
Euryhapsis												
Heterotanytarsus												
Heterotanytarsus	Larva											
Heterotrissocladius	Larva											
Heterotrissocladius	Pupa											
Orthocladius	Larva									878	322	1,122
Psectrocladius	Larva					10	20	29	10			
Psectrocladius	Pupa					10						
Thienemanniella												
Thienemaniella	Larva											
Tanypodinae	Larva									1,667	5,556	8,889
Procladius												
Procladius	Larva											
Thienemannimyia		47	25	56	92							
Thienemannimyia	Larva							39		156	411	256
Thienemannimyia	Pupa											
Tanytarsini	Juvenile											
Tanytarsini	Larva							20		2,222	5,556	2,222
Tanytarsini	Pupa											
Micropsectra	Larva										11	
Micropsectra	Pupa											

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	DORIS OUTFLOW										
		25-Aug-96				19-Jul-97			20-Aug-97	16-Aug)-00		
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 1	Rep 2	Rep 3	Rep 1	Rep 1	Rep 2	Rep 3
Paratanytarsus	Larva											
Rheotanytarsus		11	4	40	11							
Rheotanytarsus	Larva						10	10	10			
Rheotanytarsus	Pupa					10	10					
Stempellinella												
Stempellinella	Larva					10		10				
Stempellinella	Pupa						10					
Tanytarsus		2										
Tanytarsus	Larva											
Culicidae												
Anopheles	Adult					10	10	29				
Empididae	Pupa											
Chelifera												
Clinocera												
Ephydridae	Adult						10					
Simuliidae	Adult											
Prosimulium	Larva					2,030	2,030	1,269				
Prosimulium	Adult								20			
Simulium	Adult											
Simulium												
Simulium	Larva					664	986	634	10			
Simulium	Pupa	2										
Tabanidae												
Tabanus					2							
Tipulidae												
Hexatoma												
Hexatoma	Larva											
Tipula												
Tipula	Larva											
Tipula	Pupa											
EPHEMEROPTERA												
Baetidae	Larva								10			
Baetis												
Baetis bicaudatus	Larva											
Baetis tricaudatus	Larva											
Ephemerellidae												
Ephemerella												
Ephemerella intermis												
Leptophlebiidae												
Paraleptophlebia debilis	Larva					10		10	10			
GASTROPODA												
Valvata sincera sincera												
HIRUDINEA												
Piscicola salmositica												
HOMOPTERA												
Aphididae				2								
Aphididae	Adult											
Cicadellidae	Adult											
HYDRACARINA	Adult	136	42	183	489	78	137	68	264	2,811	4,011	8,689
HYMENOPTERA												
Braconidae	Adult											
LEPIDOPTERA	Larva											
MALACOSTRACA												
Gammaracanthus loricatus											11	
Hyallela azteca						10						
Pseudacanthus estuarius												
Idoteidae												
Saduria entomon												
Saduria												
NEMATODA		4	22	295	80			10				11
OLIGOCHAETA												
Enchytraeidae												11
Lumbriculidae												
Lumbriculus												
Lumbriculus variegatus												
Naididae	Juvenile											
Chaetogaster										111	111	
Nais									20	100	144	89
Tubificidae					2							
Tubificidae	Juvenile								10			
OSTRACODA	Juvenile			27								
Candona									39	167	556	
Cypria												
Cypris												
PELECYPODA												
Sphaeriidae												
Sphaerium												
PISCES												
Pungitius pungitius												
PLECOPTERA												
Nemouridae												
Nemoura	Larva									11		11
Podmosta					2							
Capnidae												
Capnia	Larva											
PROTOZOA												
Sarcodina												
PSOCOPTERA	Adult							10				
ROTIFERA			58		27							
Conochilus												
Dicranophorus												
Kellicottia				18	22							
Keratella												
Lecane												
TARDIGRADA												
Indetermined				2								
THYSANOPTERA	Adult											
	Larva											
TRICHOPTERA												
Limnephilidae												
Grensia praeterita	Larva											11
Grensia praeterita	Pupa											
Rhyacophilidae												
Rhyacophila acropedes	Larva							10				
TURBELLARIA												
TOTAL		**850**	**199**	**1,232**	**2,741**	**2,889**	**3,289**	**2,176**	**745**	**201,289**	**214,478**	**207,822**

P = present

Shaded rows indicate terrestrial invertebrates, adult forms of aquatic invertebrates, or non-benthic forms that were excluded from the total.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	TAIL OUTFLOW											
		02-Aug-96				19-Jul-97			19-Aug-97			16-Aug-00	
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2
BRYOZOA (ECTOPROCTA)													
Indetermined Colonial Statoblast	Juvenile				P								
CLADOCERA													
Bosminidae													
Bosmina longirostris													
Chydoridae	Juvenile												
Alona				2									
Alonella													
Alonella excisa												67	89
Chydorus sphaericus													
Eurycercus (*Bullatifrons*)													
Daphniidae													
Daphnia					2								
Holopediidae													
Holopedium gibberum													
COELENTERATA													
Hydrozoa													
Hydra		13	2	2	16								11
Indetermined colonial					P								
COLEOPTERA													
Dytiscidae													
Hydaticus													
Elmidae	Larva												
Halplidae													
Haliplus	Larva								10				
Staphylinidae													
COLLEMBOLA	Adult					10							
Entomobryidae	Adult												
Hypogastruridae													
Hypogastrura				4	4								
Isotomidae													
Isotoma	Adult					20				10	10		
Isotoma		9	7		2								
Isotomurus													
Isotomurus palustris													
Poduridae													
Podura aquatica			2	4	4								
Sminthuridae													
Bourletiella spinata		2		4	4								
Sminthurides													
Sminthurus	Adult												
COPEPODA	Nauplius												
Calanoida													
Canthocamptidae												178	433
Cyclopidae													
Cyclopoida		2											
Cyclops scutifer													
Eucyclops agilis													
Harpacticoida		27	7	9	7								
DIPTERA	Adult				4								
Canaceidae	Adult												
Ceratopogonidae													
Bezzia	Larva												
Chironomidae	Adult		2	7	7								
Chironomidae	Juvenile	395	114	270	58								
Chironomidae	Larva						10		88	303	68	1,311	3,800
Chironomidae	Pupa	16	4	2	9	20	20	10		29	20		
Chironominae	Pupa	16											
Chironomini	Larva												
Chironomini	Pupa												
Chironomus	Larva												
Dicrotendipes	Larva												
Lauterborniella	Larva												
Phaenopsectra	Larva												
Diamesinae													
Diamesa													
Diamesa	Larva												
Monodiamesa	Larva					39	29	88		29	10		
Potthastia	Larva												
Pseudokiefferiella	Larva												
Pseudokiefferiella	Pupa												
Orthocladiinae	Adult												
Orthocladiinae	Juvenile												
Orthocladiinae	Larva					39	39	49	10	68	49	111	122
Orthocladiinae	Pupa									29	20		
Corynoneura		2		4	7								
Corynoneura	Larva									29		478	478
Corynoneura	Pupa									10	10	11	
Cricotopus		20	11	11	16								
Cricotopus	Larva												
Cricotopus	Pupa												
Eukiefferiella		22	40	16	7								
Eukiefferiella	Larva									10		78	156
Eukiefferiella	Pupa								10		10	100	56
Euryhapsis													
Heterotanytarsus		2											
Heterotanytarsus	Larva												11
Heterotrissocladius	Larva												
Heterotrissocladius	Pupa												
Orthocladius	Larva												
Psectrocladius	Larva					107	107	205	10	20			
Psectrocladius	Pupa						10						
Thienemanniella													
Thienemaniella	Larva												
Tanypodinae	Larva											89	311
Procladius				4									
Procladius	Larva					20							
Thienemannimyia		4	2	13	2								
Thienemannimyia	Larva								10	78	29	33	22
Thienemannimyia	Pupa												
Tanytarsini	Juvenile												
Tanytarsini	Larva								20	976	273	556	511
Tanytarsini	Pupa												
Micropsectra	Larva												
Micropsectra	Pupa												

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	TAIL OUTFLOW											
		02-Aug-96				19-Jul-97			19-Aug-97			16-Aug-00	
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2
Paratanytarsus	Larva												
Rheotanytarsus		83	51	94	67								
Rheotanytarsus	Larva					332	264	146	176	527	156		
Rheotanytarsus	Pupa						29						
Stempellinella													
Stempellinella	Larva					39	10		20	49	88		
Stempellinella	Pupa												
Tanytarsus		7	9	2	11								
Tanytarsus	Larva												11
Culicidae													
Anopheles	Adult							20					
Empididae	Pupa				2								
Chelifera													
Clinocera													
Ephydridae	Adult												
Simuliidae	Adult												
Prosimulium	Larva												
Prosimulium	Adult												
Simulium	Adult					20	20	68					
Simulium													
Simulium	Larva		2	2		683	527	634					44
Simulium	Pupa		2	2		381	1,698	2,323				89	56
Tabanidae													
Tabanus													
Tipulidae													
Hexatoma													
Hexatoma	Larva					10	10						
Tipula													
Tipula	Larva									20			11
Tipula	Pupa												
EPHEMEROPTERA													
Baetidae	Larva												
Baetis				2									
Baetis bicaudatus	Larva												22
Baetis tricaudatus	Larva					68							
Ephemerellidae													
Ephemerella													
Ephemerella intermis													
Leptophlebiidae													
Paraleptophlebia debilis	Larva												
GASTROPODA													
Valvata sincera sincera													
HIRUDINEA													
Piscicola salmositica													
HOMOPTERA													
Aphididae													
Aphididae	Adult												
Cicadellidae	Adult	4	4										
HYDRACARINA	Adult	27	65	45	29	29	68	59	88	146	195	256	233
HYMENOPTERA													
Braconidae	Adult							10					
LEPIDOPTERA	Larva												
MALACOSTRACA													
Gammaracanthus loricatus													
Hyallela azteca													
Pseudacanthus estuarius													
Idoteidae													
Saduria entomon													
Saduria													
NEMATODA		107	49	404	174		10	10				44	156
OLIGOCHAETA													
Enchytraeidae												11	
Lumbriculidae		71		20									
Lumbriculus													
Lumbriculus variegatus													
Naididae	Juvenile											22	11
Chaetogaster			9	20	11								22
Nais		47	38	56	62								
Tubificidae		4			4								
Tubificidae	Juvenile					49			29	98	20		
OSTRACODA	Juvenile												
Candona		36	2	25	13				59	322	98	1,133	911
Cypria													
Cypris													
PELECYPODA													
Sphaeriidae													
Sphaerium													
PISCES													
Pungitius pungitius													11
PLECOPTERA													
Nemouridae													
Nemoura	Larva					20	49	88	20	49	68	122	278
Podmosta		4		2	4								
Capnidae													
Capnia	Larva												
PROTOZOA													
Sarcodina													
PSOCOPTERA	Adult												
ROTIFERA		138		274	196								
Conochilus													
Dicranophorus				7									
Kellicottia				2									
Keratella				13	7								
Lecane				2	2								
TARDIGRADA													
Indetermined				9	11								
THYSANOPTERA	Adult												
	Larva				2								
TRICHOPTERA													
Limnephilidae													
Grensia praeterita	Larva												11
Grensia praeterita	Pupa												
Rhyacophilidae													
Rhyacophila acropedes	Larva												
TURBELLARIA													
TOTAL		**914**	**417**	**1,028**	**526**	**1,866**	**2,880**	**3,612**	**550**	**2,802**	**1,124**	**4,622**	**7,678**

P = present

Shaded rows indicate terrestrial invertebrates, adult forms of aquatic invertebrates, or non-benthic forms that were excluded from the total.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	OGAMA OUTFLOW									PATCH OUTFLOW							
		02-Aug-96					18-Jul-97		20-Aug-97			03-Aug-96					21-Aug-97	
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 3
BRYOZOA (ECTOPROCTA)																			
Indetermined Colonial	Juvenile				P	P							P		P				
Statoblast						P													
CLADOCERA																			
Bosminidae																			
Bosmina longirostris		346	7	98	1,293	25							2						
Chydoridae	Juvenile	11																	
Alona						67													
Alonella																9			
Alonella excisa																			
Chydorus sphaericus												7							
Eurycercus (*Bullatifrons*)																			
Daphniidae																			
Daphnia		123		4	45							27	36	33	78	51			
Holopediidae																			
Holopedium gibberum		2		9															
COELENTERATA																			
Hydrozoa																			
Hydra		10,042	294	274	9,643	879						4	2	2	2				
Indetermined colonial		P			P							P	P	P	P				
COLEOPTERA																			
Dytiscidae																			
Hydaticus				2															
Elmidae	Larva																		
Halplidae																			
Haliplus	Larva																		
Staphylinidae													2						
COLLEMBOLA	Adult																		
Entomobryidae	Adult																		
Hypogastruridae																			
Hypogastrura																			
Isotomidae																			
Isotoma	Adult																		
Isotoma																			
Isotomurus			2																
Isotomurus palustris						2							9	4					
Poduridae																			
Podura aquatica			13																
Sminthuridae																			
Bourletiella spinata				2															
Sminthurides			7	2															
Sminthurus	Adult										10								
COPEPODA	Nauplius					91						49							
Calanoida												154	239	152	216	94			
Canthocamptidae																			
Cyclopidae																			
Cyclopoida		491	20	85	268	190						47	25	18	13	20			
Cyclops scutifer																			
Eucyclops agilis																			
Harpacticoida		67	2		1,115							18	33	11	22	2			
DIPTERA	Adult																		
Canaceidae	Adult								10										
Ceratopogonidae																			
Bezzia	Larva																		
Chironomidae	Adult		2	4											2				
Chironomidae	Juvenile																		
Chironomidae	Larva								2,372	176	176								10
Chironomidae	Pupa						29	10	10		10								
Chironominae	Pupa																		
Chironomini	Larva																		
Chironomini	Pupa											2							
Chironomus	Larva																	20	
Dicrotendipes	Larva																		
Lauterborniella	Larva																10		
Phaenopsectra	Larva																		
Diamesinae																			
Diamesa		71																	
Diamesa	Larva								195	49	20								
Monodiamesa	Larva						10												
Potthastia	Larva							29			20								
Pseudokiefferiella	Larva																		
Pseudokiefferiella	Pupa																		
Orthocladiinae	Adult															2			
Orthocladiinae	Juvenile	10,682	256	1,215	12,854	1,026						80	633	551	1,673	49			
Orthocladiinae	Larva						10	20	1,747	215	293						78		10
Orthocladiinae	Pupa		2	2					20							2			10
Corynoneura			2	4		2							4	9	4	4			
Corynoneura	Larva																		
Corynoneura	Pupa																		
Cricotopus		9,502	163	248	10,650	410						29	232	156	375				
Cricotopus	Larva						78	78	264	49	127						20	10	49
Cricotopus	Pupa						20	29	10										
Eukiefferiella		1,820	18	89	883	2						33	120	116	361	4			
Eukiefferiella	Larva						185	20	166	49	195						29		39
Eukiefferiella	Pupa						20	29	107	39	137						10		
Euryhapsis				4															
Heterotanytarsus																			
Heterotanytarsus	Larva																		
Heterotrissocladius	Larva																		
Heterotrissocladius	Pupa																		
Orthocladius	Larva						10												
Psectrocladius	Larva						20	20	127	20	39								
Psectrocladius	Pupa																		
Thienemanniella																			
Thienemaniella	Larva						20												
Tanypodinae	Larva								156	10	20								
Procladius						2													
Procladius	Larva																		
Thienemannimyia				2	89	9							2	2	7				
Thienemannimyia	Larva								29	10	10								
Thienemannimyia	Pupa							10											
Tanytarsini	Juvenile	85	33																
Tanytarsini	Larva						10												
Tanytarsini	Pupa					31													
Micropsectra	Larva																		
Micropsectra	Pupa																		

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	OGAMA OUTFLOW										PATCH OUTFLOW							
		02-Aug-96					18-Jul-97		20-Aug-97			03-Aug-96					21-Aug-97		
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 3
Paratanytarsus	Larva																	10	
Rheotanytarsus		27,476		872	8,126	109						7	74	107	67	18			
Rheotanytarsus	Larva						332	1,113	12,952	4,577	5,017								
Rheotanytarsus	Pupa						10	20											
Stempellinella																			
Stempellinella	Larva																		
Stempellinella	Pupa																		
Tanytarsus				22	45	11						4				9			
Tanytarsus	Larva																		
Culicidae																			
Anopheles	Adult																		
Empididae	Pupa																		
Chelifera												2							
Clinocera																			
Ephydridae	Adult																		
Simuliidae	Adult																		
Prosimulium	Larva																		
Prosimulium	Adult																		
Simulium	Adult						10												
Simulium		47	2																
Simulium	Larva						2,499	1,698	20	10	10		2						
Simulium	Pupa						2,928	3,221	39		137		2						
Tabanidae																			
Tabanus																			
Tipulidae																			
Hexatoma												2							
Hexatoma	Larva																		
Tipula			4	4															
Tipula	Larva						20		20										
Tipula	Pupa																		
EPHEMEROPTERA																			
Baetidae	Larva						68	59											
Baetis						2													
Baetis bicaudatus	Larva																		
Baetis tricaudatus	Larva							10	59		20								
Ephemerellidae																			
Ephemerella			2												2				
Ephemerella intermis											10								
Leptophlebiidae																			
Paraleptophlebia debilis	Larva																		
GASTROPODA																			
Valvata sincera sincera							39	10			10								
HIRUDINEA																			
Piscicola salmositica																			
HOMOPTERA																			
Aphididae																			
Aphididae	Adult															2			
Cicadellidae	Adult																		
HYDRACARINA	Adult	317	16	85	45	13	195	468	508	488	800	2			4	9	4	10	
HYMENOPTERA																			
Braconidae	Adult																		
LEPIDOPTERA	Larva																		
MALACOSTRACA																			
Gammaracanthus loricatus																			
Hyallela azteca																			
Pseudacanthus estuarius													2		4				
Idoteidae																			
Saduria entomon																	49	10	20
Saduria												9	31	13	22	2			
NEMATODA		863	36	40	368	281	342	342			10	125	954	825	1,329	71			
OLIGOCHAETA																			
Enchytraeidae																			
Lumbriculidae																			
Lumbriculus																			
Lumbriculus variegatus					62														
Naididae	Juvenile																		
Chaetogaster		250	7	4	134	337						80	31	18	22	54			
Nais		3,138	42	279	1,400	120	20		78	39	20	13	33	60	147	4			
Tubificidae																			
Tubificidae	Juvenile		4	2		2							2				10	10	10
OSTRACODA	Juvenile																		
Candona		33	7						1,425	88	20	4	4	9	16		20		
Cypria		11										2							
Cypris												2		2		2			
PELECYPODA																			
Sphaeriidae																			
Sphaerium																			
PISCES																			
Pungitius pungitius																			
PLECOPTERA																			
Nemouridae																			
Nemoura	Larva						127	176	10	20	10								
Podmosta														2					
Capnidae																			
Capnia	Larva																		
PROTOZOA																			
Sarcodina																			
PSOCOPTERA	Adult																		
ROTIFERA		1,539			1,606	404						314	408	691	1,204				
Conochilus						45													
Dicranophorus												22							
Kellicottia		4,884			803	165						234	872	1,030	1,742				
Keratella		178				91						190	156	134	223				
Lecane												45		112	245				
TARDIGRADA																			
Indetermined					18	2						45		25	138				
THYSANOPTERA	Adult			2															
	Larva																		
TRICHOPTERA																			
Limnephilidae																			
Grensia praeterita	Larva										10								
Grensia praeterita	Pupa																		
Rhyacophilidae																			
Rhyacophila acropedes	Larva																		
TURBELLARIA																			
TOTAL		**64,402**	**914**	**3,155**	**45,432**	**3,242**	**6,992**	**7,362**	**20,314**	**5,839**	**7,131**	**466**	**2,176**	**1,918**	**4,201**	**227**	**236**	**60**	**148**

P = present

Shaded rows indicate terrestrial invertebrates, adult forms of aquatic invertebrates, or non-benthic forms that were excluded from the total.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	WINDY OUTFLOW											
		01-Aug-96					18-Jul-97			21-Aug-97			
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	
BRYOZOA (ECTOPROCTA)													
Indetermined Colonial	Juvenile												
Statoblast													
CLADOCERA													
Bosminidae													
Bosmina longirostris													
Chydoridae	Juvenile												
Alona													
Alonella													
Alonella excisa													
Chydorus sphaericus													
Eurycercus (*Bullatifrons*)					7								
Daphniidae													
Daphnia													
Holopediidae													
Holopedium gibberum													
COELENTERATA													
Hydrozoa													
Hydra			2	9		13							
Indetermined colonial													
COLEOPTERA													
Dytiscidae													
Hydaticus													
Elmidae	Larva												
Halplidae													
Haliplus	Larva												
Staphylinidae													
COLLEMBOLA	Adult												
Entomobryidae	Adult											10	
Hypogastruridae													
Hypogastrura													
Isotomidae													
Isotoma	Adult												
Isotoma													
Isotomurus													
Isotomurus palustris													
Poduridae													
Podura aquatica													
Sminthuridae													
Bourletiella spinata													
Sminthurides													
Sminthurus	Adult								10				
COPEPODA	Nauplius												
Calanoida			2	22									
Canthocamptidae													
Cyclopidae													
Cyclopoida			4										
Cyclops scutifer													
Eucyclops agilis													
Harpacticoida			7										
DIPTERA	Adult												
Canaceidae	Adult								10				
Ceratopogonidae													
Bezzia	Larva												
Chironomidae	Adult			4									
Chironomidae	Juvenile	301	31	9,170	299	256							
Chironomidae	Larva						20			146			20
Chironomidae	Pupa						10		49				
Chironominae	Pupa												
Chironomini	Larva												
Chironomini	Pupa												
Chironomus	Larva												
Dicrotendipes	Larva												
Lauterborniella	Larva												
Phaenopsectra	Larva												
Diamesinae													
Diamesa													
Diamesa	Larva												
Monodiamesa	Larva						10						
Potthastia	Larva												
Pseudokiefferiella	Larva												
Pseudokiefferiella	Pupa												
Orthocladiinae	Adult												
Orthocladiinae	Juvenile												
Orthocladiinae	Larva												
Orthocladiinae	Pupa												
Corynoneura		4		27	7	2							
Corynoneura	Larva								10				
Corynoneura	Pupa										10		
Cricotopus		4	2	65	7	31							
Cricotopus	Larva												
Cricotopus	Pupa												
Eukiefferiella		9	4	785		76							
Eukiefferiella	Larva									78	29		10
Eukiefferiella	Pupa									117	39		
Euryhapsis													
Heterotanytarsus													
Heterotanytarsus	Larva												
Heterotrissocladius	Larva												
Heterotrissocladius	Pupa												
Orthocladius	Larva												
Psectrocladius	Larva						39		10				
Psectrocladius	Pupa												
Thienemanniella				2									
Thienemaniella	Larva												
Tanypodinae	Larva												
Procladius													
Procladius	Larva												
Thienemannimyia		2		7	2	2							
Thienemannimyia	Larva										10		20
Thienemannimyia	Pupa												
Tanytarsini	Juvenile												
Tanytarsini	Larva						10			68	10		10
Tanytarsini	Pupa												
Micropsectra	Larva												
Micropsectra	Pupa												

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	WINDY OUTFLOW											
		01-Aug-96					18-Jul-97			21-Aug-97			
		Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	
Paratanytarsus	Larva												
Rheotanytarsus		9	11	54	54	20							
Rheotanytarsus	Larva												
Rheotanytarsus	Pupa												
Stempellinella				2	11								
Stempellinella	Larva												
Stempellinella	Pupa												
Tanytarsus		47	2	631	29	54							
Tanytarsus	Larva												
Culicidae													
Anopheles	Adult							10	39		10		
Empididae	Pupa			2		2							
Chelifera				25		2							
Clinocera				2									
Ephydridae	Adult												
Simuliidae	Adult					2							
Prosimulium	Larva						117	10	29				
Prosimulium	Adult												
Simulium	Adult						10						10
Simulium													
Simulium	Larva	7		2		36	351	78	39	29	29		20
Simulium	Pupa	2		20		13			10	98	68		20
Tabanidae													
Tabanus													
Tipulidae													
Hexatoma													
Hexatoma	Larva												
Tipula													
Tipula	Larva						10	39	10	10			
Tipula	Pupa								10				
EPHEMEROPTERA													
Baetidae	Larva										20		10
Baetis		4		18		36							
Baetis bicaudatus	Larva									10	20		
Baetis tricaudatus	Larva									20			
Ephemerellidae													
Ephemerella				9									
Ephemerella intermis										10			20
Leptophlebiidae													
Paraleptophlebia debilis	Larva												
GASTROPODA													
Valvata sincera sincera													
HIRUDINEA													
Piscicola salmositica													
HOMOPTERA													
Aphididae													
Aphididae	Adult								10		10		
Cicadellidae	Adult												
HYDRACARINA	Adult	25		89		16	20			20			
HYMENOPTERA													
Braconidae	Adult												
LEPIDOPTERA	Larva												
MALACOSTRACA													
Gammaracanthus loricatus													
Hyallela azteca													
Pseudacanthus estuarius													
Idoteidae													
Saduria entomon							10						20
Saduria													
NEMATODA		49	511	1,878	154	214				20			
OLIGOCHAETA													
Enchytraeidae													
Lumbriculidae													
Lumbriculus													
Lumbriculus variegatus													
Naididae	Juvenile												
Chaetogaster		4		134	20	27							
Nais		185	27	1,385	42	136				59	10		39
Tubificidae		2											
Tubificidae	Juvenile						10	10	10	10			
OSTRACODA	Juvenile												
Candona			2		4								
Cypria													
Cypris			4										
PELECYPODA													
Sphaeriidae													
Sphaerium													
PISCES													
Pungitius pungitius													
PLECOPTERA													
Nemouridae													
Nemoura	Larva						10	10	39	29			
Podmosta				31									
Capnidae													
Capnia	Larva						10						
PROTOZOA													
Sarcodina													
PSOCOPTERA	Adult												
ROTIFERA		2	11	1,784	2	13							
Conochilus													
Dicranophorus													
Kellicottia		2		1,360	9	9							
Keratella				45									
Lecane				335									
TARDIGRADA													
Indetermined		4	11	45									
THYSANOPTERA	Adult												
	Larva												
TRICHOPTERA													
Limnephilidae													
Grensia praeterita	Larva												
Grensia praeterita	Pupa												
Rhyacophilidae													
Rhyacophila acropedes	Larva												
TURBELLARIA				2									
TOTAL		**660**	**615**	**14,392**	**629**	**937**	**627**	**147**	**226**	**724**	**255**		**189**

P = present

Shaded rows indicate terrestrial invertebrates, adult forms of aquatic invertebrates, or non-benthic forms that were excluded from the total.

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	LITTLE ROBERTS OUTFLOW									PELVIC OUTFLOW								
		03-Aug-96		19-Jul-97			19-Aug-97			19-Jul-97		21-Aug-97			16-Aug-00		
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
BRYOZOA (ECTOPROCTA)																	
Indetermined Colonial Statoblast	Juvenile																
CLADOCERA																	
Bosminidae																	
Bosmina longirostris																	
Chydoridae	Juvenile																
Alona																	
Alonella																	
Alonella excisa															556	444	
Chydorus sphaericus															333		
Eurycercus (*Bullatifrons*)																	
Daphniidae																	
Daphnia																	
Holopediidae																	
Holopedium gibberum																	
COELENTERATA																	
Hydrozoa																	
Hydra		38	4					10							56	89	56
Indetermined colonial																	
COLEOPTERA																	
Dytiscidae																	
Hydaticus																	
Elmidae	Larva												10				
Halplidae																	
Haliplus	Larva																
Staphylinidae																	
COLLEMBOLA	Adult																
Entomobryidae	Adult																
Hypogastruridae																	
Hypogastrura																	
Isotomidae																	
Isotoma	Adult																
Isotoma																	
Isotomurus																	
Isotomurus palustris																	
Poduridae																	
Podura aquatica																	
Sminthuridae																	
Bourletiella spinata																	
Sminthurides																	
Sminthurus	Adult																
COPEPODA	Nauplius																
Calanoida																	
Canthocamptidae															111	333	
Cyclopidae															222	667	33
Cyclopoida																	
Cyclops scutifer																	
Eucyclops agilis															22	100	22
Harpacticoida																	
DIPTERA	Adult																
Canaceidae	Adult																
Ceratopogonidae																	
Bezzia	Larva													10			
Chironomidae	Adult			10													
Chironomidae	Juvenile	33															
Chironomidae	Larva			10	673	29	98	10	88	68		508	556	283	2,556	4,889	2,022
Chironomidae	Pupa	4		10			20		10	59							
Chironominae	Pupa																
Chironomini	Larva																
Chironomini	Pupa																
Chironomus	Larva												20	10			
Dicrotendipes	Larva															67	
Lauterborniella	Larva																
Phaenopsectra	Larva											10					
Diamesinae																	
Diamesa																	
Diamesa	Larva											20					
Monodiamesa	Larva									10		10	10	10			
Potthastia	Larva			20				10				29	20			11	
Pseudokiefferiella	Larva																11
Pseudokiefferiella	Pupa																
Orthocladiinae	Adult																
Orthocladiinae	Juvenile																
Orthocladiinae	Larva			10	29					49	20	390	215	234	56	111	678
Orthocladiinae	Pupa					10				39		156					
Corynoneura		2															
Corynoneura	Larva									10					111	122	33
Corynoneura	Pupa													10	11		
Cricotopus		4	2														
Cricotopus	Larva			10	10		39	20	166	234	20	68	20	10			
Cricotopus	Pupa									20		29	20	20			
Eukiefferiella																	
Eukiefferiella	Larva					29	10			107	59		10	10	56	11	56
Eukiefferiella	Pupa						195	78	98	195	20				22		11
Euryhapsis																	
Heterotanytarsus																	
Heterotanytarsus	Larva																
Heterotrissocladius	Larva			10		20											
Heterotrissocladius	Pupa			10													
Orthocladius	Larva														33	33	156
Psectrocladius	Larva			39		29	20			68	59	20	39	20			
Psectrocladius	Pupa				10	10											
Thienemanniella																	
Thienemaniella	Larva																
Tanypodinae	Larva											49	29	10	667	2,078	78
Procladius		2															
Procladius	Larva																
Thienemannimyia		2															
Thienemannimyia	Larva								10	10	20	78	127	49	156	189	22
Thienemannimyia	Pupa								10								
Tanytarsini	Juvenile																
Tanytarsini	Larva				10		10					39	244	195	1,778	4,778	311
Tanytarsini	Pupa															11	
Micropsectra	Larva									10					44	56	
Micropsectra	Pupa														22	100	

Appendix C7. Benthic invertebrate abundance (organisms/m^2) in Doris Hinge streams, 1996-2000.

Taxa / Species	Stage	LITTLE ROBERTS OUTFLOW								PELVIC OUTFLOW							
		03-Aug-96		19-Jul-97			19-Aug-97			19-Jul-97		21-Aug-97			16-Aug-00		
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Paratanytarsus	Larva										20					22	
Rheotanytarsus																	
Rheotanytarsus	Larva									312	1,171	1,269	205	332		78	467
Rheotanytarsus	Pupa									88	39						
Stempellinella																	
Stempellinella	Larva						10			20		29	342	166	1,333	1,222	
Stempellinella	Pupa																
Tanytarsus																	
Tanytarsus	Larva														222	567	11
Culicidae																	
Anopheles	Adult				10					10	10						
Empididae	Pupa																
Chelifera																	
Clinocera																	
Ephydridae	Adult																
Simuliidae	Adult																
Prosimulium	Larva			166	29	49				11,517	22,058	10					
Prosimulium	Adult																
Simulium	Adult							10		20							
Simulium																	
Simulium	Larva							10		15,069	16,397	10	10				11
Simulium	Pupa									7,359	27,914	78		10			11
Tabanidae																	
Tabanus																	
Tipulidae																	
Hexatoma																	
Hexatoma	Larva																
Tipula		2															
Tipula	Larva										10	20	49	20	33	67	
Tipula	Pupa																
EPHEMEROPTERA																	
Baetidae	Larva						10	10	20	117							
Baetis																	
Baetis bicaudatus	Larva					10											
Baetis tricaudatus	Larva																
Ephemerellidae																	
Ephemerella																	
Ephemerella intermis																	
Leptophlebiidae																	
Paraleptophlebia debilis	Larva																
GASTROPODA																	
Valvata sincera sincera														10			
HIRUDINEA																	
Piscicola salmositica															11		
HOMOPTERA																	
Aphididae																	
Aphididae	Adult																
Cicadellidae	Adult																
HYDRACARINA	Adult	4		39	10		195	107	49	49	39	185	371	49	178	22	22
HYMENOPTERA																	
Braconidae	Adult																
LEPIDOPTERA	Larva									10							
MALACOSTRACA																	
Gammaracanthus loricatus																	11
Hyallela azteca																	
Pseudacanthus estuarius																	
Idoteidae																	
Saduria entomon																	
Saduria																	
NEMATODA		7	7	10	10					88	20			10	133	111	
OLIGOCHAETA																	
Enchytraeidae																	
Lumbriculidae																	
Lumbriculus								10							11		
Lumbriculus variegatus																	
Naididae	Juvenile																
Chaetogaster		2													111		
Nais		18	7				39		39					68	11		11
Tubificidae																	
Tubificidae	Juvenile				20					10		10				33	
OSTRACODA	Juvenile																
Candona		2			10	29	20		49	59		869	322	1,161	1,000	1,333	11
Cypria																	
Cypris															33		
PELECYPODA																	
Sphaeriidae																	
Sphaerium										10							
PISCES															11		
Pungitius pungitius																	
PLECOPTERA																	
Nemouridae																	
Nemoura	Larva						10	39	10	29			10				
Podmosta		27															
Capnidae																	
Capnia	Larva																
PROTOZOA																	
Sarcodina																	
PSOCOPTERA	Adult																
ROTIFERA																	
Conochilus																	
Dicranophorus																	
Kellicottia																	
Keratella																	
Lecane																	
TARDIGRADA																	
Indetermined																	
THYSANOPTERA	Adult																
	Larva																
TRICHOPTERA																	
Limnephilidae																	
Grensia praeterita	Larva															11	
Grensia praeterita	Pupa															22	
Rhyacophilidae																	
Rhyacophila acropedes	Larva																
TURBELLARIA																	
TOTAL		**149**	**20**	**334**	**811**	**215**	**676**	**304**	**549**	**35,606**	**67,866**	**3,886**	**2,629**	**2,697**	**8,756**	**16,367**	**3,989**

P = present

Appendix C8. Abundance (organisms/m^2) and percent composition of main taxa of benthic invertebrates in Doris Hinge streams, 1996-2000.

Stream	Sample Date	No. Repl.	Coelenterata			Nematoda			Oligochaeta			Ostracoda			Hydracarina			Simuliidae			Unident. Chironomidae		
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Doris Outflow	25-Aug-96	4	**8**	1	*0.7*	**100**	67	*8.0*	**1**	1	*0.0*	**7**	7	*0.5*	**213**	97	*17.0*	**1**	1	*0.0*	**251**	152	*20.0*
	19-Jul-97	3				**3**	3	*0.1*							**94**	21	*3.4*	**2,538**	331	*91.1*			
	20-Aug-97	1	**49**		*6.6*				**30**		*4.0*	**39**		*5.3*	**264**		*35.5*	**10**		*1.3*	**235**		*31.6*
	16-Aug-00	3	**18,652**	5,499	*9.0*	**4**	4	*0.0*	**189**	46	*0.1*	**241**	165	*0.1*	**5,170**	1,793	*2.5*				**171,519**	8,157	*82.5*
Tail Outflow	2-Aug-96	4	**8**	4	*1.2*	**183**	78	*25.4*	**86**	16	*11.9*	**19**	7	*2.6*	**41**	9	*5.7*	**2**	1	*0.3*	**217**	78	*30.1*
	19-Jul-97	3				**7**	3	*0.2*	**16**	16	*0.6*				**52**	12	*1.9*	**2,082**	551	*74.7*	**20**	6	*0.7*
	19-Aug-97	3							**49**	25	*3.3*	**159**	82	*10.7*	**143**	31	*9.6*				**169**	81	*11.4*
	16-Aug-00	2	**6**	6	*0.1*	**100**	56	*1.6*	**33**	0	*0.5*	**1,022**	111	*16.6*	**244**	11	*4.0*	**94**	6	*1.5*	**2,556**	1,244	*41.6*
Ogama Outflow	2-Aug-96	5	**4,226**	2,296	*18.0*	**318**	151	*1.4*	**1,156**	618	*4.9*	**10**	9	*0.0*	**95**	57	*0.4*	**10**	9	*0.0*			
	18-Jul-97	2				**342**		*4.8*	**10**	10	*0.1*				**332**	137	*4.6*	**5,173**	254	*72.1*	**20**	10	*0.3*
	20-Aug-97	3				**3**	3	*0.0*	**46**	17	*0.4*	**511**	458	*4.6*	**599**	101	*5.4*	**72**	40	*0.6*	**915**	734	*8.2*
Patch Outflow	3-Aug-96	5	**2**	1	*0.1*	**661**	244	*36.8*	**93**	20	*5.2*	**8**	2	*0.5*	**4**	1	*0.2*	**1**	1	*0.0*			
	21-Aug-97	2							**10**	0	*6.6*	**7**	7	*4.4*	**3**	3	*2.2*				**3**	3	*2.2*
Windy Outflow	1-Aug-96	5	**5**	3	*0.1*	**561**	338	*16.3*	**392**	283	*11.4*	**2**	1	*0.1*	**26**	17	*0.8*	**16**	9	*0.5*	**2,011**	1,790	*58.4*
	18-Jul-97	3							**10**	0	*2.9*				**7**	7	*2.0*	**211**	129	*63.5*	**26**	14	*7.8*
	21-Aug-97	3				**7**	7	*1.7*	**39**	17	*10.0*				**7**	7	*1.7*	**88**	26	*22.6*	**55**	46	*14.2*
Little Roberts	3-Aug-96	2	**21**	17	*25.0*	**7**	0	*7.9*	**13**	7	*15.8*	**1**	1	*1.3*	**2**	2	*2.6*				**19**	19	*22.4*
Outflow	19-Jul-97	3				**7**	3	*1.4*	**7**	7	*1.4*	**13**	9	*2.9*	**16**	12	*3.6*	**81**	43	*18.0*	**241**	216	*53.1*
	19-Aug-97	3	**3**	3	*0.6*				**29**	10	*5.7*	**23**	14	*4.5*	**117**	43	*23.0*	**3**	3	*0.6*	**75**	33	*14.7*
Pelvic Outflow	19-Jul-97	2				**54**	34	*0.1*	**5**	5	*0.0*	**30**	30	*0.1*	**44**	5	*0.1*	**50,157**	16,211	*96.9*	**64**	64	*0.1*
	21-Aug-97	3				**3**	3	*0.1*	**26**	21	*0.8*	**784**	246	*25.5*	**202**	93	*6.6*	**39**	29	*1.3*	**449**	84	*14.6*
	16-Aug-00	3	**67**	11	*0.7*	**81**	41	*0.8*	**59**	38	*0.6*	**793**	400	*8.2*	**74**	52	*0.8*	**7**	7	*0.1*	**3,156**	880	*32.5*

Site	Sample Date	No. Repl.	Tanypodinae			Tanytarsini			Chironomini			Orthocladinae			Diamesinae			Remainder			All Taxa [a]	
			Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Doris Outflow	25-Aug-96	4	**55**	14	*4.4*	**17**	8	*1.4*				**564**	256	*44.9*	**35**	28	*2.8*	**4**	2	*0.4*	**1,255**	539
	19-Jul-97	3	**13**	13	*0.5*	**29**	6	*1.1*				**62**	3	*2.2*	**33**	7	*1.2*	**13**	9	*0.5*	**2,785**	325
	20-Aug-97	1				**10**		*1.3*				**88**		*11.8*				**20**		*2.6*	**743**	
	16-Aug-00	3	**5,644**	2,120	*2.7*	**3,337**	1,115	*1.6*	**37**	37	*0.0*	**3,052**	314	*1.5*	**4**	4	*0.0*	**15**	4	*0.0*	**207,863**	3,807
Tail Outflow	2-Aug-96	4	**7**	4	*0.9*	**81**	8	*11.2*				**40**	6	*5.5*				**37**	9	*5.2*	**721**	148
	19-Jul-97	3	**7**	7	*0.2*	**273**	66	*9.8*				**185**	34	*6.7*	**52**	18	*1.9*	**91**	20	*3.3*	**2,786**	506
	19-Aug-97	3	**39**	20	*2.6*	**761**	405	*51.1*				**94**	40	*6.3*	**13**	9	*0.9*	**62**	16	*4.1*	**1,490**	676
	16-Aug-00	2	**228**	106	*3.7*	**539**	17	*8.8*				**800**	22	*13.0*				**528**	228	*8.6*	**6,150**	1,528
Ogama Outflow	2-Aug-96	5	**21**	17	*0.1*	**7,362**	5,273	*31.4*				**9,967**	5,417	*42.5*	**14**	14	*0.1*	**250**	221	*1.1*	**23,429**	13,207
	18-Jul-97	2	**5**	5	*0.1*	**743**	391	*10.3*				**280**	84	*3.9*	**20**	10	*0.3*	**255**	0	*3.5*	**7,177**	185
	20-Aug-97	3	**78**	54	*0.7*	**7,515**	2,721	*67.7*				**1,201**	632	*10.8*	**95**	50	*0.9*	**60**	21	*0.5*	**11,095**	4,625
Patch Outflow	3-Aug-96	5	**2**	1	*0.1*	**57**	17	*3.2*				**888**	423	*49.4*				**80**	30	*4.5*	**1,798**	713
	21-Aug-97	2				**3**	3	*2.2*	**10**	6	*6.6*	**85**	38	*57.2*				**26**	12	*17.6*	**148**	51
Windy Outflow	1-Aug-96	5	**3**	1	*0.1*	**185**	126	*5.4*				**205**	169	*6.0*				**40**	24	*1.2*	**3,447**	2,737
	18-Jul-97	3				**3**	3	*1.0*				**20**	11	*5.9*	**3**	3	*1.0*	**53**	9	*16.0*	**333**	149
	21-Aug-97	3	**10**	6	*2.5*	**29**	20	*7.5*				**94**	54	*24.3*				**60**	10	*15.3*	**389**	168
Little Roberts	3-Aug-96	2	**2**	2	*2.6*							**4**	2	*5.3*				**14**	14	*17.1*	**85**	65
Outflow	19-Jul-97	3				**3**	3	*0.7*				**75**	14	*16.5*	**7**	7	*1.4*	**3**	3	*0.7*	**453**	182
	19-Aug-97	3	**7**	7	*1.3*	**7**	7	*1.3*				**209**	55	*40.9*	**3**	3	*0.6*	**33**	9	*6.4*	**510**	109
Pelvic Outflow	19-Jul-97	2	**15**	5	*0.0*	**830**	400	*1.6*				**450**	272	*0.9*	**5**	5	*0.0*	**83**	73	*0.2*	**51,736**	16,130
	21-Aug-97	3	**114**	29	*3.7*	**940**	200	*30.6*	**13**	3	*0.4*	**424**	120	*13.8*	**33**	14	*1.1*	**43**	14	*1.4*	**3,071**	408
	16-Aug-00	3	**1,063**	637	*11.0*	**3,674**	1,750	*37.9*	**22**	22	*0.2*	**500**	217	*5.2*	**7**	4	*0.1*	**200**	124	*2.1*	**9,704**	3,604

[a]Terrestrial animals (e.g., adult Culicidae = mosquitoes) were excluded from these data, but not from Rescan's original reports. In addition, non-benthic forms (e.g., water fleas and most copepods) were removed from statistical analyses. Due to rounding, total numbers may not match the sum of the major taxonomic groups.

Appendix C9. Marine benthic invertebrate abundance (organisms/m^2) in Roberts Bay, 1997-1998.

Taxa/Species	Stage	STATION 1						STATION 3					STATION 5					
		23-Aug-97 19 m depth			20-Jul-98 15.5 m depth			23-Aug-97 9.5 m depth		20-Jul-98 10.4 m depth			23-Aug-97 0.8 m depth			21-Jul-98 1.2 m depth		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
AMPHIPODA	Juvenile					89	133			133	44	44						
Atylus tridens					222													
Dexamonica reduncans		400	889		44		222											
Eusirus		44																
Orchomene					267	89	44											
Paramoera					44		44											
Pontoporeia femorata		489	1,067		4	44	889	711	1,111	2,222	2,444	3,778				178		
Westwoodilla caecula						44												
CNIDARIA						44	178			44		44						44
Pachycerianthus fimbriatus?			178					44	44									
Stauromedusae?		89																
COPEPODA																		
Harpacticoida																44		
CUMACEA																		
Bathycuma			1,067	89	89													
Diastylis (abbotti?)		3,377	9,066	3,200	3,733	489	6,933	533	178	311	444	978				89		
Leucon					44	133	489											
DIPTERA																		
Chironomidae								44										
Chironomidae	Larva																	44
Chironomidae	Pupa					44											44	
Tanytarsini																		
Rheotanytarsus	Larva												44					
Culicidae	Adult																	44
Muscidae?	Pupa																44	
ECHINODERMATA																		
Echinoidea																		
Strongylocentrotus droebachiensis					44													
Holothuroidea	damaged									44		44						
Ophiuroidea	damaged						133											
GASTROPODA		44																
Haminoe (vesicula?)					356	133	756			133	133	178						
Phyline bakeri			533															
Retusa obtusa		133		44	178	89	133	133										
Tachyrhynchus erosus						44	356											
HYMENOPTERA																		
Thysanoptera																		44
ISOPODA																		
Ianiropsis (*kincaidai* ?)		133			89	311	89											
Saduria entomon											44		133	89	133	89		44
NEMATODA		755	16,354	1,022	356	267	711	267	356	267			400	578	5,022	133		44
NEMERTEA																		
Micrura ?		444	356	311	267	311	222											
OLIGOCHAETA	Juvenile														44			
Enchytraeidae																89	44	
OSTRACODA		44	889		44	1,867	533											
POLYCHAETA	Juvenile				44													
Ampharetidae																		
Amphisamytha							44											
Amphictenidae																		
Pectinaria granulata (4)		933	1,422	44	44	89	44											
Capitellidae																		
Mediomastus					44	89	178			133	44	44						
Cirratulidae		1,644	8,532	2,222														

Appendix C9. Marine benthic invertebrate abundance (organisms/m^2) in Roberts Bay, 1997-1998.

Taxa/Species	Stage	STATION 1						STATION 3					STATION 5					
		23-Aug-97 19 m depth			20-Jul-98 15.5 m depth			23-Aug-97 9.5 m depth		20-Jul-98 10.4 m depth			23-Aug-97 0.8 m depth			21-Jul-98 1.2 m depth		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Cirratulidae	damaged				2,489	289	4,133			1,511	12	533						
Cossuridae																		
Cossura (longicirrata?)		400	178	533														
Cossura longocirrata ?					356	44	222			178		44						
Flabelligeridae (Brada sp?)					89	178	89			89	44	89						
Brada? (5)		44		89														
Lumbrineridae																		
Lumbrineris (fragilis?)			178	44														
Lumbrineris fragilis ?					89	44	178											
Maldanidae (Euclymenininae)					89		44											
Maldanidae dam (2)		44		44														
Nephytidae																		
Nephthys ciliata (6)		44				44												
Nephthys cornuta (1)		14,887	22,042	11,510	4,267	5,778	7,333	6,755	5,555	644	2,133	4,622	222	178	222	667		
Orbiniidae																		
Leitoscoloplos pugettensis (1,3)		1,333	4,444	1,022	44	133		711	178	889	667	122					89	
Paraonidae																		
Aricidea lopezi						44	44				44							
Paranonella spinifera (2)		1,067	178	44	844	222	578		311	578	222	178						
Pholodidae																		
Pholoides asperus		400	3,911	311														
Pholoe minuta					356	133	16									44		
Phyllodocidae																		
Eteone longa		44																
Polynoidae		44																
Polynoidae dam					444	578	178			44		133						
Eunoe			178															
Syllidae																		
Autolytus					89	89	267										44	
Spionidae							44											
Laonice cf cirrata					311	178	267				44					44	178	
Polydora		44																
Prionospio?			533	133														
PRIAPULIDA																		
Priapulus caudata					44	44												
PELECYPODA		89	178	133														
Astarte borealis #6			533	311	44	89												
Astarte subequilatera #5		489	889	311	222	178	356	44	89	222	533	267						
Axinopsida serricata						44	89											
Clinocardium ciliatum #4								44										
Crenella faba #2				44	44			44										
Limopsis							89											
Lyonsia ?						44												
Macoma inquinata #1			533			356	178	44	44	89	44	89					1,156	44
Musculus discors						133	178											
Portlandia arctica #3								755	489									
Thyasira cf flexuosa					44	89												
Yoldia myalis				89	44		89			89	178	44						
Unidentified	Juvenile				178	1,733	533			222	44	44				133		
TANAIDACEA																		
Leptognahia gracilis			356	133	89	311	267											
TOTAL		**27,464**	**74,481**	**21,687**	**16,093**	**14,956**	**27,305**	**10,132**	**8,355**	**7,844**	**7,123**	**11,278**	**800**	**844**	**5,422**	**1,511**	**1,556**	**222**

? = Identification uncertain

NOTE: Shaded rows indicate terrestrial invertebrates or adult forms of aquatic invertebrates that were excluded from the total.

Appendix C10. Abundance (organisms/m^2) and percent composition of main taxa of benthic invertebrates in Roberts Bay, 1997-1998.

Site	Depth (m)	Sample Date	No. Repl.	Nematoda			Polychaeta			Ostracoda			Cumacea		
				Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%
Station 1	19.0	23-Aug-97	3	**6,044**	5,156	*14.7*	**26,175**	7,841	*63.5*	**311**	289	*0.8*	**5,762**	2,363	*14.0*
	15.5	20-Jul-98	3	**444**	136	*2.3*	**10,398**	1,701	*53.5*	**815**	545	*4.2*	**3,970**	1,964	*20.4*
Station 3	9.5	23-Aug-97	2	**311**	44	*3.4*	**6,755**	711	*73.1*				**356**	178	*3.8*
	10.4	20-Jul-98	3	**89**	89	*1.0*	**4,348**	751	*49.7*				**578**	204	*6.6*
Station 5	0.8	23-Aug-97	3	**2,000**	1,512	*84.9*	**207**	15	*8.8*						
	1.2	21-Jul-98	3	**59**	39	*5.4*	**356**	219	*32.4*						

Site	Depth (m)	Sample Date	No. Repl.	Amphipoda			Gastropoda			Pelecypoda			Remaining Taxa			All Taxa[a]	
				Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE	%	Mean	SE
Station 1	19.0	23-Aug-97	3	**963**	565	*2.3*	**252**	146	*0.6*	**1,200**	475	*2.9*	**504**	104	*1.2*	**41,211**	16,719
	15.5	20-Jul-98	3	**727**	316	*3.7*	**1,585**	604	*8.1*	**681**	292	*3.5*	**830**	157	*4.3*	**19,451**	3,941
Station 3	9.5	23-Aug-97	2	**911**	200	*9.9*	**67**	67	*0.7*	**778**	156	*8.4*	**67**	22	*0.7*	**9,244**	889
	10.4	20-Jul-98	3	**2,889**	468	*33.0*	**148**	15	*1.7*	**622**	103	*7.1*	**74**	15	*0.8*	**8,748**	1,282
Station 5	0.8	23-Aug-97	3										**148**	30	*6.3*	**2,355**	1,533
	1.2	21-Jul-98	3	**59**	59	*5.4*	**444**	356	*40.5*				**178**	26	*16.2*	**1,096**	418

[a]Terrestrial animals (e.g., adult Culicidae = mosquitoes) were excluded from these data, but not from Rescan's original reports.

Appendix D1. Catch and catch-per-unit-effort (CPUE) for fish captured in gill nets in Doris Hinge lakes, 1995-2000.

Lake	Year	Parameter	Lake trout	Lake whitefish	Broad whitefish	Cisco	Least cisco	Arctic char	All Species
Doris	*1995*	*Number captured*	*1*	*7*		*3*			*11*
	1996	*Number captured*	*4*	*20*		*18*			*42*
	1997	*Number captured*	*56*	*126*		*338*			*520*
	1997	CPUE (fish/100m^2/24h)							
		Mean	**23.7**	**52.6**		**150.6**			**226.9**
		SD	27.5	29.9		132.1			151.9
		Min	0.0	0.0		34.2			45.6
		Max	112.4	109.3		709.7			833.2
Tail	*1995*	*Number captured*	*13*						*13*
	1996	*Number captured*	*16*						*16*
	2000	*Number captured*	*134*						*134*
	2000	CPUE (fish/100m^2/24h)							
		Mean	**85.6**						**85.6**
		SD	61.6						61.6
		Min	0.0						0.0
		Max	229.5						229.5
Ogama	*1996*	*Number captured*	*4*	*29*		*5*			*38*
Patch	*1995*	*Number captured*	*2*						*2*
	1996	*Number captured*	*14*	*3*		*5*			*22*
	1997	*Number captured*	*54*	*78*		*31*			*163*
	1997	CPUE (fish/100m^2/24h)							
		Mean	**24.3**	**35.7**		**16.0**			**75.9**
		SD	18.0	33.2		31.9			53.5
		Min	0.0	0.0		0.0			0.0
		Max	69.0	131.1		141.2			201.8
Windy	*1996*	*Number captured*	*19*	*2*					*21*
	1997	*Number captured*	*58*			*5*			*63*
	1997	CPUE (fish/100m^2/24h)							
		Mean	**19.7**			**1.6**			**21.3**
		SD	16.9			7.5			19.3
		Min	0.0			0.0			0.0
		Max	56.2			42.0			73.4
Little Roberts	*2000*	*Number captured*	*21*	*7*	*1*		*6*	*29*	*64*
	2000	CPUE (fish/100m^2/24h)							
		Mean	**15.3**	**4.6**	**0.7**		**3.6**	**21.2**	**45.5**
		SD	17.8	20.5	3.1		9.1	27.8	57.9
		Min	0.0	0.0	13.8		0.0	0.0	0.0
		Max	58.3	91.8	13.8		29.1	91.8	262.3
Pelvic	*1998*	*Number captured*	*32*	*200*		*158*			*390*
	1998	CPUE (fish/100m^2/24h)							
		Mean	**28.5**	**203.0**		**168.5**			**400.1**
		SD	29.1	86.5		154.6			153.5
		Min	0.0	47.7		32.8			196.7
		Max	108.5	403.5		693.2			786.9

NOTE: CPUE values (for 3.8 cm mesh size) are provided only for 1997-2000. Because of differences in mesh sizes used and incomplete effort data for 1995 and 1996, CPUE values for these years are not comparable to 1997-2000 data.

Appendix D2. Raw data for catch and CPUE (fish/100m^2/24h) in index gill net sets (3.8 cm mesh size) in Doris Hinge lakes, 1997-2000.

Lake	Set #	Date	Set Time	Lift Time	Effort (min)	Arctic char		Lake trout		Lake whitefish		Broad whitefish		Cisco		Least cisco		All Species	
						n	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE
Doris	GN1	13-Aug-97	11:20	12:30	70			*6*	112.4	*2*	37.5			*4*	74.9			*12*	224.8
	GN2	13-Aug-97	11:25	13:05	100			*1*	13.1	*2*	26.2			*3*	39.3			*6*	78.7
	GN3	13-Aug-97	11:30	13:35	125			*3*	31.5	*2*	21.0			*5*	52.5			*10*	104.9
	GN4	13-Aug-97	11:35	14:10	155			*2*	16.9	*3*	25.4			*6*	50.8			*11*	93.1
	GN5	13-Aug-97	14:35	15:30	55									*7*	166.9			*7*	166.9
	GN6	13-Aug-97	14:40	15:55	75			*1*	17.5	*4*	69.9			*16*	279.8			*21*	367.2
	GN7	13-Aug-97	14:45	16:40	115					*1*	11.4			*3*	34.2			*4*	45.6
	GN8	16-Aug-97	9:40	10:40	60			*1*	21.9	*5*	109.3			*8*	174.9			*14*	306.0
	GN9	16-Aug-97	9:50	11:15	85			*1*	15.4	*3*	46.3			*6*	92.6			*10*	154.3
	GN10	16-Aug-97	9:55	11:50	115					*4*	45.6			*13*	148.3			*17*	193.9
	GN11	16-Aug-97	10:00	12:30	150			*4*	35.0	*4*	35.0			*10*	87.4			*18*	157.4
	GN12	16-Aug-97	13:00	14:30	90			*1*	14.6	*1*	14.6			*10*	145.7			*12*	174.9
	GN13	16-Aug-97	13:05	14:55	110			*1*	11.9	*6*	71.5			*11*	131.1			*18*	214.6
	GN14	16-Aug-97	13:10	15:20	130			*10*	100.9	*4*	40.4			*20*	201.8			*34*	343.0
	GN15	16-Aug-97	13:15	16:05	170			*1*	7.7	*5*	38.6			*12*	92.6			*18*	138.9
	GN16	18-Aug-97	9:50	11:30	100			*2*	26.2	*2*	26.2			*11*	144.3			*15*	196.7
	GN17	18-Aug-97	9:55	11:55	120					*8*	87.4			*10*	109.3			*18*	196.7
	GN18	18-Aug-97	10:00	12:30	150			*1*	8.7	*3*	26.2			*12*	104.9			*16*	139.9
	GN19	18-Aug-97	10:05	13:05	180			*3*	21.9	*11*	80.1			*8*	58.3			*22*	160.3
	GN20	18-Aug-97	13:35	15:05	90			*2*	29.1	*3*	43.7			*6*	87.4			*11*	160.3
	GN21	18-Aug-97	13:40	15:25	105			*3*	37.5	*6*	74.9			*11*	137.4			*20*	249.8
	GN22	18-Aug-97	13:45	16:00	135			*1*	9.7	*7*	68.0			*11*	106.9			*19*	184.6
	GN23	18-Aug-97	13:50	16:35	165			*7*	55.6	*8*	63.6			*32*	254.3			*47*	373.6
	GN24	22-Aug-97	16:15	17:20	65					*5*	100.9			*9*	181.6			*14*	282.5
	GN25	22-Aug-97	16:20	17:45	85			*2*	30.9	*6*	92.6			*46*	709.7			*54*	833.2
	GN26	22-Aug-97	16:25	18:50	145			*1*	9.0	*10*	90.4			*34*	307.5			*45*	407.0
	GN27	22-Aug-97	16:30	19:50	200			*2*	13.1	*11*	72.1			*14*	91.8			*27*	177.0
	Total				**3145**			***56***		***126***				***338***				***520***	
	Mean CPUE								**23.7**		**52.6**				**150.6**				**226.9**
	Standard Deviation								**27.5**		**29.9**				**132.1**				**151.9**
Tail	GN1	17-Aug-00	10:05	11:00	55			*2*	47.7									*2*	47.7
	GN2	17-Aug-00	10:15	11:30	75			*4*	69.9									*4*	69.9
	GN3	17-Aug-00	11:30	12:50	80			*4*	65.6									*4*	65.6
	GN4	17-Aug-00	11:55	13:20	85														
	GN5	17-Aug-00	13:10	14:30	80			*2*	32.8									*2*	32.8
	GN6	17-Aug-00	13:30	15:00	90			*2*	29.1									*2*	29.1
	GN7	17-Aug-00	14:55	16:30	95			*2*	27.6									*2*	27.6
	GN8	17-Aug-00	15:10	17:00	110			*4*	47.7									*4*	47.7
	GN9	18-Aug-00	9:00	10:15	75			*4*	69.9									*4*	69.9
	GN10	18-Aug-00	9:10	10:45	95			*13*	179.5									*13*	179.5
	GN11	18-Aug-00	10:40	12:15	95			*7*	96.6									*7*	96.6
	GN12	18-Aug-00	11:25	12:45	80			*14*	229.5									*14*	229.5
	GN13	18-Aug-00	12:20	14:00	100			*3*	39.3									*3*	39.3
	GN14	18-Aug-00	13:30	14:50	80			*7*	114.8									*7*	114.8
	GN15	18-Aug-00	14:10	15:20	70			*9*	168.6									*9*	168.6
	GN16	18-Aug-00	15:15	16:20	65			*4*	80.7									*4*	80.7
	GN17	18-Aug-00	15:55	16:35	40			*5*	163.9									*5*	163.9
	GN18	19-Aug-00	9:15	11:00	105			*6*	74.9									*6*	74.9
	GN19	19-Aug-00	9:25	11:30	125			*8*	83.9									*8*	83.9
	GN20	19-Aug-00	11:20	12:50	90			*8*	116.6									*8*	116.6
	GN21	19-Aug-00	12:00	13:35	95			*15*	207.1									*15*	207.1
	GN22	19-Aug-00	13:25	15:10	105			*4*	50.0									*4*	50.0
	GN23	19-Aug-00	14:15	15:35	80			*4*	65.6									*4*	65.6
	GN24	19-Aug-00	15:30	16:20	50			*3*	78.7									*3*	78.7
	GN25	19-Aug-00	15:45	16:25	40														
	Total				**2060**			***134***										***134***	
	Mean CPUE								**85.6**										**85.6**
	Standard Deviation								**61.6**										**61.6**

Appendix D2. Raw data for catch and CPUE (fish/100m^2/24h) in index gill net sets (3.8 cm mesh size) in Doris Hinge lakes, 1997-2000.

Lake	Set #	Date	Set Time	Lift Time	Effort (min)	Arctic char		Lake trout		Lake whitefish		Broad whitefish		Cisco		Least cisco		All Species	
						n	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE
Patch	GN1	20-Aug-97	9:10	10:10	60			*1*	21.9	*2*	43.7							*3*	65.6
	GN2	20-Aug-97	9:15	10:25	70			*2*	37.5									*2*	37.5
	GN3	20-Aug-97	9:15	10:35	80			*1*	16.4	*4*	65.6							*5*	82.0
	GN4	20-Aug-97	9:20	10:50	90			*3*	43.7	*9*	131.1			*1*	14.6			*13*	189.4
	GN5	20-Aug-97	11:15	12:45	90			*2*	29.1									*2*	29.1
	GN6	20-Aug-97	11:20	13:00	100			*1*	13.1									*1*	13.1
	GN7	20-Aug-97	11:25	13:10	105														
	GN8	20-Aug-97	11:30	13:20	110			*2*	23.8									*2*	23.8
	GN9	20-Aug-97	14:15	15:20	65			*2*	40.4	*1*	20.2			*7*	141.2			*10*	201.8
	GN10	20-Aug-97	14:20	15:45	85			*1*	15.4	*1*	15.4			*1*	15.4			*3*	46.3
	GN11	20-Aug-97	14:25	15:55	90			*3*	43.7	*3*	43.7			*6*	87.4			*12*	174.9
	GN12	23-Aug-97	13:50	14:55	65					*3*	60.5							*3*	60.5
	GN13	23-Aug-97	13:55	15:05	70					*1*	18.7							*1*	18.7
	GN14	23-Aug-97	14:00	15:10	70			*2*	37.5	*2*	37.5							*4*	74.9
	GN15	23-Aug-97	14:05	15:25	80					*2*	32.8			*4*	65.6			*6*	98.4
	GN16	23-Aug-97	15:40	17:20	100					*3*	39.3			*1*	13.1			*4*	52.5
	GN17	23-Aug-97	15:45	17:30	105			*3*	37.5	*3*	37.5							*6*	74.9
	GN18	23-Aug-97	15:50	17:45	115			*2*	22.8	*9*	102.6							*11*	125.4
	GN19	23-Aug-97	15:55	18:00	125			*4*	42.0	*2*	21.0			*2*	21.0			*8*	83.9
	GN20	24-Aug-97	14:55	16:05	70			*2*	37.5	*2*	37.5			*1*	18.7			*5*	93.7
	GN21	24-Aug-97	15:00	16:20	80			*1*	16.4	*3*	49.2							*4*	65.6
	GN22	24-Aug-97	15:05	16:30	85			*2*	30.9	*1*	15.4							*3*	46.3
	GN23	24-Aug-97	15:10	16:45	95			*5*	69.0	*4*	55.2			*3*	41.4			*12*	165.7
	GN24	24-Aug-97	17:20	18:15	55			*2*	47.7					*3*	71.5			*5*	119.2
	GN25	24-Aug-97	17:25	18:20	55			*1*	23.8	*3*	71.5			*1*	23.8			*5*	119.2
	GN26	25-Aug-97	12:10	13:20	70			*1*	18.7	*5*	93.7							*6*	112.4
	GN27	25-Aug-97	12:10	13:35	85					*2*	30.9							*2*	30.9
	GN28	25-Aug-97	12:15	13:50	95			*3*	41.4									*3*	41.4
	GN29	25-Aug-97	12:20	14:05	105			*2*	25.0	*7*	87.4			*1*	12.5			*10*	124.9
	GN30	25-Aug-97	14:30	16:20	110			*2*	23.8	*1*	11.9							*3*	35.8
	GN31	25-Aug-97	14:35	16:30	115					*2*	22.8							*2*	22.8
	GN32	25-Aug-97	14:40	16:40	120			*4*	43.7	*2*	21.9							*6*	65.6
	GN33	25-Aug-97	14:45	17:00	135					*1*	9.7							*1*	9.7
	Total				**2950**			***54***		***78***				***31***				***163***	
	Mean CPUE								**24.3**		**35.7**				**16.0**				**75.9**
	Standard Deviation								**18.0**		**33.2**				**31.9**				**53.5**

Appendix D2. Raw data for catch and CPUE (fish/100m^2/24h) in index gill net sets (3.8 cm mesh size) in Doris Hinge lakes, 1997-2000.

Lake	Set #	Date	Set Time	Lift Time	Effort (min)	Arctic char		Lake trout		Lake whitefish		Broad whitefish		Cisco		Least cisco		All Species	
						n	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE
Windy	GN1	17-Aug-97	10:40	11:50	70			*3*	56.2									*3*	56.2
	GN2	17-Aug-97	10:45	12:35	110			*2*	23.8									*2*	23.8
	GN3	17-Aug-97	10:50	12:45	125			*5*	52.5									*5*	52.5
	GN4	17-Aug-97	10:55	12:55	120														
	GN5	17-Aug-97	13:00	14:40	100			*1*	13.1									*1*	13.1
	GN6	17-Aug-97	13:05	14:50	105			*3*	37.5									*3*	37.5
	GN7	17-Aug-97	13:10	15:10	120			*3*	32.8									*3*	32.8
	GN8	17-Aug-97	13:15	15:25	130			*4*	40.4									*4*	40.4
	GN9	17-Aug-97	15:40	17:30	130			*4*	40.4									*4*	40.4
	GN10	17-Aug-97	15:45	18:05	140			*2*	18.7					*1*	9.4			*3*	28.1
	GN11	17-Aug-97	15:50	18:20	150			*2*	17.5									*2*	17.5
	GN12	17-Aug-97	15:55	18:30	155			*1*	8.5									*1*	8.5
	GN13	17-Aug-97	18:40	20:30	110														
	GN14	17-Aug-97	18:45	20:35	110			*3*	35.8									*3*	35.8
	GN15	17-Aug-97	18:50	20:50	120														
	GN16	17-Aug-97	18:55	20:55	120														
	GN17	19-Aug-97	16:15	18:30	135			*2*	19.4									*2*	19.4
	GN18	19-Aug-97	16:20	18:35	135														
	GN19	19-Aug-97	16:25	18:40	135														
	GN20	19-Aug-97	16:30	18:45	135			*1*	9.7									*1*	9.7
	GN21	19-Aug-97	18:50	20:45	115			*1*	11.4									*1*	11.4
	GN22	19-Aug-97	18:55	20:50	115														
	GN23	19-Aug-97	19:00	20:55	115			*3*	34.2									*3*	34.2
	GN24	19-Aug-97	19:05	21:00	115			*3*	34.2									*3*	34.2
	GN25	22-Aug-97	9:45	11:45	120														
	GN26	22-Aug-97	9:45	11:50	125			*3*	31.5					*4*	42.0			*7*	73.4
	GN27	22-Aug-97	9:50	12:10	140														
	GN28	22-Aug-97	9:50	12:15	145			*3*	27.1									*3*	27.1
	GN29	22-Aug-97	12:25	14:30	125			*2*	21.0									*2*	21.0
	GN30	22-Aug-97	12:25	14:35	130			*2*	20.2									*2*	20.2
	GN31	22-Aug-97	12:30	14:45	135			*1*	9.7									*1*	9.7
	GN32	22-Aug-97	12:30	14:55	145			*4*	36.2									*4*	36.2
	Total				**3980**			***58***						***5***				***63***	
	Mean CPUE								**19.7**						**1.6**				**21.3**
	Standard Deviation								**16.9**						**7.5**				**19.3**

Appendix D2. Raw data for catch and CPUE (fish/100m^2/24h) in index gill net sets (3.8 cm mesh size) in Doris Hinge lakes, 1997-2000.

Lake	Set #	Date	Set Time	Lift Time	Effort (min)	Arctic char		Lake trout		Lake whitefish		Broad whitefish		Cisco		Least cisco		All Species	
						n	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE
Little Roberts	GN1	26-Aug-00	8:10	8:55	45	*1*	29.1	*1*	29.1									*2*	58.3
	GN2	26-Aug-00	8:15	9:15	60	*2*	43.7	*1*	21.9									*3*	65.6
	GN3	26-Aug-00	9:10	10:50	100	*7*	91.8	*4*	52.5	*7*	91.8					*2*	26.2	*20*	262.3
	GN4	26-Aug-00	9:25	12:00	155	*4*	33.8	*2*	16.9							*2*	16.9	*8*	67.7
	GN5	26-Aug-00	11:50	13:30	100	*3*	39.3	*1*	13.1									*4*	52.5
	GN6	26-Aug-00	12:25	14:00	95	*2*	27.6	*3*	41.4									*5*	69.0
	GN7	26-Aug-00	13:55	15:25	90			*4*	58.3									*4*	58.3
	GN8	26-Aug-00	14:20	15:50	90			*1*	14.6							*2*	29.1	*3*	43.7
	GN9	26-Aug-00	15:40	16:30	50														
	GN10	26-Aug-00	16:00	16:35	35														
	GN11	27-Aug-00	8:15	9:30	75	*5*	87.4											*5*	87.4
	GN12	27-Aug-00	8:20	10:00	100	*2*	26.2											*2*	26.2
	GN13	27-Aug-00	9:50	11:25	95	*1*	13.8											*1*	13.8
	GN14	27-Aug-00	10:05	11:35	90			*1*	14.6									*1*	14.6
	GN15	27-Aug-00	11:30	13:05	95														
	GN16	27-Aug-00	11:45	13:20	95							*1*	13.8					*1*	13.8
	GN17	27-Aug-00	13:15	15:00	105			*1*	12.5									*1*	12.5
	GN18	27-Aug-00	13:30	15:10	100	*1*	13.1	*1*	13.1									*2*	26.2
	GN19	27-Aug-00	15:05	16:15	70	*1*	18.7	*1*	18.7									*2*	37.5
	GN20	27-Aug-00	15:20	16:25	65														
	Total				**1710**	***29***		***21***		***7***		***1***				***6***		***64***	
	Mean CPUE						**21.2**		**15.3**		**4.6**		**0.7**				**3.6**		**45.5**
	Standard Deviation						**27.8**		**17.8**		**20.5**		**3.1**				**9.1**		**57.9**
Pelvic	GN1	15-Aug-98	10:05	11:00	55			*1*	23.8	*2*	47.7			*7*	166.9			*10*	238.5
	GN2	15-Aug-98	10:10	11:35	85					*10*	154.3			*13*	200.6			*23*	354.9
	GN3	15-Aug-98	10:15	12:25	130			*4*	40.4	*21*	211.9			*14*	141.2			*39*	393.4
	GN4	15-Aug-98	14:05	15:15	70			*1*	18.7	*4*	74.9			*37*	693.2			*42*	786.9
	GN5	15-Aug-98	2:15					*gill net lost*											
	GN6	16-Aug-98	9:20	10:25	65			*2*	40.4	*20*	403.5			*9*	181.6			*31*	625.5
	GN7	16-Aug-98	9:45	11:30	105			*2*	25.0	*23*	287.3			*15*	187.4			*40*	499.6
	GN8	16-Aug-98	13:45	14:25	40					*5*	163.9			*1*	32.8			*6*	196.7
	GN9	16-Aug-98	13:55	15:00	65			*2*	40.4	*6*	121.1			*6*	121.1			*14*	282.5
	GN10	16-Aug-98	15:20	16:30	80					*12*	196.7			*5*	82.0			*17*	278.7
	GN11	17-Aug-98	9:15	10:10	55			*2*	47.7	*10*	238.5			*6*	143.1			*18*	429.2
	GN12	17-Aug-98	9:25	11:00	105			*4*	50.0	*16*	199.8			*9*	112.4			*29*	362.2
	GN13	17-Aug-98	11:45	12:55	70					*12*	224.8			*10*	187.4			*22*	412.2
	GN14	17-Aug-98	11:55	13:35	100					*19*	249.2			*7*	91.8			*26*	341.0
	GN15	17-Aug-98	14:05	15:25	80			*2*	32.8	*15*	245.9			*2*	32.8			*19*	311.5
	GN16	17-Aug-98	14:15	16:40	145			*12*	108.5	*25*	226.1			*17*	153.8			*54*	488.4
	Total				**1250**			***32***		***200***				***158***				***390***	
	Mean CPUE								**28.5**		**203.0**				**168.53**				**400.07**
	Standard Deviation								**29.1**		**86.5**				**154.6**				**153.5**

Appendix D3. Size and age statistics for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Year	Species	Fork Length (mm)					Weight (g)					Condition Factor					Age (years)				
			n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
Doris	1995	Lake trout	*1*	**469**	-	469	469	*1*	**1224**	-	1224	1224	*1*	**1.19**	-	1.19	1.19					
		Lake whitefish	*7*	**383**	65	287	469	*7*	**881**	494	294	1760	*7*	**1.42**	0.15	1.24	1.71	*7*	**11.6**	2.4	8	16
		Cisco	*3*	**269**	18	248	281	*3*	**191**	30	156	210	*3*	**0.98**	0.04	0.95	1.02	*2*	**11.5**	2.1	10	13
	1996	Lake trout	*3*	**699**	228	438	860															
		Lake whitefish	*19*	**412**	57	336	490	*3*	**1083**	558	450	1500	*3*	**1.32**	0.12	1.19	1.41	*3*	**17.7**	10.6	8	29
		Cisco	*18*	**262**	33	199	329	*11*	**216**	64	150	375	*11*	**1.19**	0.14	1.03	1.52	*11*	**10.6**	3.0	7	15
	1997	Lake trout	*47*	**631**	156	251	945	*47*	**2708**	1662	152	9900	*47*	**0.97**	0.16	0.61	1.42	*30*	**28.5**	12.5	8	49
		Lake whitefish	*120*	**363**	106	175	557	*120*	**810**	589	52	2800	*120*	**1.28**	0.19	0.83	1.69	*35*	**25.1**	15.8	2	65
		Cisco	*331*	**222**	34	163	498	*327*	**114**	65	44	904	*326*	**0.97**	0.11	0.50	1.53	*26*	**7.6**	3.3	4	16
	1995-1997	**Lake trout**	*51*	**632**	159	251	945	*48*	**2677**	1658	152	9900	*48*	**0.98**	0.16	0.61	1.42	30	**28.5**	12.5	8	49
		Lake whitefish	*146*	**370**	101	175	557	*130*	**820**	581	52	2800	*130*	**1.29**	0.19	0.83	1.71	*45*	**22.5**	15.0	2	65
		Cisco	*352*	**225**	35	163	498	*341*	**118**	68	44	904	*340*	**0.98**	0.12	0.50	1.53	*39*	**8.6**	3.5	4	16
Tail	1995	Lake trout	*13*	**576**	33	535	665	*13*	**1845**	452	1118	2830	*13*	**0.95**	0.16	0.73	1.30	*13*	**13.7**	1.7	11	16
	1996	Lake trout	*16*	**537**	95	296	620	*3*	**1025**	1026	250	2475	*3*	**1.05**	0.07	0.96	1.14	*2*	**5.5**	0.5	5	6
	2000	Lake trout	*134*	**556**	51	284	665	*134*	**1615**	334	280	2550	*134*	**0.94**	0.16	0.66	1.77	*116*	**19.8**	6.4	4	33
	1995-2000	**Lake trout**	*163*	**556**	56	284	665	*150*	**1623**	384	250	2830	*150*	**0.94**	0.16	0.66	1.77	*131*	**19.0**	6.5	4	33
Ogama	**1996**	**Lake trout**	*4*	**539**	156	440	772	*1*	**1100**	-	1100	1100	*1*	**1.03**	-	1.03	1.03	1	**10.0**	-	10	10
		Lake whitefish	*22*	**327**	50	193	420	*9*	**517**	208	300	975	*9*	**1.32**	0.06	1.20	1.40	*11*	**11.1**	5.0	7	24
		Cisco	*5*	**291**	59	210	354	*3*	**367**	142	250	525	*3*	**1.36**	0.19	1.16	1.53	*3*	**13.7**	6.7	8	21
Patch	1995	Lake trout	*2*	**432**	187	300	564	*2*	**1347**	1525	268	2425	*2*	**1.17**	0.25	0.99	1.35	*2*	**10.0**	4.2	7	13
	1996	Lake trout	*13*	**556**	129	368	751	*2*	**738**	188	550	925	*2*	**1.05**	0.05	1.00	1.10	*2*	**21.0**	8.0	13	29
		Lake whitefish	*3*	**475**	22	452	504	*2*	**1488**	163	1325	1650	*2*	**1.29**	0.00	1.29	1.29	2	**34.5**	3.5	31	38
		Cisco	*5*	**229**	59	141	294	*2*	**156**	94	62	250	*2*	**0.94**	0.04	0.90	0.98	3	**11.7**	2.6	8	14
	1997	Lake trout	*53*	**615**	158	199	915	*43*	**2256**	1526	80	7294	*43*	**0.93**	0.12	0.58	1.17	*29*	**21.5**	8.3	8	40
		Lake whitefish	*78*	**407**	48	269	501	*77*	**881**	325	222	1746	*77*	**1.25**	0.17	0.84	1.73	*32*	**21.5**	8.7	8	43
		Cisco	*30*	**252**	40	180	310	*30*	**170**	76	60	326	*30*	**0.98**	0.10	0.82	1.18	*9*	**10.4**	3.0	7	17
	1995-1997	**Lake trout**	*68*	**598**	125	199	915	*47*	**2152**	188	80	7294	*47*	**0.95**	0.05	0.58	1.35	33	**20.8**	8.0	7	40
		Lake whitefish	*81*	**409**	49	269	504	*79*	**897**	334	222	1746	*79*	**1.25**	0.17	0.84	1.73	*34*	**22.3**	8.9	8	43
		Cisco	*35*	**249**	44	141	310	*32*	**169**	76	60	326	*32*	**0.98**	0.10	0.82	1.18	*12*	**10.8**	2.9	7	17
Windy	1996	Lake trout	*19*	**472**	113	343	931	*8*	**903**	172	650	1250	*8*	**0.95**	0.10	0.79	1.09	*8*	**16.3**	5.8	11	28
		Lake whitefish	*55*	**98**	66	48	419	*2*	**575**	35	550	600	*2*	**0.84**	0.04	0.82	0.87	*2*	**18.5**	2.1	17	20
	1997	Lake trout	*58*	**478**	156	202	980	*57*	**1505**	2226	62	12000	*57*	**1.12**	0.19	0.54	1.94	*30*	**19.6**	10.0	9	54
		Cisco	*5*	**344**	54	274	409	*5*	**442**	173	236	646	*5*	**1.05**	0.08	0.94	1.15	*5*	**12.6**	4.8	7	17
	1996-1997	**Lake trout**	*77*	**476**	193	202	980	*65*	**1431**	2108	62	12000	*65*	**1.10**	0.19	0.54	1.94	*38*	**18.9**	9.3	9	54
		Lake whitefish	*55*	**98**	66	48	419	*2*	**575**	35	550	600	*2*	**0.84**	0.04	0.82	0.87	*2*	**18.5**	2.1	17	20
		Cisco	*5*	**344**	54	274	409	*5*	**442**	173	236	646	*5*	**1.05**	0.08	0.94	1.15	*5*	**12.6**	4.8	7	17
Little Roberts	**2000**	**Arctic char**	*29*	**332**	193	149	869	*28*	**1060**	1932	67	7250	*28*	**1.30**	0.13	1.10	1.58	*28*	**4.0**	2.1	2	9
		Lake trout	*19*	**385**	56	288	523	*19*	**783**	319	310	1750	*19*	**1.33**	0.21	0.65	1.55	*20*	**11.9**	4.9	4	25
		Lake whitefish	*6*	**198**	14	174	213	*6*	**104**	20	70	130	*6*	**1.32**	0.06	1.24	1.41	*7*	**4.6**	1.0	4	6
		Broad whitefish	*1*	**533**	-	533	533	*1*	**2000**	-	2000	2000	*1*	**1.32**	-	1.32	1.32	*1*	**12.0**	-	12	12
		Least cisco	*6*	**191**	18	169	221	*6*	**87**	18	61	115	*6*	**1.23**	0.11	1.07	1.34	*6*	**3.3**	1.8	2	6
Pelvic	**1998**	**Lake trout**	*31*	**525**	154	159	915	*31*	**1914**	1808	36	8600	*31*	**1.08**	0.14	0.62	1.39	*31*	**22.2**	6.2	8	39
		Lake whitefish	*194*	**290**	82	153	420	*193*	**378**	295	50	1060	*193*	**1.22**	0.10	0.66	1.51	*106*	**11.7**	8.9	2	35
		Cisco	*155*	**214**	44	157	337	*155*	**119**	87	28	480	*155*	**1.06**	0.16	0.60	1.68	*61*	**9.0**	4.7	3	18

NOTE: all sampling methods combined; SD = standard deviation

Appendix D4. Length-frequency (%) distribution of fish captured in Doris Hinge lakes, 1995-2000.

Fork Length Interval (mm)	DORIS LAKE												TAIL LAKE			
	Lake Trout				Lake whitefish				Cisco				Lake trout			
	1995	1996	1997	**Total**	1995	1996	1997	**Total**	1995	1996	1997	**Total**	1995	1996	2000	**Total**
40 - 49																
50 - 59																
60 - 69																
70 - 79																
80 - 89																
90 - 99																
100 - 109																
110 - 119																
120 - 129																
130 - 139																
140 - 149																
150 - 159																
160 - 169											0.6	**0.6**				
170 - 179							4.2	**3.4**			6.9	**6.5**				
180 - 189							8.3	**6.8**			12.4	**11.6**				
190 - 199							4.2	**3.4**		5.6	11.5	**11.1**				
200 - 209							2.5	**2.1**			7.9	**7.4**				
210 - 219							0.8	**0.7**			8.8	**8.2**				
220 - 229							1.7	**1.4**		11.1	8.8	**8.8**				
230 - 239										11.1	12.4	**12.2**				
240 - 249									33.3	16.7	11.2	**11.6**				
250 - 259			2.1	**2.0**							9.4	**8.8**				
260 - 269							1.7	**1.4**		11.1	3.9	**4.3**				
270 - 279									33.3	16.7	2.4	**3.4**				
280 - 289					14.3		1.7	**2.1**	33.3	5.6	2.1	**2.6**			0.7	**0.6**
290 - 299							0.8	**0.7**		11.1	1.5	**2.0**		6.3		**0.6**
300 - 309										5.6		**0.3**				
310 - 319							1.7	**1.4**						6.3		**0.6**
320 - 329							0.8	**0.7**		5.6		**0.3**				
330 - 339						15.8	2.5	**4.1**								
340 - 349					14.3	10.5	6.7	**7.5**								
350 - 359			4.3	**3.9**	14.3		3.3	**3.4**								
360 - 369						10.5	5.0	**5.5**								
370 - 379					14.3		3.3	**3.4**								
380 - 389					14.3	5.3	4.2	**4.8**								
390 - 399			2.1	**2.0**		5.3	3.3	**3.4**							0.7	**0.6**
400 - 409			2.1	**2.0**			0.8	**0.7**							0.7	**0.6**
410 - 419							4.2	**3.4**								
420 - 429			2.1	**2.0**			1.7	**1.4**								
430 - 439		33.3	4.3	**5.9**		10.5	4.2	**4.8**								
440 - 449			2.1	**2.0**			7.5	**6.2**							0.7	**0.6**
450 - 459						15.8	6.7	**7.5**							2.2	**1.8**
460 - 469	100.0		2.1	**3.9**	28.6	10.5	6.7	**8.2**							0.7	**0.6**
470 - 479						5.3	4.2	**4.1**							3.0	**2.5**
480 - 489			2.1	**2.0**			0.8	**0.7**							3.0	**2.5**
490 - 499						10.5	1.7	**2.7**			0.3	**0.3**		6.3		**0.6**
500 - 509							2.5	**2.1**						6.3	1.5	**1.8**
510 - 519															3.0	**2.5**
520 - 529							1.7	**1.4**							3.0	**2.5**
530 - 539													7.7	6.3	4.5	**4.9**
540 - 549			2.1	**2.0**										6.3	6.0	**5.5**
550 - 559							0.8	**0.7**					23.1	6.3	8.2	**9.2**
560 - 569			2.1	**2.0**									23.1		19.4	**17.8**
570 - 579													7.7	12.5	14.2	**13.5**
580 - 589													15.4	6.3	11.9	**11.7**
590 - 599														12.5	4.5	**4.9**
600 - 609			4.3	**3.9**									15.4	12.5	3.7	**5.5**
610 - 619			2.1	**2.0**										6.3	1.5	**1.8**
620 - 629			8.5	**7.8**										6.3	1.5	**1.8**
630 - 639															3.0	**2.5**
640 - 649															0.7	**0.6**
650 - 659			4.3	**3.9**												
660 - 669			8.5	**7.8**									7.7		1.5	**1.8**
670 - 679			4.3	**3.9**												
680 - 689			4.3	**3.9**												
690 - 699			2.1	**2.0**												
700 - 709			14.9	**13.7**												
710 - 719			2.1	**2.0**												
720 - 729																
730 - 739			2.1	**2.0**												
740 - 749			2.1	**2.0**												
750 - 759																
760 - 769																
770 - 779			4.3	**3.9**												
780 - 789																
790 - 799		33.3		**2.0**												
800 - 809																
810 - 819																
860 - 869		33.3		**2.0**												
870 - 879																
890 - 899																
910 - 919																
930 - 939			6.4	**5.9**												
940 - 949			2.1	**2.0**												
960 - 969																
970 - 979																
980 - 989																
No. Sampled	***1***	***3***	***47***	***51***	***7***	***19***	***120***	***146***	***3***	***18***	***331***	***352***	***13***	***16***	***134***	***163***

Appendix D4. Length-frequency (%) distribution of fish captured in Doris Hinge lakes, 1995-2000.

Fork Length Interval (mm)	OGAMA LAKE			PATCH LAKE									
	LKTR	LKWH	CISC	Lake trout				Lake whitefish			Cisco		
	1996	1996	1996	1995	1996	1997	**Total**	1996	1997	**Total**	1996	1997	**Total**
40 - 49													
50 - 59													
60 - 69													
70 - 79													
80 - 89													
90 - 99													
100 - 109													
110 - 119													
120 - 129													
130 - 139													
140 - 149											20.0		**2.9**
150 - 159													
160 - 169													
170 - 179													
180 - 189												13.3	**11.4**
190 - 199		4.5				1.9	**1.5**				20.0	3.3	**5.7**
200 - 209												6.7	**5.7**
210 - 219			20.0									3.3	**2.9**
220 - 229											20.0		**2.9**
230 - 239													
240 - 249												6.7	**5.7**
250 - 259			20.0									13.3	**11.4**
260 - 269									1.3	**1.2**		13.3	**11.4**
270 - 279												13.3	**11.4**
280 - 289		13.6										13.3	**11.4**
290 - 299											40.0	3.3	**8.6**
300 - 309		18.2	20.0	50.0			**1.5**		1.3	**1.2**		6.7	**5.7**
310 - 319		27.3				1.9	**1.5**		2.6	**2.5**		3.3	**2.9**
320 - 329		4.5				1.9	**1.5**		2.6	**2.5**			
330 - 339			20.0						3.8	**3.7**			
340 - 349		4.5				1.9	**1.5**		3.8	**3.7**			
350 - 359		4.5	20.0			1.9	**1.5**		2.6	**2.5**			
360 - 369					7.7		**1.5**		3.8	**3.7**			
370 - 379									2.6	**2.5**			
380 - 389		4.5				1.9	**1.5**		3.8	**3.7**			
390 - 399		9.1			7.7	1.9	**2.9**		9.0	**8.6**			
400 - 409					7.7	1.9	**2.9**		7.7	**7.4**			
410 - 419					7.7	1.9	**2.9**		7.7	**7.4**			
420 - 429		9.1				1.9	**1.5**		11.5	**11.1**			
430 - 439									12.8	**12.3**			
440 - 449	25.0					3.8	**2.9**		6.4	**6.2**			
450 - 459					7.7		**1.5**	33.3	6.4	**7.4**			
460 - 469						3.8	**2.9**	33.3	2.6	**3.7**			
470 - 479	50.0								3.8	**3.7**			
480 - 489									2.6	**2.5**			
490 - 499													
500 - 509								33.3	1.3	**2.5**			
510 - 519													
520 - 529													
530 - 539													
540 - 549													
550 - 559					7.7		**1.5**						
560 - 569				50.0	7.7		**2.9**						
570 - 579													
580 - 589						3.8	**2.9**						
590 - 599						3.8	**2.9**						
600 - 609						1.9	**1.5**						
610 - 619						1.9	**1.5**						
620 - 629						1.9	**1.5**						
630 - 639					7.7	3.8	**4.4**						
640 - 649					7.7	1.9	**2.9**						
650 - 659					7.7		**1.5**						
660 - 669						5.7	**4.4**						
670 - 679					7.7	5.7	**5.9**						
680 - 689						3.8	**2.9**						
690 - 699						11.3	**8.8**						
700 - 709						3.8	**2.9**						
710 - 719						1.9	**1.5**						
720 - 729					7.7	3.8	**4.4**						
730 - 739						3.8	**2.9**						
740 - 749						1.9	**1.5**						
750 - 759					7.7	1.9	**2.9**						
760 - 769						1.9	**1.5**						
770 - 779	25.0					1.9	**1.5**						
780 - 789													
790 - 799													
800 - 809						1.9	**1.5**						
810 - 819						1.9	**1.5**						
860 - 869													
870 - 879													
890 - 899						1.9	**1.5**						
910 - 919						1.9	**1.5**						
930 - 939													
940 - 949													
960 - 969													
970 - 979													
980 - 989													
No. Sampled	***4***	***22***	***5***	***2***	***13***	***53***	***68***	***3***	***78***	***81***	***5***	***30***	***35***

Appendix D4. Length-frequency (%) distribution of fish captured in Doris Hinge lakes, 1995-2000.

Fork Length Interval (mm)	WINDY LAKE					LITTLE ROBERTS LAKE					PELVIC LAKE		
	Lake trout			LKWH	CISC	ARCH	LKTR	LKWH	BRWH	LSCS	LKTR	LKWH	CISC
	1996	1997	**Total**	1996	1997	2000	2000	2000	2000	2000	1998	1998	1998
40 - 49				1.8									
50 - 59				25.5									
60 - 69													
70 - 79													
80 - 89				10.9									
90 - 99				36.4									
100 - 109				14.5									
110 - 119				1.8									
120 - 129													
130 - 139				3.6									
140 - 149						3.4							
150 - 159											3.2	1.5	1.9
160 - 169				1.8		3.4				16.7		7.2	5.8
170 - 179						13.8		16.7				3.6	13.5
180 - 189						3.4				33.3			12.3
190 - 199						3.4		16.7		16.7		0.5	13.5
200 - 209		1.7	**1.3**					50.0		16.7		0.5	17.4
210 - 219								16.7				5.2	5.2
220 - 229										16.7		8.8	5.2
230 - 239						3.4						8.2	1.3
240 - 249												3.6	2.6
250 - 259						17.2						5.2	0.6
260 - 269						3.4						5.7	1.3
270 - 279					20.0	6.9						2.6	3.2
280 - 289							5.3					4.1	5.8
290 - 299						6.9						2.6	5.2
300 - 309					20.0							2.1	1.3
310 - 319												1.0	1.9
320 - 329						10.3						1.5	1.3
330 - 339							10.5					0.5	0.6
340 - 349	5.3		**1.3**				5.3					2.6	
350 - 359		1.7	**1.3**			3.4	15.8					0.5	
360 - 369					40.0		15.8					1.5	
370 - 379	5.3		**1.3**									5.2	
380 - 389		1.7	**1.3**				10.5					10.8	
390 - 399		3.4	**2.6**	1.8			5.3					2.6	
400 - 409		6.9	**5.2**		20.0						3.2	6.7	
410 - 419	5.3	5.2	**5.2**	1.8			10.5				3.2	4.6	
420 - 429		12.1	**9.1**			3.4						1.0	
430 - 439	10.5	17.2	**15.6**				5.3				25.8		
440 - 449	21.1	15.5	**16.9**								6.5		
450 - 459	10.5	12.1	**11.7**				5.3				12.9		
460 - 469		6.9	**5.2**				5.3				3.2		
470 - 479	15.8	3.4	**6.5**								3.2		
480 - 489	15.8	1.7	**5.2**										
490 - 499	5.3		**1.3**										
500 - 509													
510 - 519		1.7	**1.3**								3.2		
520 - 529							5.3				3.2		
530 - 539									100.0				
540 - 549													
550 - 559													
560 - 569													
570 - 579						3.4							
580 - 589													
590 - 599													
600 - 609													
610 - 619													
620 - 629											3.2		
630 - 639											3.2		
640 - 649											3.2		
650 - 659						3.4					3.2		
660 - 669											3.2		
670 - 679						3.4					3.2		
680 - 689													
690 - 699											3.2		
700 - 709													
710 - 719													
720 - 729													
730 - 739													
740 - 749													
750 - 759											3.2		
760 - 769													
770 - 779													
780 - 789													
790 - 799						3.4							
800 - 809													
810 - 819													
860 - 869						3.4							
870 - 879											3.2		
890 - 899													
910 - 919											3.2		
930 - 939	5.3	1.7	**2.6**										
940 - 949													
960 - 969		1.7	**1.3**										
970 - 979		3.4	**2.6**										
980 - 989		1.7	**1.3**										
No. Sampled	***19***	***58***	***77***	***55***	***5***	***29***	***19***	***6***	***1***	***6***	***31***	***194***	***155***

Appendix D5. Age-specific length and weight statistics for fish captured in Doris Hinge Lakes, 1995-2000.

Age (yr)	DORIS LAKE																										
	LAKE TROUT										LAKE WHITEFISH										CISCO						
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1																											
2											*1*	**196**	-	196	196	*1*	**72**	-	72	72									
3																											
4											*1*	**223**	-	223	223	*1*	**116**	-	116	116	*2*	**182**	7	177	187	*2*	**55**	1	54	56
5																					*7*	**200**	17	181	231	*7*	**71**	24	52	118
6											*2*	**278**	13	269	287	*2*	**251**	41	222	280	*2*	**197**	7	192	202	*1*	**74**	-	74	74
7																					*6*	**229**	7	222	238	*4*	**117**	39	90	175
8	*2*	**396**	61	353	439	*2*	**598**	272	406	790	*3*	**318**	27	287	336	*3*	**400**	92	294	456	*7*	**250**	10	236	266	*7*	**162**	22	126	196
9	*1*	**397**	-	397	397	*1*	**582**	-	582	582	*2*	**373**	21	358	388	*2*	**667**	188	534	800	*4*	**237**	11	222	248	*4*	**148**	47	100	200
10											*1*	**395**	-	395	395	*1*	**724**	-	724	724	*1*	**248**	-	248	248	*1*	**156**	-	156	156
11											*4*	**366**	19	345	386	*4*	**707**	136	570	856									
12	*1*	**484**	-	484	484	*1*	**1150**	-	1150	1150	*1*	**373**	-	373	373	*1*	**638**	-	638	638	*2*	**262**	6	258	266	*2*	**196**	42	166	225
13											*1*	**462**	-	462	462	*1*	**1290**	-	1290	1290	*4*	**284**	31	263	329	*4*	**236**	95	162	375
14											*2*	**417**	4	414	420	*2*	**892**	6	888	896									
15	*1*	**618**	-	618	618	*1*	**2250**	-	2250	2250	*2*	**415**	3	413	417	*2*	**893**	33	870	916	*2*	**291**	11	283	299	*2*	**263**	18	250	275
16											*2*	**464**	8	458	469	*2*	**1530**	325	1300	1760	*2*	**293**	6	288	297	*1*	**206**	-	206	206
17	*1*	**448**	-	448	448	*1*	**1000**	-	1000	1000																				
18																														
19																														
20																														
21	*1*	**624**	-	624	624	*1*	**2500**	-	2500	2500																				
22	*1*	**680**	-	680	680	*1*	**3050**	-	3050	3050	*2*	**439**	12	430	447	*2*	**1222**	195	1084	1360										
23	*2*	**661**	56	621	700	*2*	**2825**	672	2350	3300																				
24											*2*	**457**	25	439	475	*2*	**1286**	136	1190	1382										
25	*4*	**598**	130	403	672	*4*	**2245**	1002	756	2925	*2*	**437**	26	418	455	*2*	**1053**	81	996	1110										
26	*1*	**605**	-	605	605	*1*	**2025**	-	2025	2025																				
27	*3*	**695**	24	668	714	*3*	**3358**	456	2950	3850	*2*	**453**	14	443	463	*2*	**1213**	174	1090	1336										
28	*2*	**647**	122	560	733	*2*	**2970**	1457	1940	4000																				
29											*2*	**467**	11	459	474	*2*	**1358**	201	1216	1500										
30																														
31											*5*	**459**	11	446	472	*5*	**1328**	131	1248	1556										
32																														
33																														
34	*1*	**660**	-	660	660	*1*	**2020**	-	2020	2020	*2*	**464**	2	462	465	*2*	**1455**	298	1244	1666										
35											*1*	**472**	-	472	472	*1*	**1486**	-	1486	1486										
36																														
37																														
38																														
39	*1*	**945**	-	945	945	*1*	**5121**	-	5121	5121																				
40	*1*	**655**	-	655	655	*1*	**2625**	-	2625	2625	*1*	**497**	-	497	497	*1*	**1674**	-	1674	1674										
42	*2*	**772**	2	770	773	*2*	**4033**	267	3844	4221																				
43																														
45	*1*	**707**	-	707	707	*1*	**3175**	-	3175	3175																				
47	*1*	**932**	-	932	932	*1*	**9900**	-	9900	9900																				
48	*1*	**935**	-	935	935	*1*	**5000**	-	5000	5000																				
49	*2*	**693**	13	684	702	*2*	**2775**	636	2325	3225																				
52											*1*	**466**	-	466	466	*1*	**1346**	-	1346	1346										
54											*1*	**525**	-	525	525	*1*	**1925**	-	1925	1925										
60											*1*	**508**	-	508	508	*1*	**1975**	-	1975	1975										
65											*1*	**504**	-	504	504	*1*	**1775**	-	1775	1775										
Total	*30*	**650**	149	353	945	*30*	**2862**	1808	406	9900	*45*	**415**	75	196	525	*45*	**1052**	488	72	1975	*39*	**239**	36	177	329	*35*	**146**	73	52	375

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D5. Age-specific length and weight statistics for fish captured in Doris Hinge Lakes, 1995-2000.

Age (yr)	TAIL LAKE									
	LAKE TROUT									
	Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1										
2										
3										
4	*1*	**284**	-	284	284	*1*	**280**	-	280	280
5	*1*	**296**	-	296	296	*1*	**250**	-	250	250
6	*1*	**313**	-	313	313	*1*	**350**	-	350	350
7	*5*	**438**	36	399	487	*5*	**930**	248	700	1275
8										
9	*2*	**470**	7	465	475	*2*	**1138**	53	1100	1175
10	*4*	**487**	29	470	530	*4*	**1294**	189	1175	1575
11	*7*	**526**	41	483	601	*7*	**1517**	260	1250	2022
12	*3*	**537**	29	507	564	*3*	**1683**	159	1500	1775
13	*9*	**554**	22	519	586	*9*	**1717**	251	1375	2256
14	*2*	**550**	5	546	553	*2*	**1562**	266	1374	1750
15	*7*	**539**	37	489	585	*7*	**1497**	220	1118	1824
16	*6*	**570**	68	456	665	*6*	**2156**	413	1675	2830
17	*6*	**573**	19	555	608	*6*	**1938**	171	1750	2225
18	*5*	**567**	27	519	588	*5*	**1630**	332	1125	1950
19	*3*	**587**	24	566	613	*3*	**1675**	307	1450	2025
20	*7*	**571**	59	457	641	*7*	**1889**	427	1375	2550
21	*7*	**583**	22	555	609	*7*	**1643**	228	1325	1925
22	*7*	**570**	28	549	631	*7*	**1564**	134	1325	1700
23	*9*	**564**	17	538	592	*9*	**1547**	228	1200	2000
24	*8*	**571**	36	525	631	*8*	**1619**	328	1225	2025
25	*12*	**581**	27	540	631	*12*	**1681**	264	1375	2350
26	*3*	**572**	12	560	584	*3*	**1642**	257	1425	1925
27	*5*	**570**	9	556	580	*5*	**1635**	167	1500	1900
28	*6*	**588**	63	520	665	*6*	**1742**	452	1250	2525
29	*2*	**566**	18	553	579	*2*	**1800**	141	1700	1900
30	*1*	**576**	-	576	576	*1*	**1675**	-	1675	1675
31	*1*	**592**	-	592	592	*1*	**1475**	-	1475	1475
32										
33	*1*	**593**	-	593	593	*1*	**1925**	-	1925	1925
34										
35										
36										
37										
38										
39										
40										
42										
43										
45										
47										
48										
49										
52										
54										
60										
65										
Total	*131*	**551**	60	284	665	*131*	**1606**	393	250	2830

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D5. Age-specific length and weight statistics for fish captured in Doris Hinge Lakes, 1995-2000.

Age (yr)	OGAMA LAKE																									
	LAKE TROUT										LAKE WHITEFISH										CISCO					
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1																														
2																														
3																														
4																														
5																														
6																														
7											*1*	**282**	-	282	282	*1*	**300**	-	300	300										
8											*2*	**322**	6	318	326	*2*	**463**	18	450	475	*1*	**254**	-	254	254	*1*	**250**	-	250	250
9											*1*	**302**	-	302	302	*1*	**350**	-	350	350										
10	*1*	**475**	-	475	475	*1*	**1100**	-	1100	1100																				
11											*1*	**340**	-	340	340	*1*	**500**	-	500	500										
12											*1*	**318**	-	318	318	*1*	**450**	-	450	450	*1*	**334**	-	334	334	*1*	**525**	-	525	525
13											*1*	**318**	-	318	318	*1*	**425**	-	425	425										
14																														
15											*1*	**392**	-	392	392	*1*	**725**	-	725	725										
16																														
17																														
18																														
19																														
20																														
21																					*1*	**304**	-	304	304	*1*	**325**	-	325	325
22																														
23																														
24											*1*	**420**	-	420	420	*1*	**975**	-	975	975										
25																														
26																														
27																														
28																														
29																														
30																														
31																														
32																														
33																														
34																														
35																														
36																														
37																														
38																														
39																														
40																														
42																														
43																														
45																														
47																														
48																														
49																														
52																														
54																														
60																														
65																														
Total	*1*	**475**	-	475	475	*1*	**1100**	-	1100	1100	*9*	**335**	44	282	420	*9*	**517**	208	300	975	*3*	**297**	40	254	334	*3*	**367**	142	250	525

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D5. Age-specific length and weight statistics for fish captured in Doris Hinge Lakes, 1995-2000.

Age (yr)	PATCH LAKE																									
	LAKE TROUT										LAKE WHITEFISH										CISCO					
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1																														
2																														
3																														
4																														
5																														
6																														
7	*1*	**300**	-	300	300	*1*	**268**	-	268	268											*1*	**256**	-	256	256	*1*	**146**	-	146	146
8	*2*	**336**	30	314	357	*2*	**324**	133	230	418	*3*	**327**	14	312	340	*3*	**414**	134	260	500	*1*	**190**	-	190	190	*1*	**62**	-	62	62
9	*1*	**347**	-	347	347	*1*	**400**	-	400	400	*1*	**320**	-	320	320	*1*	**364**	-	364	364	*5*	**266**	12	251	285	*5*	**190**	48	134	254
10	*1*	**325**	-	325	325	*1*	**400**	-	400	400																				
11	*1*	**380**	-	380	380	*1*	**614**	-	614	614																				
12																					*1*	**300**	-	300	300	*1*	**264**	-	264	264
13	*2*	**466**	139	368	564	*2*	**1488**	1326	550	2425	*1*	**374**	-	374	374	*1*	**800**	-	800	800	*2*	**253**	33	229	276	*1*	**220**	-	220	220
14											*4*	**378**	16	355	390	*4*	**703**	108	554	812	*1*	**294**	-	294	294	*1*	**250**	-	250	250
15	*1*	**397**	-	397	397	*1*	**606**	-	606	606																				
16											*1*	**368**	-	368	368	*1*	**592**	-	592	592										
17											*2*	**419**	16	408	430	*2*	**968**	93	902	1034	*1*	**305**	-	305	305	*1*	**256**	-	256	256
18	*3*	**635**	45	589	679	*3*	**2298**	569	1700	2833	*1*	**393**	-	393	393	*1*	**910**	-	910	910										
19	*2*	**636**	39	608	663	*2*	**2416**	543	2032	2800																				
20																														
21											*1*	**429**	-	429	429	*1*	**1064**	-	1064	1064										
22	*2*	**568**	180	440	695	*2*	**1589**	907	948	2230	*1*	**406**	-	406	406	*1*	**966**	-	966	966										
23	*1*	**680**	-	680	680	*1*	**3362**	-	3362	3362	*4*	**423**	23	393	449	*4*	**924**	159	698	1060										
24	*2*	**683**	54	645	721	*2*	**3078**	619	2640	3516	*2*	**451**	3	449	453	*2*	**1169**	81	1112	1226										
25	*2*	**615**	29	594	635	*2*	**2108**	520	1740	2476	*2*	**458**	37	432	484	*2*	**1282**	554	890	1674										
26	*3*	**617**	133	464	697	*3*	**2348**	1264	902	3242	*1*	**427**	-	427	427	*1*	**860**	-	860	860										
27	*1*	**715**	-	715	715	*1*	**3198**	-	3198	3198	*2*	**428**	6	424	432	*2*	**1022**	93	956	1088										
28	*1*	**683**	-	683	683	*1*	**2608**	-	2608	2608																				
29	*3*	**657**	185	453	814	*3*	**3049**	2098	925	5121	*1*	**427**	-	427	427	*1*	**1155**	-	1155	1155										
30											*1*	**431**	-	431	431	*1*	**1078**	-	1078	1078										
31	*1*	**767**	-	767	767	*1*	**4860**	-	4860	4860	*1*	**504**	-	504	504	*1*	**1650**	-	1650	1650										
32											*1*	**414**	-	414	414	*1*	**942**	-	942	942										
33																														
34																														
35	*1*	**627**	-	627	627	*1*	**2388**	-	2388	2388	*1*	**474**	-	474	474	*1*	**1538**	-	1538	1538										
36																														
37											*1*	**473**	-	473	473	*1*	**1216**	-	1216	1216										
38											*1*	**468**	-	468	468	*1*	**1325**	-	1325	1325										
39																														
40	*1*	**897**	-	897	897	*1*	**7294**	-	7294	7294																				
42																														
43											*1*	**435**	-	435	435	*1*	**1162**	-	1162	1162										
45																														
47																														
48																														
49																														
52																														
54																														
60																														
65																														
Total	*32*	**576**	163	300	897	*32*	**2222**	1604	230	7294	*34*	**413**	47	312	504	*34*	**949**	329	260	1674	*12*	**265**	32	190	305	*11*	**195**	65	62	264

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D5. Age-specific length and weight statistics for fish captured in Doris Hinge Lakes, 1995-2000.

Age (yr)	WINDY LAKE																									
	LAKE TROUT										LAKE WHITEFISH										CISCO					
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1																														
2																														
3																														
4																														
5																														
6																														
7																					*1*	**274**	-	274	274	*1*	**236**	-	236	236
8																					*1*	**303**	-	303	303	*1*	**294**	-	294	294
9	*1*	**353**	-	353	353	*1*	**600**	-	600	600																				
10																														
11	*3*	**419**	36	388	458	*3*	**758**	113	650	875																				
12	*3*	**409**	12	401	423	*3*	**739**	137	656	898																				
13	*4*	**429**	23	400	451	*4*	**782**	131	630	950																				
14	*3*	**420**	16	406	437	*3*	**814**	45	776	864											*1*	**368**	-	368	368	*1*	**550**	-	550	550
15	*4*	**431**	10	422	442	*4*	**821**	58	768	902																				
16	*3*	**423**	21	399	437	*3*	**772**	135	620	875																				
17	*1*	**447**	-	447	447	*1*	**870**	-	870	870	*1*	**399**	-	399	399	*1*	**550**	-	550	550	*2*	**387**	32	364	409	*2*	**566**	113	486	646
18	*1*	**470**	-	470	470	*1*	**950**	-	950	950																				
19	*3*	**451**	5	446	455	*3*	**932**	64	858	972																				
20	*2*	**477**	10	470	484	*2*	**1003**	146	900	1106	*1*	**419**	-	419	419	*1*	**600**	-	600	600										
21	*2*	**457**	13	447	466	*2*	**868**	23	852	884																				
22																														
23	*1*	**431**	-	431	431	*1*	**930**	-	930	930																				
24	*1*	**463**	-	463	463	*1*	**966**	-	966	966																				
25																														
26	*1*	**458**	-	458	458	*1*	**932**	-	932	932																				
27	*1*	**456**	-	456	456	*1*	**998**	-	998	998																				
28	*1*	**486**	-	486	486	*1*	**1250**	-	1250	1250																				
29																														
30																														
31																														
32																														
33																														
34																														
35																														
36																														
37	*1*	**963**	-	963	963																									
38																														
39																														
40																														
42																														
43																														
45	*1*	**980**	-	980	980	*1*	**####**	-	####	####																				
47																														
48																														
49																														
52																														
54	*1*	**973**	-	973	973	*1*	**5000**	-	5000	5000																				
60																														
65																														
Total	*38*	**478**	149	353	980	*37*	**1262**	1943	600	####	*2*	**409**	14	399	419	*2*	**575**	35	550	600	*5*	**344**	54	274	409	*5*	**442**	173	236	646

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D5. Age-specific length and weight statistics for fish captured in Doris Hinge Lakes, 1995-2000.

LITTLE ROBERTS LAKE

Age (yr)	LAKE TROUT										LAKE WHITEFISH									
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1																				
2																				
3																				
4	*1*	**288**	-	288	288	*1*	**310**	-	310	310	*4*	**192**	13	174	203	*4*	**94**	16	70	105
5																				
6											*2*	**211**	4	208	213	*2*	**123**	11	115	130
7																				
8	*3*	**354**	11	346	367	*3*	**612**	62	560	680										
9	*2*	**333**	3	331	335	*2*	**485**	42	455	515										
10	*4*	**360**	8	351	367	*4*	**685**	52	635	730										
11	*2*	**388**	8	382	393	*2*	**895**	64	850	940										
12	*1*	**383**	-	383	383	*1*	**825**	-	825	825										
13	*2*	**433**	31	411	455	*2*	**1053**	32	1030	1075										
14	*1*	**439**	-	439	439	*1*	**550**	-	550	550										
15																				
16																				
17																				
18	*1*	**416**	-	416	416	*1*	**875**	-	875	875										
19																				
20																				
21																				
22	*1*	**465**	-	465	465	*1*	**1125**	-	1125	1125										
23																				
24																				
25	*1*	**523**	-	523	523	*1*	**1750**	-	1750	1750										
26																				
27																				
28																				
29																				
30																				
Total	*19*	**385**	56	288	523	*19*	**783**	319	310	1750	*6*	**198**	14	174	213	*6*	**104**	20	70	130

Age (yr)	ARCTIC CHAR										LEAST CISCO									
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1																				
2	*8*	**175**	14	149	199	*7*	**77**	12	67	99	*3*	**182**	12	169	190	*3*	**81**	17	61	92
3	*5*	**285**	76	235	420	*5*	**338**	291	155	850	*1*	**180**	-	180	180	*1*	**73**	-	73	73
4	*9*	**287**	32	250	329	*9*	**328**	137	175	540										
5											*1*	**221**	-	221	221	*1*	**115**	-	115	115
6	*2*	**463**	157	352	574	*2*	**1505**	1407	510	2500	*1*	**200**	-	200	200	*1*	**91**	-	91	91
7	*1*	**675**	-	675	675	*1*	**3650**	-	3650	3650										
8	*1*	**654**	-	654	654	*1*	**3375**	-	3375	3375										
9	*2*	**834**	49	799	869	*2*	**7025**	318	6800	7250										
10																				
Total	*28*	**333**	197	149	869	*27*	**1084**	1965	67	7250	*6*	**191**	18	169	221	*6*	**87**	18	61	115

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D5. Age-specific length and weight statistics for fish captured in Doris Hinge Lakes, 1995-2000.

Age (yr)	PELVIC LAKE																										
	LAKE TROUT										LAKE WHITEFISH										CISCO									
	Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)					Fork Length (mm)					Weight (g)				
	n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
1																														
2											*8*	**163**	6	155	173	*8*	**55**	4	50	62										
3																					*2*	**182**	1	181	183	*2*	**66**	11	58	74
4											*18*	**225**	11	196	245	*18*	**136**	19	84	172	*14*	**207**	11	184	223	*14*	**95**	13	68	116
5											*13*	**252**	13	228	275	*13*	**189**	25	148	234	*5*	**218**	37	170	260	*5*	**126**	67	48	205
6											*5*	**275**	17	252	291	*5*	**249**	51	178	306	*3*	**172**	18	157	192	*3*	**45**	22	28	70
7											*11*	**289**	8	278	302	*11*	**270**	52	142	336	*6*	**208**	44	172	293	*6*	**102**	93	42	289
8	*2*	**439**	5	435	442	*2*	**910**	76	856	964	*2*	**309**	9	302	315	*2*	**334**	6	330	338	*4*	**202**	54	171	282	*4*	**101**	89	50	234
9											*2*	**322**	1	321	322	*2*	**415**	7	410	420	*1*	**275**	-	275	275	*1*	**226**	-	226	226
10											*2*	**331**	21	316	345	*2*	**456**	62	412	500	*1*	**186**	-	186	186	*1*	**64**	-	64	64
11	*1*	**456**	-	456	456	*1*	**1062**	-	1062	1062											*1*	**252**	-	252	252	*1*	**166**	-	166	166
12																					*5*	**282**	53	193	323	*5*	**228**	127	66	420
13											*1*	**375**	-	375	375	*1*	**660**	-	660	660	*3*	**274**	12	260	281	*3*	**238**	49	208	295
14											*5*	**359**	16	341	381	*5*	**594**	95	500	734	*5*	**292**	11	283	310	*5*	**263**	33	224	300
15											*5*	**378**	16	362	403	*5*	**709**	106	600	880	*2*	**305**	7	300	310	*2*	**333**	49	298	368
16											*3*	**379**	9	370	388	*3*	**698**	17	680	714	*4*	**277**	9	270	290	*4*	**208**	19	180	222
17	*2*	**445**	21	430	460	*2*	**1041**	86	980	1102	*2*	**382**	1	381	383	*2*	**666**	14	656	676	*2*	**296**	8	290	301	*2*	**282**	59	240	324
18											*1*	**420**	-	420	420	*1*	**1060**	-	1060	1060	*2*	**288**	11	280	295	*2*	**282**	8	276	288
19	*2*	**476**	58	435	517	*2*	**1230**	354	980	1480																				
20	*2*	**436**	30	415	457	*2*	**906**	107	830	982	*2*	**393**	32	370	415	*2*	**791**	98	722	860										
21	*1*	**406**	-	406	406	*1*	**892**	-	892	892	*4*	**390**	11	380	403	*4*	**791**	87	700	900										
22	*3*	**478**	41	438	520	*3*	**1286**	450	920	1788	*4*	**382**	4	377	387	*4*	**736**	28	698	760										
23	*3*	**504**	104	438	623	*3*	**1503**	907	958	2550	*2*	**401**	27	382	420	*2*	**778**	144	676	880										
24	*5*	**592**	150	430	753	*5*	**2488**	1453	952	4250	*5*	**408**	3	404	411	*5*	**889**	48	824	954										
25	*3*	**515**	132	431	667	*3*	**1569**	1068	880	2800	*2*	**398**	17	386	410	*2*	**771**	69	722	820										
26	*1*	**458**	-	458	458	*1*	**1010**	-	1010	1010																				
27	*1*	**873**	-	873	873	*1*	**6600**	-	6600	6600	*2*	**413**	3	411	415	*2*	**820**	28	800	840										
28	*1*	**646**	-	646	646	*1*	**2850**	-	2850	2850	*1*	**405**	-	405	405	*1*	**840**	-	840	840										
29	*1*	**637**	-	637	637	*1*	**1600**	-	1600	1600	*1*	**400**	-	400	400	*1*	**878**	-	878	878										
30											*1*	**399**	-	399	399	*1*	**698**	-	698	698										
31																														
32	*1*	**670**	-	670	670	*1*	**2990**	-	2990	2990	*1*	**406**	-	406	406	*1*	**806**	-	806	806										
33																														
34											*1*	**407**	-	407	407	*1*	**824**	-	824	824										
35																														
36																														
37																														
38																														
39	*1*	**915**	-	915	915	*1*	**8600**	-	8600	8600																				
40																														
42																														
43																														
45																														
47																														
48																														
49																														
52																														
54																														
60																														
65																														
Total	*30*	**537**	141	406	915	*30*	**1976**	1804	830	8600	*104*	**306**	79	155	420	*104*	**428**	296	50	1060	*60*	**237**	49	157	323	*60*	**158**	98	28	420

NOTE: all sampling periods and methods combined; SD = standard deviation

Appendix D6. Sex-specific size and age characteristics for immature and mature fish captured in Doris Hinge lakes, 1995-2000.

Sex	Maturity	Parameter		DORIS LAKE			TAIL L.	OGAMA LAKE			PATCH LAKE			WINDY LAKE			L. ROBERTS L.		PELVIC LAKE		
				LKTR	LKWH	CISC	LKTR	LKTR	LKWH	CISC	LKTR	LKWH	CISC	LKTR	LKWH	CISC	ARCH	LKWH	LKTR	LKWH	CISC
Female	Immature	Fork Length	*n*	*3*	*12*	*47*	*2*		*7*	*1*	*1*	*2*	*3*	*1*			*3*	*1*	*1*	*35*	*14*
		(mm)	Minimum	251	175	172	284		282	254	357	304	190	458			250	200	456	173	181
			Maximum	469	386	270	553		340	254	357	312	256	458			270	200	456	415	221
		Age	*n*	*1*	*4*	*7*	*2*		*7*	*1*	*1*	*1*	*2*	*1*			*3*	*1*	*1*	*11*	*7*
		(yr)	Minimum	9	8	4	4		7	8	8	8	7	11			4	4	11	2	4
			Maximum	9	11	8	14		13	8	8	8	8	11			4	4	11	16	7
		Condition Factor	*n*	*3*	*12*	*47*	*2*		*7*	*1*	*1*	*2*	*3*	*1*			*3*	*1*	*1*	*35*	*14*
			Mean	1.03	1.17	0.96	1.02		1.32	1.53	0.92	0.99	0.87	0.91			1.27	1.31	1.12	1.23	1.04
	Mature	Fork Length	*n*	*12*	*12*	*70*	*12*	*1*		*1*	*10*	*17*	*12*	*18*	*1*	*3*	*1*		*11*	*17*	*63*
		(mm)	Minimum	403	357	183	556	475		334	453	406	229	400	399	274	799		406	370	162
			Maximum	932	525	329	601	475		334	897	504	310	484	399	368	799		694	411	323
		Age	*n*	*12*	*11*	*9*	*12*	*1*		*1*	*9*	*13*	*6*	*17*	*1*	*3*	*1*		*11*	*11*	*16*
		(yr)	Minimum	23	11	8	11	10		12	18	17	9	13	17	7	9		20	14	4
			Maximum	49	54	15	27	10		12	40	38	17	26	17	14	9		29	29	18
		Condition Factor	*n*	*12*	*12*	*70*	*12*	*1*		*1*	*10*	*17*	*12*	*18*	*1*	*3*	*1*		*11*	*17*	*63*
			Mean	0.97	1.43	1.01	0.98	1.03		1.41	0.97	1.34	1.03	0.99	0.87	1.10	1.33		1.04	1.32	1.06
	Combined	Fork Length	*n*	*15*	*24*	*117*	*14*	*1*	*7*	*2*	*11*	*19*	*15*	*19*	*1*	*3*	*4*	*1*	*12*	*52*	*77*
		(mm)	Minimum	251	175	172	284	475	282	254	357	304	190	400	399	274	250	200	406	173	162
			Maximum	932	525	329	601	475	340	334	897	504	310	484	399	368	799	200	694	415	323
		Age	*n*	*13*	*15*	*16*	*14*	*1*	*7*	*2*	*10*	*14*	*8*	*18*	*1*	*3*	*4*	*1*	*12*	*22*	*23*
		(yr)	Minimum	9	8	4	4	10	7	8	8	8	7	11	17	7	4	4	11	2	4
			Maximum	49	54	15	27	10	13	12	40	38	17	26	17	14	9	4	29	29	18
		Condition Factor	*n*	*15*	*24*	*117*	*14*	*1*	*7*	*2*	*11*	*19*	*15*	*19*	*1*	*3*	*4*	*1*	*12*	*52*	*77*
			Mean	0.98	1.30	0.99	0.99	1.03	1.32	1.47	0.97	1.30	1.00	0.98	0.87	1.10	1.28	1.31	1.05	1.26	1.06
Male	Immature	Fork Length	*n*	*2*	*25*	*75*			*1*		*2*	*15*	*3*	*7*			*3*	*4*	*2*	*72*	*20*
		(mm)	Minimum	353	175	165			318		368	269	249	202			267	174	435	153	170
			Maximum	439	420	288			318		397	432	252	455			675	213	442	410	271
		Age	*n*	*2*	*7*	*8*			*1*		*2*	*11*	*1*	*6*			*3*	*5*	*2*	*26*	*11*
		(yr)	Minimum	8	4	5			12		13	8	9	11			3	4	8	2	3
			Maximum	8	15	16			12		15	30	9	19			7	6	8	30	16
		Condition Factor	*n*	*2*	*25*	*75*			*1*		*2*	*15*	*3*	*7*			*3*	*4*	*2*	*72*	*20*
			Mean	0.93	1.11	0.97			1.40		1.04	1.22	0.93	0.95			1.31	1.33	1.08	1.21	1.13
	Mature	Fork Length	*n*	*7*	*22*	*30*	*6*		*2*	*1*	*15*	*9*	*5*	*9*			*1*		*7*	*10*	*44*
		(mm)	Minimum	621	377	195	471		392	304	380	423	264	402			869		430	377	157
			Maximum	773	508	276	665		420	304	721	478	298	486			869		753	419	322
		Age	*n*	*7*	*19*	*5*	*5*		*2*	*1*	*14*	*7*	*3*	*9*			*1*		*7*	*4*	*14*
		(yr)	Minimum	22	11	9	10		15	21	11	23	9	12			9		17	22	6
			Maximum	45	65	13	16		24	21	28	43	13	28			9		32	34	17
		Condition Factor	*n*	*7*	*22*	*30*	*6*		*2*	*1*	*15*	*9*	*5*	*9*			*1*		*7*	*10*	*44*
			Mean	0.91	1.35	0.99	0.93		1.26	1.16	0.94	1.31	0.97	1.09			1.10		1.16	1.26	1.02
	Combined	Fork Length	*n*	*9*	*47*	*105*	*6*		*3*	*1*	*17*	*24*	*8*	*16*			*4*	*5*	*9*	*82*	*64*
		(mm)	Minimum	353	175	165	471		318	304	368	269	249	202			267	174	430	153	157
			Maximum	773	508	288	665		420	304	721	478	298	486			869	213	753	419	322
		Age	*n*	*9*	*26*	*13*	*5*		*3*	*1*	*16*	*18*	*4*	*15*			*4*	*5*	*9*	*30*	*25*
		(yr)	Minimum	8	4	5	10		12	21	11	8	9	11			3	4	8	2	3
			Maximum	45	65	16	16		24	21	28	43	13	28			9	6	32	34	17
		Condition Factor	*n*	*9*	*47*	*105*	*6*		*3*	*1*	*17*	*24*	*8*	*16*			*4*	*5*	*9*	*82*	*64*
			Mean	0.92	1.22	0.97	0.93		1.31	1.16	0.95	1.25	0.96	1.03			1.26	1.33	1.14	1.22	1.06

Note: LKTR = lake trout; LKWH = lake whitefish; CISC = cisco; ARCH = Arctic char

Appendix D7. Frequency of occurrence and percent composition of food items encountered in fish stomachs in Doris Hinge lakes, 1995-2000.

Food Item	DORIS LAKE						TAIL LAKE		PATCH LAKE				WINDY LAKE	LITTLE ROBERTS LAKE			PELVIC LAKE	
	Lake trout		Lake whitefish		Cisco		Lake trout		Lake trout		Lake whitefish		Lake trout	Arctic char		Lake whitefish		Lake trout
	% occ	*% com*	% occ	*% com*	% occ	*% com*	% occ	*% com*	% occ	*% com*	% occ	*% com*	% occ *% com*	% occ	*% com*	% occ	*% com*	% occ	*% com*
Invertebrates																			
Pelecypoda (clams)							13.3	*1.8*											
Isopoda			22.2	*88.9*			6.7	*8.8*	16.7	*21.4*	60.0	*95.7*							
Notostraca (tadpole shrimp)							33.3	*18.6*						66.7	*100.0*				
Trichoptera (caddis fly larvae)							20.0	*21.2*											
Chironomidae (blood worms)			11.1	*8.9*	66.7	*100.0*	20.0	*2.7*											
Amphipoda			11.1	*2.2*			13.3	*2.7*	8.3	*6.3*									
Zooplankton	5.9	*6.1*					13.3	*6.2*			20.0	*4.3*							
Fish																			
Cisco	11.8	*48.8*							4.2	*17.9*								20.0	*67.5*
Lake whitefish	5.9	*24.4*							4.2	*17.9*								5.0	*25.0*
Ninespine stickleback							20.0	*31.9*	4.2	*8.9*									
Unidentified fish remains	11.8	*20.7*							20.8	*26.8*								10.0	*3.8*
Plant matter									4.2	*0.9*						50.0	*100.0*		
Unidentified							6.7	*6.2*										5.0	*3.8*
Number of Stomachs Examined	17		9		3		15		24		5		3	6		6		20	
Number of Empty Stomachs	11		6		1		3		11		1		3	2		3		12	
Total Fullness	410		225		30		565		560		230		0	320		160		400	
Mean Fullness (%)	**24.1**		**25.0**		**10.0**		**37.7**		**23.3**		**46.0**		**0.0**	**53.3**		**26.7**		**20.0**	
Empty Stomachs (%)	64.7		66.7		33.3		20.0		45.8		20.0		100.0	33.3		50.0		60.0	

NOTES:

% occ = frequency of occurrence of each food item in the total number of stomachs examined

% com = percent contribution of each food item (by volume) to the total amount of food found in all stomachs

Fullness was assessed on a scale of 0 (empty stomach) to 100 (stomach completely filled with food)

Total Fullness = the sum of all fullness values from all fish examined

Mean Fullness = Total Fullness / Number of Stomachs Examined

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mortality	Comments / Stomach Content
Doris		19-Aug-95	GN		22	CISC	281	210	0.95	F	2	3		O					Y	5% chironomids
Doris		19-Aug-95	GN		23	CISC	248	156	1.02	M	2	3	10	O					Y	stomach empty
Doris		19-Aug-95	GN		24	CISC	278	206	0.96	F	2	3	13	O					Y	5% chironomids
Doris		6-Aug-96	GN	5.08	35	CISC	265	200	1.07	F	2		13						Y	
Doris		6-Aug-96	GN	5.08	36	CISC	226	175	1.52	M	1		7						Y	
Doris		6-Aug-96	GN	5.08		CISC	272													
Doris		6-Aug-96	GN	3.81	37	CISC	283	250	1.10	F	2		15						Y	
Doris		6-Aug-96	GN	3.81	38	CISC	236	150	1.14				8						Y	
Doris		6-Aug-96	GN	5.08		CISC	276													
Doris		6-Aug-96	GN	5.08	40	CISC	237	175	1.31				9						Y	
Doris		6-Aug-96	GN	6.35	41	CISC	329	375	1.05	F	2		13						Y	
Doris		6-Aug-96	GN	1.91		CISC	199													
Doris		6-Aug-96	GN	3.81		CISC	226													
Doris		6-Aug-96	GN	3.81	42	CISC	246	175	1.18	F	2		8						Y	
Doris		6-Aug-96	GN	3.81	43	CISC	248	200	1.31	F	2		9						Y	
Doris		6-Aug-96	GN	3.81		CISC	304													
Doris		6-Aug-96	GN	5.08		CISC	271													
Doris		6-Aug-96	GN	5.08		CISC	296													
Doris		6-Aug-96	GN	5.08	44	CISC	245	175	1.19	F	2		8						Y	
Doris		6-Aug-96	GN	5.08	45	CISC	299	275	1.03	F	2		15						Y	
Doris		6-Aug-96	GN	5.08	46	CISC	266	225	1.20	M	2		12						Y	
Doris	GN1	13-Aug-97	GN	3.81	3	CISC	297	"550"	"2.10"				16	F	orange	903				
Doris	GN1	13-Aug-97	GN	3.81	10	CISC	238	"350"	"2.60"	F	1	1	7	O					Y	
Doris	GN1	13-Aug-97	GN	3.81	11	CISC	231	"350"	"2.84"	F	1	1	7	O					Y	
Doris	GN1	13-Aug-97	GN	3.81	12	CISC	187	52	0.80	M	1	1	5	O					Y	
Doris	GN2	13-Aug-97	GN	3.81	15	CISC	202	"300"	"3.64"				6	F						
Doris	GN2	13-Aug-97	GN	3.81	17	CISC	198	68	0.88	M	1	1	5	O						
Doris	GN2	13-Aug-97	GN	3.81	18	CISC	198	54	0.70	M	1	1	5	O						
Doris	GN3	13-Aug-97	GN	3.81	23	CISC	236	100	0.76	F	1	1	7	O					Y	
Doris	GN3	13-Aug-97	GN	3.81	24	CISC	222	100	0.91	M	2	2	9	O					Y	
Doris	GN3	13-Aug-97	GN	3.81	25	CISC	177	54	0.97	F	1	1	4	O					Y	
Doris	GN3	13-Aug-97	GN	3.81	26	CISC	223	90	0.81	M	1	1	7	O					Y	
Doris	GN3	13-Aug-97	GN	3.81	27	CISC	181	56	0.94	F	1	1	5	O					Y	
Doris	GN4	13-Aug-97	GN	3.81	29	CISC	192	74	1.05				6	F						
Doris	GN4	13-Aug-97	GN	3.81	30	CISC	210	86	0.93				5	F						
Doris	GN4	13-Aug-97	GN	3.81	35	CISC	255	154	0.93	M	1	1	8	O					Y	
Doris	GN4	13-Aug-97	GN	3.81	36	CISC	244	126	0.87	M	1	1	8	O					Y	
Doris	GN6	13-Aug-97	GN	3.81	37	CISC	184	54	0.87											
Doris	GN4	13-Aug-97	GN	3.81	38	CISC	258	166	0.97	M	2	2	12	O					Y	
Doris	GN4	13-Aug-97	GN	3.81	39	CISC	222	102	0.93	F	1	1	7	O					Y	
Doris	GN5	13-Aug-97	GN	3.81	42	CISC	260	156	0.89				8	F	orange	922				
Doris	GN5	13-Aug-97	GN	3.81	43	CISC	187	56	0.86				4	F						
Doris	GN5	13-Aug-97	GN	3.81	44	CISC	192	66	0.93				5	F						
Doris	GN5	13-Aug-97	GN	3.81	45	CISC	288	206	0.86	M	1	1	16	O					Y	
Doris	GN5	13-Aug-97	GN	3.81	46	CISC	263	162	0.89	M	2	2	13	O					Y	
Doris	GN5	13-Aug-97	GN	3.81	47	CISC	266	196	1.04	F	1	1	8	O					Y	
Doris	GN5	13-Aug-97	GN	3.81	48	CISC	231	118	0.96				5	F						
Doris	GN6	13-Aug-97	GN	3.81	49	CISC	212	80	0.84											
Doris	GN6	13-Aug-97	GN	3.81	54	CISC	177	48	0.87											
Doris	GN6	13-Aug-97	GN	3.81	55	CISC	165	44	0.98	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	56	CISC	226	106	0.92	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	57	CISC	200	88	1.10	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	58	CISC	225	122	1.07	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	59	CISC	228	166	1.40	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	60	CISC	186	68	1.06	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	61	CISC	220	90	0.85	F	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	62	CISC	210	91	0.98	F	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	63	CISC	203	78	0.93	F	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	64	CISC	188	64	0.96	F	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	65	CISC	171	52	1.04	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	66	CISC	176	58	1.06	M	1	1							Y	
Doris	GN6	13-Aug-97	GN	3.81	67	CISC	178	50	0.89	M	1	1							Y	
Doris	GN7	13-Aug-97	GN	3.81	68	CISC	218	104	1.00											
Doris	GN7	13-Aug-97	GN	3.81	69	CISC	190	58	0.85											
Doris	GN7	13-Aug-97	GN	3.81	70	CISC	285	186	0.80	M	1	1							Y	
Doris	GN7	13-Aug-97	GN	3.81	71	CISC	186	58	0.90											
Doris	GN8	16-Aug-97	GN	3.81	106	CISC	188	60	0.90											
Doris	GN8	16-Aug-97	GN	3.81	107	CISC	257	260	1.53											
Doris	GN8	16-Aug-97	GN	3.81	108	CISC	240	128	0.93											
Doris	GN8	16-Aug-97	GN	3.81	109	CISC	258	170	0.99											
Doris	GN8	16-Aug-97	GN	3.81	110	CISC	267	192	1.01	M	1	1		O, F					Y	
Doris	GN8	16-Aug-97	GN	3.81	111	CISC	242	116	0.82	F	2	3	9						Y	black pelvic fin
Doris	GN8	16-Aug-97	GN	3.81	112	CISC	192	54	0.76	F	2	2							Y	
Doris	GN9	16-Aug-97	GN	3.81	114	CISC	213	82	0.85											
Doris	GN9	16-Aug-97	GN	3.81	116	CISC	179	56	0.98											
Doris	GN9	16-Aug-97	GN	3.81	117	CISC	202	68	0.83											
Doris	GN9	16-Aug-97	GN	3.81	119	CISC	268	196	1.02	F	2	3							Y	black pelvic fin
Doris	GN9	16-Aug-97	GN	3.81	120	CISC	276	218	1.04	M	2	2							Y	
Doris	GN9	16-Aug-97	GN	3.81	121	CISC	265	172	0.92	F	2	3							Y	
Doris	GN10	16-Aug-97	GN	3.81	128	CISC	247	160	1.06											
Doris	GN10	16-Aug-97	GN	3.81	129	CISC	238	132	0.98											
Doris	GN10	16-Aug-97	GN	3.81	130	CISC	197	80	1.05											
Doris	GN10	16-Aug-97	GN	3.81	131	CISC	236	152	1.16											
Doris	GN10	16-Aug-97	GN	3.81	132	CISC	251	154	0.97											
Doris	GN10	16-Aug-97	GN	3.81	133	CISC	178	62	1.10											

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Doris	GN10	16-Aug-97	GN	3.81	134	CISC	163	54	1.25											
Doris	GN10	16-Aug-97	GN	3.81	135	CISC	239	144	1.05	M	2	2							Y	
Doris	GN10	16-Aug-97	GN	3.81	136	CISC	203	92	1.10	F	1	1							Y	
Doris	GN10	16-Aug-97	GN	3.81	137	CISC	256	192	1.14	F	2	3							Y	
Doris	GN10	16-Aug-97	GN	3.81	138	CISC	256	182	1.08	F	2	3							Y	
Doris	GN10	16-Aug-97	GN	3.81	139	CISC	221	104	0.96	M	2	2							Y	
Doris	GN10	16-Aug-97	GN	3.81	140	CISC	189	72	1.07	M	1	1							Y	
Doris	GN11	16-Aug-97	GN	3.81	144	CISC	214	102	1.04											
Doris	GN11	16-Aug-97	GN	3.81	145	CISC	237	124	0.93											
Doris	GN11	16-Aug-97	GN	3.81	146	CISC	233	150	1.19											
Doris	GN11	16-Aug-97	GN	3.81	152	CISC	256	174	1.04	F	2	3							Y	
Doris	GN11	16-Aug-97	GN	3.81	153	CISC	275	184	0.88	F	2	2							Y	
Doris	GN11	16-Aug-97	GN	3.81	154	CISC	227	108	0.92	F	1	1							Y	
Doris	GN11	16-Aug-97	GN	3.81	155	CISC	242	128	0.90	F	2	3							Y	
Doris	GN11	16-Aug-97	GN	3.81	156	CISC	204	78	0.92	F	1	1							Y	
Doris	GN11	16-Aug-97	GN	3.81	157	CISC	234	108	0.84	M	2	2							Y	
Doris	GN11	16-Aug-97	GN	3.81	158	CISC	227	110	0.94	M	1	1							Y	
Doris	GN12	16-Aug-97	GN	3.81	159	CISC	217	102	1.00											
Doris	GN12	16-Aug-97	GN	3.81	160	CISC	249	162	1.05											
Doris	GN12	16-Aug-97	GN	3.81	161	CISC	187	72	1.10											
Doris	GN12	16-Aug-97	GN	3.81	162	CISC	205	92	1.07											
Doris	GN12	16-Aug-97	GN	3.81	163	CISC	185	64	1.01											
Doris	GN12	16-Aug-97	GN	3.81	164	CISC	198	74	0.95											
Doris	GN12	16-Aug-97	GN	3.81	165	CISC	195	72	0.97											
Doris	GN12	16-Aug-97	GN	3.81	166	CISC	240	146	1.06	F	2	3							Y	
Doris	GN12	16-Aug-97	GN	3.81	167	CISC	237	126	0.95	F	2	2							Y	
Doris	GN12	16-Aug-97	GN	3.81	168	CISC	282	180	0.80	F	2	2							Y	
Doris	GN13	16-Aug-97	GN	3.81	171	CISC	195	68	0.92											
Doris	GN13	16-Aug-97	GN	3.81	172	CISC	237	139	1.04											
Doris	GN13	16-Aug-97	GN	3.81	173	CISC	180	54	0.93											
Doris	GN13	16-Aug-97	GN	3.81	174	CISC	183	64	1.04											
Doris	GN13	16-Aug-97	GN	3.81	175	CISC	212	88	0.92											
Doris	GN13	16-Aug-97	GN	3.81	176	CISC	237	124	0.93											
Doris	GN13	16-Aug-97	GN	3.81	177	CISC	199	76	0.96											
Doris	GN13	16-Aug-97	GN	3.81	178	CISC	197	58	0.76											
Doris	GN13	16-Aug-97	GN	3.81	179	CISC	187	66	1.01											
Doris	GN13	16-Aug-97	GN	3.81	180	CISC	270	174	0.88	F	1	1							Y	
Doris	GN13	16-Aug-97	GN	3.81	181	CISC	242	154	1.09	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	189	CISC	225	112	0.98											
Doris	GN14	16-Aug-97	GN	3.81	190	CISC	247	168	1.11											
Doris	GN14	16-Aug-97	GN	3.81	191	CISC	247	116	0.77											
Doris	GN14	16-Aug-97	GN	3.81	192	CISC	238	124	0.92											
Doris	GN14	16-Aug-97	GN	3.81	193	CISC	232	120	0.96											
Doris	GN14	16-Aug-97	GN	3.81	208	CISC	254	160	0.98											
Doris	GN14	16-Aug-97	GN	3.81	209	CISC	217													
Doris	GN14	16-Aug-97	GN	3.81	210	CISC	"118"	"120"	"7.30"	M	2	2							Y	
Doris	GN14	16-Aug-97	GN	3.81	211	CISC	240	130	0.94	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	212	CISC	244	130	0.89	M	2	2							Y	
Doris	GN14	16-Aug-97	GN	3.81	213	CISC	228	120	1.01	M	1	1							Y	
Doris	GN14	16-Aug-97	GN	3.81	214	CISC	258	164	0.95	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	215	CISC	255	190	1.15	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	216	CISC	236	116	0.88	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	217	CISC	238	134	0.99	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	218	CISC	251	142	0.90	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	219	CISC	230	112	0.92	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	220	CISC	224	160	1.42	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	221	CISC	245	150	1.02	F	2	3							Y	
Doris	GN14	16-Aug-97	GN	3.81	222	CISC	237	150	1.13	F	2	3							Y	
Doris	GN15	16-Aug-97	GN	3.81	223	CISC	277	244	1.15											
Doris	GN15	16-Aug-97	GN	3.81	224	CISC	267	200	1.05											
Doris	GN15	16-Aug-97	GN	3.81	225	CISC	248	146	0.96											
Doris	GN15	16-Aug-97	GN	3.81	226	CISC	173	60	1.16											
Doris	GN15	16-Aug-97	GN	3.81	227	CISC	247	138	0.92											
Doris	GN15	16-Aug-97	GN	3.81	229	CISC	252	182	1.14	M	2	2							Y	
Doris	GN15	16-Aug-97	GN	3.81	230	CISC	222	120	1.10	M	1	1							Y	
Doris	GN15	16-Aug-97	GN	3.81	231	CISC	215	110	1.11	M	1	1							Y	
Doris	GN15	16-Aug-97	GN	3.81	232	CISC	203	84	1.00	M	1	1							Y	
Doris	GN15	16-Aug-97	GN	3.81	233	CISC	257	198	1.17	F	2	2							Y	
Doris	GN15	16-Aug-97	GN	3.81	234	CISC	193	80	1.11	F	1	1							Y	
Doris	GN15	16-Aug-97	GN	3.81	235	CISC	290	256	1.05	F	2	2							Y	
Doris	GN16	18-Aug-97	GN	3.81	247	CISC	238	166	1.23											
Doris	GN16	18-Aug-97	GN	3.81	248	CISC	251	154	0.97	F	2	2								
Doris	GN16	18-Aug-97	GN	3.81	249	CISC	268	188	0.98	M	2	2								
Doris	GN16	18-Aug-97	GN	3.81	250	CISC	268	164	0.85	F	2	3								
Doris	GN16	18-Aug-97	GN	3.81	251	CISC	171	52	1.04	M	1	1								
Doris	GN16	18-Aug-97	GN	3.81	252	CISC	262	156	0.87	M	2	2								
Doris	GN17	18-Aug-97	GN	3.81	257	CISC	223	108	0.97											
Doris	GN17	18-Aug-97	GN	3.81	258	CISC	232	102	0.82											
Doris	GN17	18-Aug-97	GN	3.81	262	CISC	209	90	0.99											
Doris	GN17	18-Aug-97	GN	3.81	263	CISC	231	120	0.97	F	1	1								
Doris	GN17	18-Aug-97	GN	3.81	264	CISC	198	62	0.80	F	1	1								
Doris	GN17	18-Aug-97	GN	3.81	265	CISC	200	78	0.98	F	1	1								
Doris	GN17	18-Aug-97	GN	3.81	266	CISC	269	162	0.83	F	2	3								
Doris	GN17	18-Aug-97	GN	3.81	267	CISC	276	202	0.96	F	2	2								
Doris	GN17	18-Aug-97	GN	3.81	268	CISC	254	150	0.92	F	2	2								

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Doris	GN17	18-Aug-97	GN	3.81	269	CISC	239	150	1.10	M	2	2								
Doris	GN18	18-Aug-97	GN	3.81	276	CISC	184	54	0.87											
Doris	GN18	18-Aug-97	GN	3.81	277	CISC	187	62	0.95											
Doris	GN18	18-Aug-97	GN	3.81	278	CISC	198	74	0.95											
Doris	GN18	18-Aug-97	GN	3.81	280	CISC	244	134	0.92											
Doris	GN18	18-Aug-97	GN	3.81	281	CISC	196	70	0.93											
Doris	GN18	18-Aug-97	GN	3.81	282	CISC	197	78	1.02	F	1	1								
Doris	GN18	18-Aug-97	GN	3.81	283	CISC	187	58	0.89	M	1	1								
Doris	GN18	18-Aug-97	GN	3.81	284	CISC	199	72	0.91	M	1	1								
Doris	GN18	18-Aug-97	GN	3.81	285	CISC	219	108	1.03	F	1	1								
Doris	GN18	18-Aug-97	GN	3.81	286	CISC	274	214	1.04	M	1	1								
Doris	GN18	18-Aug-97	GN	3.81	287	CISC	245	156	1.06	F	2	2								
Doris	GN18	18-Aug-97	GN	3.81	288	CISC	247	128	0.85	M	1	1								
Doris	GN19	18-Aug-97	GN	3.81	293	CISC	182	58	0.96											
Doris	GN19	18-Aug-97	GN	3.81	294	CISC	227	120	1.03											
Doris	GN19	18-Aug-97	GN	3.81	297	CISC	242	136	0.96	F	1	1								
Doris	GN19	18-Aug-97	GN	3.81	298	CISC	172	52	1.02	F	1	1								
Doris	GN19	18-Aug-97	GN	3.81	299	CISC	238	132	0.98	M	1	1								
Doris	GN19	18-Aug-97	GN	3.81	300	CISC	195	70	0.94	M	1	1								
Doris	GN19	18-Aug-97	GN	3.81	301	CISC	254	168	1.03	M	2	2								
Doris	GN19	18-Aug-97	GN	3.81	302	CISC	254	180	1.10	F	1	1								
Doris	GN20	18-Aug-97	GN	3.81	314	CISC	287	212	0.90											
Doris	GN20	18-Aug-97	GN	3.81	315	CISC	234	120	0.94											
Doris	GN20	18-Aug-97	GN	3.81	316	CISC	228	108	0.91											
Doris	GN20	18-Aug-97	GN	3.81	317	CISC	175	54	1.01											
Doris	GN20	18-Aug-97	GN	3.81	321	CISC	177	58	1.05	M	1	1								
Doris	GN20	18-Aug-97	GN	3.81	322	CISC	194	68	0.93	M	1	1								
Doris	GN21	18-Aug-97	GN	3.81	325	CISC	212	84	0.88											
Doris	GN21	18-Aug-97	GN	3.81	326	CISC	237	132	0.99											
Doris	GN21	18-Aug-97	GN	3.81	327	CISC	185	66	1.04											
Doris	GN21	18-Aug-97	GN	3.81	328	CISC	280	244	1.11											
Doris	GN21	18-Aug-97	GN	3.81	329	CISC	188	64	0.96											
Doris	GN21	18-Aug-97	GN	3.81	330	CISC	293	256	1.02											
Doris	GN21	18-Aug-97	GN	3.81	337	CISC	225	116	1.02											
Doris	GN21	18-Aug-97	GN	3.81	338	CISC	181	64	1.08	M	1	1								
Doris	GN21	18-Aug-97	GN	3.81	339	CISC	222	112	1.02	F	1	1								
Doris	GN21	18-Aug-97	GN	3.81	340	CISC	186	52	0.81	M	1	1								
Doris	GN21	18-Aug-97	GN	3.81	341	CISC	202	64	0.78	M	1	1								
Doris	GN22	18-Aug-97	GN	3.81	345	CISC	185	68	1.07											
Doris	GN22	18-Aug-97	GN	3.81	346	CISC	233	118	0.93											
Doris	GN22	18-Aug-97	GN	3.81	347	CISC	237	128	0.96											
Doris	GN22	18-Aug-97	GN	3.81	354	CISC	247	132	0.88	M	2	2								
Doris	GN22	18-Aug-97	GN	3.81	355	CISC	223	104	0.94	M	1	1								
Doris	GN22	18-Aug-97	GN	3.81	356	CISC	254	176	1.07	F	1	1								
Doris	GN22	18-Aug-97	GN	3.81	357	CISC	245	130	0.88	F	2	2								
Doris	GN22	18-Aug-97	GN	3.81	358	CISC	268	174	0.90	M	2	2								
Doris	GN22	18-Aug-97	GN	3.81	359	CISC	264	182	0.99	M	2	2								
Doris	GN22	18-Aug-97	GN	3.81	360	CISC	253	148	0.91	M	1	1								
Doris	GN22	18-Aug-97	GN	3.81	361	CISC	255	144	0.87	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	375	CISC	297	284	1.08	F	2	2								
Doris	GN23	18-Aug-97	GN	3.81	376	CISC	257	150	0.88	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	377	CISC	242	156	1.10	M	2	2								
Doris	GN23	18-Aug-97	GN	3.81	378	CISC	240	134	0.97	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	379	CISC	270	188	0.96	F	2	3								
Doris	GN23	18-Aug-97	GN	3.81	380	CISC	186	68	1.06	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	381	CISC	282	240	1.07	F	2	3								
Doris	GN23	18-Aug-97	GN	3.81	382	CISC	237	124	0.93	M	2	3								
Doris	GN23	18-Aug-97	GN	3.81	383	CISC	232	130	1.04	M	2	2								
Doris	GN23	18-Aug-97	GN	3.81	384	CISC	191	66	0.95	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	385	CISC	222	106	0.97	F	2	3								
Doris	GN23	18-Aug-97	GN	3.81	386	CISC	233	124	0.98	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	387	CISC	253	162	1.00	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	388	CISC	217	100	0.98	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	389	CISC	195	66	0.89	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	390	CISC	243	138	0.96	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	391	CISC	221	108	1.00	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	392	CISC	223	106	0.96	M	2	3								
Doris	GN23	18-Aug-97	GN	3.81	393	CISC	200	78	0.98	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	394	CISC	208	88	0.98	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	396	CISC	187	66	1.01	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	397	CISC	183	58	0.95	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	398	CISC	186	60	0.93	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	400	CISC	173	54	1.04	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	401	CISC	295	246	0.96	F	2	2								
Doris	GN23	18-Aug-97	GN	3.81	402	CISC	243	142	0.99	F	2	3								
Doris	GN23	18-Aug-97	GN	3.81	403	CISC	195	68	0.92	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	404	CISC	205	78	0.91	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	405	CISC	211	90	0.96	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	406	CISC	"128"	"118"	"5.63"	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	407	CISC	187	60	0.92	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	409	CISC	172	46	0.90	M	1	1								
Doris	GN24	22-Aug-97	GN	3.81	412	CISC	249	146	0.95											
Doris	GN24	22-Aug-97	GN	3.81	413	CISC	242	154	1.09											
Doris	GN24	22-Aug-97	GN	3.81	414	CISC	228	118	1.00											
Doris	GN24	22-Aug-97	GN	3.81	416	CISC	498	904	0.73											

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Doris	GN24	22-Aug-97	GN	3.81	417	CISC	205	86	1.00											
Doris	GN24	22-Aug-97	GN	3.81	418	CISC	"477"	"58"	"0.05"											
Doris	GN24	22-Aug-97	GN	3.81	420	CISC	271	110	0.55	M	1	1								
Doris	GN24	22-Aug-97	GN	3.81	421	CISC	257	160	0.94	M	1	1								
Doris	GN24	22-Aug-97	GN	3.81	422	CISC	228	112	0.94	F	1	1								
Doris	GN25	22-Aug-97	GN	3.81	427	CISC	281	256	1.15											
Doris	GN25	22-Aug-97	GN	3.81	428	CISC	214	104	1.06											
Doris	GN25	22-Aug-97	GN	3.81	429	CISC	209	84	0.92											
Doris	GN25	22-Aug-97	GN	3.81	430	CISC	203	86	1.03											
Doris	GN25	22-Aug-97	GN	3.81	431	CISC	246	144	0.97											
Doris	GN25	22-Aug-97	GN	3.81	432	CISC	240	142	1.03											
Doris	GN25	22-Aug-97	GN	3.81	433	CISC	241	144	1.03											
Doris	GN25	22-Aug-97	GN	3.81	434	CISC	176	52	0.95											
Doris	GN25	22-Aug-97	GN	3.81	435	CISC	211	80	0.85											
Doris	GN25	22-Aug-97	GN	3.81	436	CISC	"225"	"1424"	"12.50"											
Doris	GN25	22-Aug-97	GN	3.81	437	CISC	231	110	0.89											
Doris	GN25	22-Aug-97	GN	3.81	438	CISC	184	58	0.93											
Doris	GN25	22-Aug-97	GN	3.81	439	CISC	194	72	0.99											
Doris	GN25	22-Aug-97	GN	3.81	440	CISC	247	154	1.02											
Doris	GN25	22-Aug-97	GN	3.81	441	CISC	218	100	0.97											
Doris	GN25	22-Aug-97	GN	3.81	442	CISC	206	82	0.94	F	2	3								
Doris	GN25	22-Aug-97	GN	3.81	443	CISC	232	136	1.09											
Doris	GN25	22-Aug-97	GN	3.81	444	CISC	250	182	1.16	F	2	3								
Doris	GN25	22-Aug-97	GN	3.81	445	CISC	242	130	0.92	F	2	2								
Doris	GN25	22-Aug-97	GN	3.81	446	CISC	214	98	1.00	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	447	CISC	257	146	0.86	F	2	3								
Doris	GN25	22-Aug-97	GN	3.81	448	CISC	234	126	0.98	F	2	3								
Doris	GN25	22-Aug-97	GN	3.81	449	CISC	228	116	0.98	M	2	3								
Doris	GN25	22-Aug-97	GN	3.81	450	CISC	249	146	0.95	M	2	2								
Doris	GN25	22-Aug-97	GN	3.81	451	CISC	258	182	1.06	F	2	3								
Doris	GN25	22-Aug-97	GN	3.81	452	CISC	242	138	0.97	F	2	2								
Doris	GN25	22-Aug-97	GN	3.81	453	CISC	195	80	1.08	M	2	2								
Doris	GN25	22-Aug-97	GN	3.81	454	CISC	217	100	0.98	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	455	CISC	186	60	0.93	F	1	1								
Doris	GN25	22-Aug-97	GN	3.81	456	CISC	255	170	1.03	F	2	3								
Doris	GN25	22-Aug-97	GN	3.81	457	CISC	209	86	0.94	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	458	CISC	206	82	0.94	F	1	1								
Doris	GN25	22-Aug-97	GN	3.81	459	CISC	224	116	1.03	M	2	3								
Doris	GN25	22-Aug-97	GN	3.81	460	CISC	191	64	0.92	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	461	CISC	191	68	0.98											
Doris	GN25	22-Aug-97	GN	3.81	462	CISC	188	66	0.99											
Doris	GN25	22-Aug-97	GN	3.81	463	CISC	186	66	1.03	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	464	CISC	190	66	0.96	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	465	CISC	201	78	0.96	F	2	2								
Doris	GN25	22-Aug-97	GN	3.81	466	CISC	212	76	0.80	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	467	CISC	178	54	0.96	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	468	CISC	173	48	0.93	F	1	1								
Doris	GN25	22-Aug-97	GN	3.81	469	CISC	192	74	1.05	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	470	CISC	191	72	1.03	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	472	CISC	210	90	0.97	F	2	2								
Doris	GN25	22-Aug-97	GN	3.81	474	CISC	198	78	1.00	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	481	CISC	"103"	"74"	"6.77"											
Doris	GN26	22-Aug-97	GN	3.81	482	CISC	240	136	0.98											
Doris	GN26	22-Aug-97	GN	3.81	483	CISC	257	134	0.79											
Doris	GN26	22-Aug-97	GN	3.81	484	CISC	232	122	0.98											
Doris	GN26	22-Aug-97	GN	3.81	485	CISC	182	56	0.93											
Doris	GN26	22-Aug-97	GN	3.81	486	CISC	194	60	0.82											
Doris	GN26	22-Aug-97	GN	3.81	487	CISC	207	78	0.88											
Doris	GN26	22-Aug-97	GN	3.81	488	CISC	185	54	0.85											
Doris	GN26	22-Aug-97	GN	3.81	489	CISC	235	124	0.96											
Doris	GN26	22-Aug-97	GN	3.81	490	CISC	251	152	0.96											
Doris	GN26	22-Aug-97	GN	3.81	491	CISC	196	80	1.06											
Doris	GN26	22-Aug-97	GN	3.81	492	CISC	213	88	0.91	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	493	CISC	241	132	0.94	F	2	3								
Doris	GN26	22-Aug-97	GN	3.81	494	CISC	217	118	1.15	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	495	CISC	234	152	1.19	F	2	3								
Doris	GN26	22-Aug-97	GN	3.81	496	CISC	229	106	0.88	F	2	2								
Doris	GN26	22-Aug-97	GN	3.81	497	CISC	233	114	0.90	M	2	3								
Doris	GN26	22-Aug-97	GN	3.81	498	CISC	231	116	0.94	F	2	2								
Doris	GN26	22-Aug-97	GN	3.81	499	CISC	204	84	0.99	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	500	CISC	211	86	0.92	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	501	CISC	237	136	1.02	F	2	3								
Doris	GN26	22-Aug-97	GN	3.81	502	CISC	188	58	0.87	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	503	CISC	212	48	0.50	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	504	CISC	194	60	0.82	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	505	CISC	187	92	1.41	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	507	CISC	197	92	1.20	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	508	CISC	194	82	1.12	F	2	2								
Doris	GN26	22-Aug-97	GN	3.81	510	CISC	190	74	1.08	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	512	CISC	172	50	0.98	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	513	CISC	180	50	0.86	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	516	CISC	187	68	1.04	F	2	2								
Doris	GN26	22-Aug-97	GN	3.81	518	CISC	183	62	1.01	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	519	CISC	186	68	1.06	F	2	2								
Doris	GN26	22-Aug-97	GN	3.81	522	CISC	177	48	0.87	F	1	1								

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Doris	GN27	22-Aug-97	GN	3.81	525	CISC	175	54	1.01											
Doris	GN27	22-Aug-97	GN	3.81	527	CISC	191	54	0.77											
Doris	GN27	22-Aug-97	GN	3.81	529	CISC	207	86	0.97											
Doris	GN27	22-Aug-97	GN	3.81	539	CISC														mutilated
Doris	GN27	22-Aug-97	GN	3.81	540	CISC	200	64	0.80	F	2	2								
Doris	GN27	22-Aug-97	GN	3.81	541	CISC	208	94	1.04	F	2	2								
Doris	GN27	22-Aug-97	GN	3.81	542	CISC	177	56	1.01	M	1	1								
Doris	GN27	22-Aug-97	GN	3.81	543	CISC	183	64	1.04	F	2	2								
Doris	GN27	22-Aug-97	GN	3.81	544	CISC	173	54	1.04	M	1	1								
Doris	GN27	22-Aug-97	GN	3.81	545	CISC	219	118	1.12	F	2	3								
Doris	GN27	22-Aug-97	GN	3.81	546	CISC	257	164	0.97	M	2	2								
Doris	GN27	22-Aug-97	GN	3.81	547	CISC	245	154	1.05	M	2	3								
Doris	GN27	22-Aug-97	GN	3.81	548	CISC	217	104	1.02	F	2	2								
Doris	GN27	22-Aug-97	GN	3.81	549	CISC	179	60	1.05	M	1	1								
Doris	GN16	18-Aug-98	GN	3.81	242	CISC		146												
Doris	GN16	18-Aug-98	GN	3.81	243	CISC	222	94	0.86											
Doris	GN16	18-Aug-98	GN	3.81	244	CISC	233	116	0.92											
Doris	GN16	18-Aug-98	GN	3.81	245	CISC	219	86	0.82											
Doris	GN16	18-Aug-98	GN	3.81	246	CISC	211	98	1.04											
Doris		19-Aug-95	GN		31	LKTR	469	1224	1.19	F	1	1		O				Y	Y	
Doris		6-Aug-96	GN	5.68		LKTR	799													
Doris		6-Aug-96	GN	5.08		LKTR	860													
Doris		6-Aug-96	GN	5.08		LKTR														
Doris		6-Aug-96	GN	8.89		LKTR	438													
Doris	GN1	13-Aug-97	GN	3.81	4	LKTR	432	1050	1.30					F	orange	904				
Doris	GN1	13-Aug-97	GN	3.81	5	LKTR	702	3700	1.07					F	orange	905				
Doris	GN1	13-Aug-97	GN	3.81	6	LKTR	623	2600	1.08					F	orange	906				
Doris	GN1	13-Aug-97	GN	3.81	7	LKTR	626	2500	1.02					F	orange	907				
Doris	GN1	13-Aug-97	GN	3.81	8	LKTR	484	1150	1.01				12	F	orange	908				
Doris	GN1	13-Aug-97	GN	3.81	9	LKTR	601	2100	0.97					F	orange	909				
Doris	GN2	13-Aug-97	GN	3.81	16	LKTR	624	2500	1.03				21	F	orange	912				
Doris	GN3	13-Aug-97	GN	3.81	19	LKTR	935	5121	0.63					F	orange	913				
Doris	GN3	13-Aug-97	GN	3.81	21	LKTR	549	1750	1.06					F	orange	915				
Doris	GN3	13-Aug-97	GN	3.81	22	LKTR	358	650	1.42					F	orange	916				
Doris	GN4	13-Aug-97	GN	3.81	33	LKTR	467	1000	0.98					F	orange	919				
Doris	GN4	13-Aug-97	GN	3.81	34	LKTR	672	2700	0.89					F	orange	920				
Doris	GN6	13-Aug-97	GN	3.81	53	LKTR	702	3100	0.90					F	orange	926				
Doris	GN8	16-Aug-97	GN	3.81	105	LKTR	697	3600	1.06					F	orange	931				
Doris	GN9	16-Aug-97	GN	3.81	118	LKTR	618	2250	0.95				15	F	orange	932				
Doris	GN11	16-Aug-97	GN	3.81	141	LKTR	705	3100	0.88						red	95	Y			
Doris	GN11	16-Aug-97	GN	3.81	147	LKTR	428	950	1.21						orange	939				
Doris	GN11	16-Aug-97	GN	3.81	148	LKTR	448	1000	1.11				17	F	orange	940				
Doris	GN11	16-Aug-97	GN	3.81	149	LKTR	665	3000	1.02					F	orange	941				
Doris	GN12	16-Aug-97	GN	3.81	169	LKTR	439	790	0.93	M	1	1	8	O, F				Y		
Doris	GN13	16-Aug-97	GN	3.81	182	LKTR	684	3225	1.01	F	2	2	49	O, F				Y	Y	100% CISC
Doris	GN14	16-Aug-97	GN	3.81	194	LKTR	700	3300	0.96	F	2	2	23	O, F				Y		
Doris	GN14	16-Aug-97	GN	3.81	195	LKTR	663	2925	1.00	M	2	3	25	O, F				Y		
Doris	GN14	16-Aug-97	GN	3.81	196	LKTR														lost
Doris	GN14	16-Aug-97	GN	3.81	197	LKTR														lost
Doris	GN14	16-Aug-97	GN	3.81	198	LKTR														lost
Doris	GN14	16-Aug-97	GN	3.81	199	LKTR														lost
Doris	GN14	16-Aug-97	GN	3.81	200	LKTR														lost
Doris	GN14	16-Aug-97	GN	3.81	201	LKTR														lost
Doris	GN14	16-Aug-97	GN	3.81	202	LKTR														lost
Doris	GN14	16-Aug-97	GN	3.81	203	LKTR														lost
Doris	GN15	16-Aug-97	GN	3.81	236	LKTR														lost
Doris	GN16	18-Aug-97	GN	3.81	255	LKTR	605	2025	0.91	F	2	2	26	O, F				Y	Y	75% fish remains
Doris	GN16	18-Aug-97	GN	3.81	256	LKTR	702	2325	0.67	F	2	2	49	O, F				Y	Y	stomach empty
Doris	GN23	18-Aug-97	GN	3.81	272	LKTR	655	2625	0.93	M	2	3	40	O, F				Y	Y	10% fish remains
Doris	GN18	18-Aug-97	GN	3.81	289	LKTR	353	406	0.92	M	1	1	8	O, F				Y	Y	stomach empty
Doris	GN19	18-Aug-97	GN	3.81	292	LKTR	945	5121	0.61				39	F	orange	946				
Doris	GN19	18-Aug-97	GN	3.81	303	LKTR	672	2600	0.86	F	2	2	25	O, F				Y		
Doris	GN19	18-Aug-97	GN	3.81	304	LKTR	403	756	1.16	F	2	2	25	O, F				Y	Y	25% zooplankton
Doris	GN20	18-Aug-97	GN	3.81	323	LKTR	680	3050	0.97	M	2	2	22	O, F				Y	Y	stomach empty
Doris	GN20	18-Aug-97	GN	3.81	324	LKTR	560	1940	1.10	F	2	3	28	O, F				Y	Y	stomach empty
Doris	GN21	18-Aug-97	GN	3.81	342	LKTR	653	2700	0.97	F	2	2	25	O, F				Y	Y	stomach empty
Doris	GN21	18-Aug-97	GN	3.81	343	LKTR	714	3275	0.90	F	2	2	27	O, F				Y	Y	stomach empty
Doris	GN21	18-Aug-97	GN	3.81	344	LKTR	707	3175	0.90	M	2	2	45	O, F				Y	Y	stomach empty
Doris	GN22	18-Aug-97	GN	3.81	362	LKTR	397	582	0.93	F	1	1	9	O, F				Y	Y	stomach empty
Doris	GN23	18-Aug-97	GN	3.81	364	LKTR	935	5000	0.61				48	F	orange	964				
Doris	GN23	18-Aug-97	GN	3.81	365	LKTR	932	9900	1.22	F	2	2	47	O, F				Y	Y	100% LKWH (440 mm)
Doris	GN23	18-Aug-97	GN	3.81	366	LKTR	704	3850	1.10				27	O, F	orange	966				
Doris	GN23	18-Aug-97	GN	3.81	367	LKTR	742	4350	1.06					O, F	orange	967				
Doris	GN23	18-Aug-97	GN	3.81	368	LKTR	733	4000	1.02				28	O, F	orange	968				
Doris	GN23	18-Aug-97	GN	3.81	374	LKTR	251	152	0.96	F	1	1								
Doris	GN25	22-Aug-97	GN	3.81	476	LKTR	621	2350	0.98	M	2	3	23	O, F				Y		
Doris	GN25	22-Aug-97	GN	3.81	477	LKTR	660	2020	0.70	M	2	2	34	O, F				Y	Y	stomach empty
Doris	GN26	22-Aug-97	GN	3.81	521	LKTR	668	2950	0.99	F	2	2	27	O, F				Y	Y	stomach empty
Doris	GN27	22-Aug-97	GN	3.81	530	LKTR	770	3844	0.84	F	2	2	42	O, F				Y	Y	100% CISCO (265mm)
Doris	GN27	22-Aug-97	GN	3.81	531	LKTR	773	4221	0.91	M	2	2	42	O, F				Y	Y	stomach empty
Doris		19-Aug-95	GN		21	LKWH	345	570	1.39	F	1	1	11	O					Y	stomach empty
Doris		19-Aug-95	GN		25	LKWH	287	294	1.24	M	1	1	8	O					Y	stomach empty
Doris		19-Aug-95	GN		26	LKWH	357	616	1.35	F	2	2	11	O					Y	stomach empty
Doris		19-Aug-95	GN		27	LKWH	377	784	1.46	M	2	2	11	O					Y	20% chirnomids, 5% amphipods
Doris		19-Aug-95	GN		28	LKWH	462	1290	1.31	M	2	3	13	O				Y	Y	

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mortality	Comments / Stomach Content
Doris		19-Aug-95	GN		29	LKWH	386	856	1.49	F	1	1	11	O				Y	Y	
Doris		19-Aug-95	GN		30	LKWH	469	1760	1.71	F	2	2	16	O				Y	Y	
Doris		6-Aug-96	GN	3.81		LKWH	490													
Doris		6-Aug-96	GN	3.81		LKWH	438													
Doris		6-Aug-96	GN	3.81		LKWH	452													
Doris		6-Aug-96	GN	3.81		LKWH	339													
Doris		6-Aug-96	GN	3.81		LKWH	338													
Doris		6-Aug-96	GN	3.81	33	LKWH	336	450	1.19	F	1		8						Y	
Doris		6-Aug-96	GN	5.08	34	LKWH	474	1500	1.41	F	2		29						Y	
Doris		6-Aug-96	GN	5.08		LKWH	454													
Doris		6-Aug-96	GN	5.08		LKWH	363													
Doris		6-Aug-96	GN	8.89		LKWH	460													
Doris		6-Aug-96	GN	5.08		LKWH														
Doris		6-Aug-96	GN	5.08		LKWH	399													
Doris		6-Aug-96	GN	5.08		LKWH	346													
Doris		6-Aug-96	GN	5.08	39	LKWH	458	1300	1.35	M	2		16						Y	
Doris		6-Aug-96	GN	5.08		LKWH	490													
Doris		6-Aug-96	GN	3.81		LKWH	346													
Doris		6-Aug-96	GN	3.81		LKWH	387													
Doris		6-Aug-96	GN	3.81		LKWH	432													
Doris		6-Aug-96	GN	5.08		LKWH	361													
Doris		6-Aug-96	GN	5.08		LKWH	469													
Doris	GN1	13-Aug-97	GN	3.81	1	LKWH	456	1600	1.69					F	orange	901				
Doris	GN1	13-Aug-97	GN	3.81	2	LKWH	452	1450	1.57					F	orange	902				
Doris	GN2	13-Aug-97	GN	3.81	13	LKWH	482	1750	1.56					F	orange	910				
Doris	GN2	13-Aug-97	GN	3.81	14	LKWH	474	1800	1.69					F	orange	911				
Doris	GN3	13-Aug-97	GN	3.81	20	LKWH	438	1400	1.67					F	orange	914				
Doris	GN3	13-Aug-97	GN	3.81	28	LKWH	417	870	1.20	M	1	1	15	O, F				Y	Y	
Doris	GN4	13-Aug-97	GN	3.81	31	LKWH	448	1200	1.33					F	orange	917				
Doris	GN4	13-Aug-97	GN	3.81	32	LKWH	497	1900	1.55					F	orange	918				
Doris	GN4	13-Aug-97	GN	3.81	40	LKWH	472	1556	1.48	M	2	3	31	O, F				Y	Y	
Doris	GN6	13-Aug-97	GN	3.81	41	LKWH	280	220	1.00					F	orange	921				
Doris	GN6	13-Aug-97	GN	3.81	50	LKWH	454	1250	1.34					F	orange	923				
Doris	GN6	13-Aug-97	GN	3.81	51	LKWH	454	1250	1.34					F	orange	924				
Doris	GN6	13-Aug-97	GN	3.81	52	LKWH	365	650	1.34					F	orange	925				
Doris	GN7	13-Aug-97	GN	3.81	72	LKWH	455	1110	1.18	M	2	3	25	O, F				Y	Y	
Doris	GN8	16-Aug-97	GN	3.81	101	LKWH	467	1650	1.62					F	orange	927				
Doris	GN8	16-Aug-97	GN	3.81	102	LKWH	454	1300	1.39					F	orange	928				
Doris	GN8	16-Aug-97	GN	3.81	103	LKWH	445	1050	1.19					F	orange	929				
Doris	GN8	16-Aug-97	GN	3.81	104	LKWH	343	600	1.49					F	orange	930				
Doris	GN8	16-Aug-97	GN	3.81	113	LKWH	"185"	"347"	"5.48"	M	1	1							Y	
Doris	GN9	16-Aug-97	GN	3.81	115	LKWH	196	72	0.96				2	F						
Doris	GN9	16-Aug-97	GN	3.81	122	LKWH	269	222	1.14	M	1	1	6	O, F					Y	
Doris	GN9	16-Aug-97	GN	3.81	123	LKWH	223	116	1.05	M	1	1	4	O, F					Y	
Doris	GN10	16-Aug-97	GN	3.81	124	LKWH	448	1300	1.45					F	orange	933				
Doris	GN10	16-Aug-97	GN	3.81	125	LKWH	426	1100	1.42					F	orange	934				
Doris	GN10	16-Aug-97	GN	3.81	126	LKWH	334	600	1.61					F	orange	935				
Doris	GN10	16-Aug-97	GN	3.81	127	LKWH	351	496	1.15					F	orange	936				
Doris	GN11	16-Aug-97	GN	3.81	142	LKWH	444	1400	1.60					F	orange	937				
Doris	GN11	16-Aug-97	GN	3.81	143	LKWH	412	1100	1.57					F	orange	938				
Doris	GN11	16-Aug-97	GN	3.81	150	LKWH													Y	
Doris	GN11	16-Aug-97	GN	3.81	151	LKWH	269	256	1.32	M	1	1		O, F					Y	
Doris	GN12	16-Aug-97	GN	3.81	170	LKWH	418	996	1.36	M	2	2	25	O, F				Y	Y	
Doris	GN13	16-Aug-97	GN	3.81	183	LKWH	446	1320	1.49	F	2	2	31	O, F				Y	Y	stomach empty
Doris	GN13	16-Aug-97	GN	3.81	184	LKWH	525	1925	1.33	F	2	2	54	O, F				Y	Y	100% isopods
Doris	GN13	16-Aug-97	GN	3.81	185	LKWH	450	1268	1.39	M	2	2	31	O, F				Y	Y	
Doris	GN13	16-Aug-97	GN	3.81	186	LKWH	504	1775	1.39	M	2	2	65	O, F				Y	Y	
Doris	GN13	16-Aug-97	GN	3.81	187	LKWH	462	1666	1.69	F	2	2	34	O, F				Y	Y	
Doris	GN13	16-Aug-97	GN	3.81	188	LKWH	497	1674	1.36	F	2	3	40	O, F				Y	Y	
Doris	GN14	16-Aug-97	GN	3.81	204	LKWH	508	1975	1.51	M	2	2	60	O, F				Y	Y	
Doris	GN14	16-Aug-97	GN	3.81	205	LKWH	466	1346	1.33	M	2	2	52	O, F				Y	Y	
Doris	GN14	16-Aug-97	GN	3.81	206	LKWH	395	724	1.17	M	1	1	10	O, F				Y	Y	
Doris	GN14	16-Aug-97	GN	3.81	207	LKWH	358	534	1.16	F	1	1	9	O, F				Y	Y	
Doris	GN15	16-Aug-97	GN	3.81	228	LKWH	342	600	1.50						orange	942				
Doris	GN15	16-Aug-97	GN	3.81	237	LKWH	368	586	1.18	M	1	1		O						
Doris	GN15	16-Aug-97	GN	3.81	238	LKWH	314	352	1.14	F	1	1		O						
Doris	GN15	16-Aug-97	GN	3.81	240	LKWH														lost
Doris	GN15	16-Aug-97	GN	3.81	241	LKWH														lost
Doris	GN16	18-Aug-97	GN	3.81	253	LKWH	199	86	1.09	M	1	1								
Doris	GN16	18-Aug-97	GN	3.81	254	LKWH	414	888	1.25	M	1	1	14	O, F				Y	Y	
Doris	GN17	18-Aug-97	GN	3.81	259	LKWH	342	444	1.11					F	orange	943				
Doris	GN17	18-Aug-97	GN	3.81	260	LKWH	362	550	1.16					F	orange	944				
Doris	GN17	18-Aug-97	GN	3.81	261	LKWH	365	530	1.09					F	orange	945				
Doris	GN17	18-Aug-97	GN	3.81	270	LKWH	472	1486	1.41	M	2	2	35	O, F				Y	Y	
Doris	GN17	18-Aug-97	GN	3.81	271	LKWH	465	1244	1.24	F	2	3	34	O, F				Y	Y	
Doris	GN17	18-Aug-97	GN	3.81	273	LKWH	443	1090	1.25	M	2	2	27	O, F				Y	Y	
Doris	GN17	18-Aug-97	GN	3.81	274	LKWH	463	1248	1.26	M	2	2	31	O, F				Y	Y	
Doris	GN17	18-Aug-97	GN	3.81	275	LKWH	413	916	1.30	M	2	2	15	O, F				Y	Y	
Doris	GN18	18-Aug-97	GN	3.81	279	LKWH	203	94	1.12											
Doris	GN18	18-Aug-97	GN	3.81	290	LKWH	459	1216	1.26	M	2	2	29	O, F				Y	Y	
Doris	GN18	18-Aug-97	GN	3.81	291	LKWH	439	1190	1.41	F	2	3	24	O, F				Y	Y	
Doris	GN19	18-Aug-97	GN	3.81	295	LKWH	296	264	1.02					F	orange	947				
Doris	GN19	18-Aug-97	GN	3.81	296	LKWH	557	2800	1.62					F	orange	948				
Doris	GN19	18-Aug-97	GN	3.81	305	LKWH	430	1084	1.36	M	2	2	22	O, F				Y	Y	stomach empty
Doris	GN19	18-Aug-97	GN	3.81	306	LKWH	465	1250	1.24	M	2	3	31	O, F				Y	Y	stomach empty

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mortality	Comments / Stomach Content
Doris	GN19	18-Aug-97	GN	3.81	307	LKWH	475	1382	1.29	M	2	2	24	O, F				Y	Y	
Doris	GN19	18-Aug-97	GN	3.81	308	LKWH	463	1336	1.35	M	2	3	27	O, F				Y	Y	
Doris	GN19	18-Aug-97	GN	3.81	309	LKWH	420	896	1.21	M	1	1	14	O, F				Y	Y	
Doris	GN19	18-Aug-97	GN	3.81	310	LKWH	373	638	1.23	F	2	2	12	O, F				Y	Y	
Doris	GN19	18-Aug-97	GN	3.81	311	LKWH	447	1360	1.52	F	2	3	22	O, F				Y	Y	
Doris	GN19	18-Aug-97	GN	3.81	312	LKWH	355	508	1.14	M	1	1								
Doris	GN19	18-Aug-97	GN	3.81	313	LKWH	333	456	1.23	F	1	1								
Doris	GN20	18-Aug-97	GN	3.81	318	LKWH	368	650	1.30					F	orange	949				
Doris	GN20	18-Aug-97	GN	3.81	319	LKWH	448	1450	1.61					F	orange	950				
Doris	GN20	18-Aug-97	GN	3.81	320	LKWH	438	1150	1.37					F	orange	951				
Doris	GN21	18-Aug-97	GN	3.81	331	LKWH	522	1900	1.34					F						
Doris	GN21	18-Aug-97	GN	3.81	332	LKWH	343	550	1.36					F						
Doris	GN21	18-Aug-97	GN	3.81	333	LKWH	394	850	1.39					F	orange	954				
Doris	GN21	18-Aug-97	GN	3.81	334	LKWH	396	950	1.53					F	orange	955				
Doris	GN21	18-Aug-97	GN	3.81	335	LKWH	383	750	1.33					F	orange	956				
Doris	GN21	18-Aug-97	GN	3.81	336	LKWH	384	800	1.41					F	orange	957				
Doris	GN22	18-Aug-97	GN	3.81	348	LKWH	467	1250	1.23					F	orange	958				
Doris	GN22	18-Aug-97	GN	3.81	349	LKWH	370	750	1.48					F	orange	959				
Doris	GN22	18-Aug-97	GN	3.81	350	LKWH	382	700	1.26					F	orange	960				
Doris	GN22	18-Aug-97	GN	3.81	351	LKWH	341	600	1.51					F	orange	961				
Doris	GN22	18-Aug-97	GN	3.81	352	LKWH	352	600	1.38					F	orange	962				
Doris	GN22	18-Aug-97	GN	3.81	353	LKWH	397	850	1.36					F	orange	963				
Doris	GN22	18-Aug-97	GN	3.81	363	LKWH	445	1350	1.53	M	2	3		O, F						
Doris	GN23	18-Aug-97	GN	3.81	369	LKWH	374	700	1.34					O, F	orange	969				
Doris	GN23	18-Aug-97	GN	3.81	370	LKWH	388	800	1.37				9	O, F						
Doris	GN23	18-Aug-97	GN	3.81	371	LKWH	345	478	1.16											
Doris	GN23	18-Aug-97	GN	3.81	372	LKWH	"563"	"275"	"0.15"	M	2	2							Y	100% isopods
Doris	GN23	18-Aug-97	GN	3.81	373	LKWH	507	1744	1.34	M	2	2								
Doris	GN23	18-Aug-97	GN	3.81	395	LKWH	189	78	1.16	F	1	1								
Doris	GN23	18-Aug-97	GN	3.81	399	LKWH	187	70	1.07	M	1	1								
Doris	GN23	18-Aug-97	GN	3.81	408	LKWH	188	70	1.05	M	1	1								
Doris	GN24	22-Aug-97	GN	3.81	410	LKWH	287	280	1.18				6	F	orange	971				
Doris	GN24	22-Aug-97	GN	3.81	411	LKWH	317	264	0.83					F	orange	972				
Doris	GN24	22-Aug-97	GN	3.81	415	LKWH	223	120	1.08											
Doris	GN24	22-Aug-97	GN	3.81	419	LKWH	209	92	1.01											
Doris	GN24	22-Aug-97	GN	3.81	423	LKWH	214	112	1.14	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	424	LKWH	402	796	1.23					F	orange	973				
Doris	GN25	22-Aug-97	GN	3.81	425	LKWH	331	456	1.26				8	F	orange	974				
Doris	GN25	22-Aug-97	GN	3.81	426	LKWH	349	528	1.24					F	orange	975				
Doris	GN25	22-Aug-97	GN	3.81	471	LKWH	197	78	1.02	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	473	LKWH	175	58	1.08	M	1	1								
Doris	GN25	22-Aug-97	GN	3.81	475	LKWH	191	72	1.03	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	478	LKWH	472	1540	1.46					F	orange	976				
Doris	GN26	22-Aug-97	GN	3.81	479	LKWH	374	612	1.17					F	orange	977				
Doris	GN26	22-Aug-97	GN	3.81	480	LKWH	340	460	1.17					F	orange	978				
Doris	GN26	22-Aug-97	GN	3.81	506	LKWH	207	80	0.90	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	509	LKWH	181	64	1.08	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	511	LKWH	186	66	1.03	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	514	LKWH	185	62	0.98	M	1	1								
Doris	GN26	22-Aug-97	GN	3.81	515	LKWH	175	52	0.97	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	517	LKWH	182	64	1.06	F	1	1								
Doris	GN26	22-Aug-97	GN	3.81	520	LKWH	182	60	1.00	F	1	1								
Doris	GN27	22-Aug-97	GN	3.81	523	LKWH	382	678	1.22						orange	919				
Doris	GN27	22-Aug-97	GN	3.81	524	LKWH	362	554	1.17						orange	980				
Doris	GN27	22-Aug-97	GN	3.81	526	LKWH	177	52	0.94											
Doris	GN27	22-Aug-97	GN	3.81	528	LKWH	175	68	1.27											
Doris	GN27	22-Aug-97	GN	3.81	532	LKWH	436	1134	1.37	F	2	2								
Doris	GN27	22-Aug-97	GN	3.81	533	LKWH	325	446	1.30	M	1	1								
Doris	GN27	22-Aug-97	GN	3.81	534	LKWH	189	74	1.10	F	1	1								
Doris	GN27	22-Aug-97	GN	3.81	535	LKWH	177	62	1.12	F	1	1								
Doris	GN27	22-Aug-97	GN	3.81	536	LKWH	194	78	1.07	M	1	1								
Doris	GN27	22-Aug-97	GN	3.81	537	LKWH	181	60	1.01	M	1	1								
Doris	GN27	22-Aug-97	GN	3.81	538	LKWH														mutilated
Tail		18-Aug-95	GN		1	LKTR	665	2406	0.82	M	2	2	16	O					Y	5% chironomids
Tail		18-Aug-95	GN		2	LKTR	601	2022	0.93	F	2	3	11	O					Y	stomach empty
Tail		18-Aug-95	GN		3	LKTR	586	1742	0.87	F	2	3	13	O					Y	15 % zoopl., 5% amphi., 5% chiron.
Tail		18-Aug-95	GN		4	LKTR	550	1520	0.91	M	2	3	11	O					Y	25% tadpole shrimp
Tail		18-Aug-95	GN		5	LKTR	553	1374	0.81	F	1	1	14	O					Y	20% zooplankton, 5% clams
Tail		18-Aug-95	GN		6	LKTR	557	1741	1.01	F	2	3	13	O					Y	5% clam, 5% t.shr, 5% chir, 35% unic
Tail		18-Aug-95	GN		7	LKTR	563	1565	0.88	F	2	3	15	O					Y	40% tadpole shrimp, 10% amph.
Tail		18-Aug-95	GN		8	LKTR	535	1118	0.73	M	2	3	15	O					Y	stomach empty
Tail		18-Aug-95	GN		9	LKTR	561	1722	0.98	F	2	2	13	O				Y	Y	
Tail		18-Aug-95	GN		10	LKTR	560	1865	1.06	F	2	3	13	O				Y	Y	
Tail		18-Aug-95	GN		11	LKTR	577	2256	1.17	F	2	3	13	O				Y	Y	
Tail		18-Aug-95	GN		12	LKTR	601	2830	1.30	F	2	2	16	O				Y	Y	
Tail		18-Aug-95	GN		13	LKTR	585	1824	0.91	F	2	3	15	O				Y	Y	100% caddis fly
Tail		5-Aug-96	GN	6.35		LKTR	551													
Tail		5-Aug-96	GN	6.35		LKTR	594													
Tail		5-Aug-96	GN	5.08		LKTR	532													
Tail		5-Aug-96	GN	5.08	30	LKTR	296	250	0.96				5							
Tail		5-Aug-96	GN	3.81		LKTR	580													
Tail		5-Aug-96	GN	3.81	31	LKTR	313	350	1.14				6							
Tail		5-Aug-96	GN	6.35		LKTR	546													
Tail		5-Aug-96	GN	6.35		LKTR	612													
Tail		5-Aug-96	GN	5.08		LKTR	601													

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Tail		5-Aug-96	GN	5.08		LKTR	602													
Tail		5-Aug-96	GN	5.08		LKTR	578													
Tail		5-Aug-96	GN	5.08	32	LKTR	620	2475	1.04	M	2								Y	
Tail		5-Aug-96	GN	1.91		LKTR	592													
Tail		5-Aug-96	GN	6.35		LKTR	572													
Tail		5-Aug-96	GN	3.81		LKTR	508													
Tail		5-Aug-96	GN	5.08		LKTR	492													
Tail	GN1	17-Aug-00	GN	3.81	1	LKTR	548	1575	0.96				20		yellow	945				
Tail	GN1	17-Aug-00	GN	3.81	2	LKTR	606	1925	0.86				21		yellow	946				
Tail	GN2	17-Aug-00	GN	3.81	3	LKTR	575	1550	0.82				27		yellow	947				
Tail	GN2	17-Aug-00	GN	3.81	4	LKTR	578	1825	0.95				21		yellow	948				
Tail	GN2	17-Aug-00	GN	3.81	5	LKTR	487	1275	1.10				7		yellow	949				
Tail	GN2	17-Aug-00	GN	3.81	6	LKTR	560	1575	0.90				26		yellow	950				
Tail	GN3	17-Aug-00	GN	3.81	7	LKTR	579	1900	0.98				29		yellow	951				
Tail	GN3	17-Aug-00	GN	3.81	8	LKTR	575	1925	1.01				17		yellow	952				
Tail	GN3	17-Aug-00	GN	3.81	9	LKTR	571	1425	0.77				26		yellow	953				
Tail	GN3	17-Aug-00	GN	3.81	10	LKTR	556	1500	0.87	F	2	2	27	O					Y	50% isopods
Tail	GN5	17-Aug-00	GN	3.81	11	LKTR	609	1800	0.80				21		yellow	954				
Tail	GN5	17-Aug-00	GN	3.81	12	LKTR	585	1550	0.77				28		yellow	955				
Tail	GN6	17-Aug-00	GN	3.81	13	LKTR	475	1175	1.10				9		yellow	956				
Tail	GN6	17-Aug-00	GN	3.81	14	LKTR	476	1225	1.14				10		yellow	957				
Tail	GN7	17-Aug-00	GN	3.81	15	LKTR	584	1925	0.97						yellow	958				
Tail	GN7	17-Aug-00	GN	3.81	16	LKTR	561	1675	0.95				23		yellow	959				
Tail	GN8	17-Aug-00	GN	3.81	17	LKTR	582	1300	0.66						yellow	960				Aaniak (skinny)
Tail	GN8	17-Aug-00	GN	3.81	18	LKTR	564	1775	0.99				12		yellow	961				
Tail	GN8	17-Aug-00	GN	3.81	19	LKTR	528	1550	1.05				13		yellow	962				
Tail	GN8	17-Aug-00	GN	3.81	20	LKTR	409	700	1.02				7		yellow	963				
Tail	GN9	18-Aug-00	GN	3.81	21	LKTR	399	700	1.10				7		yellow	964				
Tail	GN9	18-Aug-00	GN	3.81	22	LKTR	620	2350	0.99				25		yellow	965				
Tail	GN9	18-Aug-00	GN	3.81	23	LKTR	591	1700	0.82				25		yellow	966				
Tail	GN9	18-Aug-00	GN	3.81	24	LKTR	486	1275	1.11				11		yellow	967				
Tail	GN10	18-Aug-00	GN	3.81	25	LKTR	565	1800	1.00				17		yellow	968				
Tail	GN10	18-Aug-00	GN	3.81	26	LKTR	583	1900	0.96				24		yellow	969				
Tail	GN10	18-Aug-00	GN	3.81	27	LKTR	544	1575	0.98				28		yellow	970				
Tail	GN10	18-Aug-00	GN	3.81	28	LKTR	530	1575	1.06				10		yellow	971				
Tail	GN10	18-Aug-00	GN	3.81	29	LKTR	555	1375	0.80				21		yellow	972				
Tail	GN10	18-Aug-00	GN	3.81	30	LKTR	560	1825	1.04				25		yellow	973				
Tail	GN10	18-Aug-00	GN	3.81	31	LKTR	546	1750	1.08				14		yellow	974				
Tail	GN10	18-Aug-00	GN	3.81	32	LKTR	507	1500	1.15				12		yellow	975				
Tail	GN10	18-Aug-00	GN	3.81	33	LKTR	578	1825	0.95				18		yellow	976				
Tail	GN10	18-Aug-00	GN	3.81	34	LKTR	550	1550	0.93				28		yellow	977				
Tail	GN10	18-Aug-00	GN	3.81	35	LKTR	560	1500	0.85				13		yellow	978				
Tail	GN10	18-Aug-00	GN	3.81	36	LKTR	556	1650	0.96				24		yellow	979				
Tail	GN10	18-Aug-00	GN	3.81	37	LKTR	580	1800	0.92				25		yellow	980				
Tail	GN11	18-Aug-00	GN	3.81	38	LKTR	593	1925	0.92				33		yellow	981				
Tail	GN11	18-Aug-00	GN	3.81	39	LKTR	575	1325	0.70				21		yellow	982				
Tail	GN11	18-Aug-00	GN	3.81	40	LKTR	572	1775	0.95				18		yellow	983				walleye (left side)
Tail	GN11	18-Aug-00	GN	3.81	41	LKTR	641	2550	0.97				20		yellow	984				
Tail	GN11	18-Aug-00	GN	3.81	42	LKTR	576	1375	0.72						yellow	985				
Tail	GN11	18-Aug-00	GN	3.81	43	LKTR	455	1075	1.14				7		yellow	986				
Tail	GN11	18-Aug-00	GN	3.81	44	LKTR	560	1375	0.78				25		yellow	987				
Tail	GN12	18-Aug-00	GN	3.81	45	LKTR	531	1225	0.82				24		yellow	988				
Tail	GN12	18-Aug-00	GN	3.81	46	LKTR	588	1475	0.73				18		yellow	989				
Tail	GN12	18-Aug-00	GN	3.81	47	LKTR	598	1875	0.88						yellow	990				
Tail	GN12	18-Aug-00	GN	3.81	48	LKTR	519	1125	0.80				18		yellow	991				
Tail	GN12	18-Aug-00	GN	3.81	49	LKTR	631	1650	0.66				22		yellow	992				
Tail	GN12	18-Aug-00	GN	3.81	50	LKTR	631	1800	0.72				25		yellow	993				
Tail	GN12	18-Aug-00	GN	3.81	51	LKTR	596	1625	0.77				21		yellow	994				
Tail	GN12	18-Aug-00	GN	3.81	52	LKTR	585	1625	0.81						yellow	995				
Tail	GN12	18-Aug-00	GN	3.81	53	LKTR	619	2275	0.96				20		yellow	996				
Tail	GN12	18-Aug-00	GN	3.81	54	LKTR	577	1950	1.02				18		yellow	997				
Tail	GN12	18-Aug-00	GN	3.81	55	LKTR	540	1425	0.90				25		yellow	998				
Tail	GN12	18-Aug-00	GN	3.81	56	LKTR	605	2025	0.91				24		yellow	999				
Tail	GN12	18-Aug-00	GN	3.81	57	LKTR	587	1750	0.87				25		yellow	1000				
Tail	GN12	18-Aug-00	GN	3.81	58	LKTR	565	1650	0.91				22		yellow	751				
Tail	GN13	18-Aug-00	GN	3.81	59	LKTR	565	1425	0.79				24		yellow	752				walleye (right side, some in left)
Tail	GN13	18-Aug-00	GN	3.81	60	LKTR	536	1600	1.04				11		yellow	753				
Tail	GN13	18-Aug-00	GN	3.81	61	LKTR	587	1500	0.74				23		yellow	754				
Tail	GN14	18-Aug-00	GN	3.81	62	LKTR	568	1700	0.93				27		yellow	755				
Tail	GN14	18-Aug-00	GN	3.81	63	LKTR	567	2125	1.17				16		yellow	756				
Tail	GN14	18-Aug-00	GN	3.81	64	LKTR	549	1450	0.88				22		yellow	757				
Tail	GN14	18-Aug-00	GN	3.81	65	LKTR	489	1350	1.15				15		yellow	758				
Tail	GN14	18-Aug-00	GN	3.81	66	LKTR	572	1900	1.02				27		yellow	759				
Tail	GN14	18-Aug-00	GN	3.81	67	LKTR	572	1425	0.76				25		yellow	760				
Tail	GN14	18-Aug-00	GN	3.81	68	LKTR	284	280	1.22	F	1	1	4	O					Y	100% NNST (25 fish)
Tail	GN15	18-Aug-00	GN	3.81	69	LKTR	580	1525	0.78				27		yellow	761				
Tail	GN15	18-Aug-00	GN	3.81	70	LKTR	520	1250	0.89				28		yellow	762				
Tail	GN15	18-Aug-00	GN	3.81	71	LKTR	470	1200	1.16				10		yellow	763				
Tail	GN15	18-Aug-00	GN	3.81	72	LKTR	563	1200	0.67				23		yellow	764				
Tail	GN15	18-Aug-00	GN	3.81	73	LKTR	510	1550	1.17				15		yellow	765				
Tail	GN15	18-Aug-00	GN	3.81	74	LKTR	592	1475	0.71				31		yellow	766				
Tail	GN15	18-Aug-00	GN	3.81	75	LKTR	580	2000	1.03				20		yellow	767				
Tail	GN15	18-Aug-00	GN	3.81	76	LKTR	538	1550	1.00				23		yellow	768				
Tail	GN15	18-Aug-00	GN	3.81	77	LKTR	564	1625	0.91				22		yellow	769				
Tail	GN16	18-Aug-00	GN	3.81	78	LKTR	520	1550	1.10				11		yellow	770				

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Tail	GN16	18-Aug-00	GN	3.81	79	LKTR	505	1400	1.09				11		yellow	771				
Tail	GN16	18-Aug-00	GN	3.81	80	LKTR	592	2000	0.96				23		yellow	772				
Tail	GN16	18-Aug-00	GN	3.81	81	LKTR	560	1625	0.93				21		yellow	773				
Tail	GN17	18-Aug-00	GN	3.81	82	LKTR	577	1775	0.92						yellow	774				
Tail	GN17	18-Aug-00	GN	3.81	83	LKTR	562	1425	0.80				23		yellow	775				
Tail	GN17	18-Aug-00	GN	3.81	84	LKTR	573	1550	0.82				25		yellow	776				
Tail	GN17	18-Aug-00	GN	3.81	85	LKTR	608	2225	0.99				17		yellow	777				
Tail	GN17	18-Aug-00	GN	3.81	86	LKTR	457	1525	1.60				20		yellow	778				
Tail	GN18	19-Aug-00	GN	3.81	87	LKTR	525	1225	0.85				24		yellow	779				
Tail	GN18	19-Aug-00	GN	3.81	88	LKTR	550	1325	0.80				22		yellow	780				
Tail	GN18	19-Aug-00	GN	3.81	89	LKTR	540	1775	1.13				12		yellow	781				
Tail	GN18	19-Aug-00	GN	3.81	90	LKTR	553	1700	1.01				29		yellow	782				
Tail	GN18	19-Aug-00	GN	3.81	91	LKTR	441	900	1.05				7		yellow	783				
Tail	GN18	19-Aug-00	GN	3.81	92	LKTR	553	1600	0.95						yellow	784			Y	
Tail	GN19	19-Aug-00	GN	3.81	93	LKTR	581	1650	0.84						yellow	785				
Tail	GN19	19-Aug-00	GN	3.81	94	LKTR	613	2025	0.88				19		yellow	786				
Tail	GN19	19-Aug-00	GN	3.81	95	LKTR	583	1450	0.73				19		yellow	787				
Tail	GN19	19-Aug-00	GN	3.81	96	LKTR	553	1550	0.92						yellow	788				
Tail	GN19	19-Aug-00	GN	3.81	97	LKTR	556	1850	1.08				16		yellow	789				
Tail	GN19	19-Aug-00	GN	3.81	98	LKTR	631	2150	0.86						yellow	790				
Tail	GN19	19-Aug-00	GN	3.81	99	LKTR	519	1375	0.98	M	2	3	13	O					Y	5% NNST
Tail	GN19	19-Aug-00	GN	3.81	100	LKTR	565	1900	1.05	F	2	3	17	O					Y	15% caddis fly, 15% tad. shrimp
Tail	GN20	19-Aug-00	GN	3.81	101	LKTR	456	1675	1.77				16		yellow	791				
Tail	GN20	19-Aug-00	GN	3.81	102	LKTR	534	1700	1.12				13		yellow	792				
Tail	GN20	19-Aug-00	GN	3.81	103	LKTR	624	2250	0.93						yellow	793				
Tail	GN20	19-Aug-00	GN	3.81	104	LKTR	573	2050	1.09				16		yellow	794				
Tail	GN20	19-Aug-00	GN	3.81	105	LKTR	665	2000	0.68				28		yellow	795				
Tail	GN20	19-Aug-00	GN	3.81	106	LKTR	584	1925	0.97				26		yellow	796				
Tail	GN20	19-Aug-00	GN	3.81	107	LKTR	565	1825	1.01						yellow	797				
Tail	GN20	19-Aug-00	GN	3.81	108	LKTR	577	1600	0.83				15		yellow	798				
Tail	GN21	19-Aug-00	GN	3.81	109	LKTR	600	1525	0.71				25		yellow	799				
Tail	GN21	19-Aug-00	GN	3.81	110	LKTR	563	1675	0.94						yellow	800				
Tail	GN21	19-Aug-00	GN	3.81	111	LKTR	631	2000	0.80				24		yellow	750				
Tail	GN21	19-Aug-00	GN	3.81	112	LKTR	483	1250	1.11				11		yellow	749				
Tail	GN21	19-Aug-00	GN	3.81	113	LKTR	566	1700	0.94				23		yellow	748				
Tail	GN21	19-Aug-00	GN	3.81	114	LKTR	570	1700	0.92				22		yellow	747				
Tail	GN21	19-Aug-00	GN	3.81	115	LKTR	540	1400	0.89						yellow	746				
Tail	GN21	19-Aug-00	GN	3.81	116	LKTR	546	1500	0.92				23		yellow	745				
Tail	GN21	19-Aug-00	GN	3.81	117	LKTR	563	1375	0.77				23		yellow	744				
Tail	GN21	19-Aug-00	GN	3.81	118	LKTR	581	1825	0.93						yellow	743				
Tail	GN21	19-Aug-00	GN	3.81	119	LKTR	561	1850	1.05						yellow	742				
Tail	GN21	19-Aug-00	GN	3.81	120	LKTR	570	1500	0.81				24		yellow	741				
Tail	GN21	19-Aug-00	GN	3.81	121	LKTR	512	1475	1.10				15		yellow	740				
Tail	GN21	19-Aug-00	GN	3.81	122	LKTR	471	1175	1.12	M	2	3	10	O					Y	75% NNST, 20% tad. Shr., 5% caddi
Tail	GN21	19-Aug-00	GN	3.81	123	LKTR	566	1375	0.76	F	2	2	20	O					Y	stomach empty
Tail	GN22	19-Aug-00	GN	3.81	124	LKTR	563	1550	0.87				22		yellow	739				
Tail	GN22	19-Aug-00	GN	3.81	125	LKTR	536	1575	1.02						yellow	738				
Tail	GN22	19-Aug-00	GN	3.81	126	LKTR	553	1650	0.98				25		yellow	737				
Tail	GN22	19-Aug-00	GN	3.81	127	LKTR	465	1100	1.09				9		yellow	736				
Tail	GN23	19-Aug-00	GN	3.81	128	LKTR	566	1550	0.85				19		yellow	735				
Tail	GN23	19-Aug-00	GN	3.81	129	LKTR	560	1375	0.78						yellow	734				
Tail	GN23	19-Aug-00	GN	3.81	130	LKTR	567	2025	1.11				17		yellow	733				
Tail	GN23	19-Aug-00	GN	3.81	131	LKTR	586	1925	0.96				20		yellow	732				
Tail	GN24	19-Aug-00	GN	3.81	132	LKTR	555	1750	1.02				17		yellow	731				
Tail	GN24	19-Aug-00	GN	3.81	133	LKTR	576	1675	0.88				30		yellow	730				
Tail	GN24	19-Aug-00	GN	3.81	134	LKTR	663	2525	0.87				28		yellow	729				
Ogama		4-Aug-96	GN	5.08		CISC	210													
Ogama		4-Aug-96	GN	5.08		CISC	354													
Ogama		4-Aug-96	GN	5.08	15	CISC	304	325	1.16	M	2		21						Y	
Ogama		4-Aug-96	GN	5.08	26	CISC	334	525	1.41	F	2		12						Y	
Ogama		4-Aug-96	GN	5.08	28	CISC	254	250	1.53	F	1		8						Y	
Ogama		4-Aug-96	GN	6.35		LKTR	440													
Ogama		4-Aug-96	GN	5.08		LKTR	772													
Ogama		4-Aug-96	GN	5.08		LKTR	470													
Ogama		4-Aug-96	GN	5.08	25	LKTR	475	1100	1.03	F	2		10					Y	Y	
Ogama		4-Aug-96	GN	5.08	16	LKWH	302	350	1.27	F	1		9						Y	
Ogama		4-Aug-96	GN	1.91		LKWH	286													
Ogama		4-Aug-96	GN	5.08		LKWH	381													
Ogama		4-Aug-96	GN	5.08		LKWH														
Ogama		4-Aug-96	GN	5.08		LKWH														
Ogama		4-Aug-96	GN	5.08		LKWH	311													
Ogama		4-Aug-96	GN	3.81		LKWH	304													
Ogama		4-Aug-96	GN	3.81	17	LKWH	"442"	"325"	"0.38"	F	1		7						Y	
Ogama		4-Aug-96	GN	3.81		LKWH														
Ogama		4-Aug-96	GN	8.89		LKWH	350													
Ogama		4-Aug-96	GN	8.89	18	LKWH	318	425	1.32	F	1		13						Y	
Ogama		4-Aug-96	GN	5.08	19	LKWH	"439"	"450"	"0.53"	F	1		8						Y	
Ogama		4-Aug-96	GN	5.08	20	LKWH	282	300	1.34	F	1		7						Y	
Ogama		4-Aug-96	GN	3.81	21	LKWH	340	500	1.27	F	1		11						Y	
Ogama		4-Aug-96	GN	1.91	22	LKWH	392	725	1.20	M	2		15						Y	
Ogama		4-Aug-96	GN	3.81		LKWH	420													
Ogama		4-Aug-96	GN	8.89	23	LKWH	420	975	1.32	M	2		24						Y	
Ogama		4-Aug-96	GN	8.89	24	LKWH	318	450	1.40	M	1		12						Y	
Ogama		4-Aug-96	GN	5.08		LKWH	286													
Ogama		4-Aug-96	GN	1.91		LKWH														

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Ogama		4-Aug-96	GN	5.08		LKWH	305													
Ogama		4-Aug-96	GN	5.08		LKWH	317													
Ogama		4-Aug-96	GN	3.81		LKWH	314													
Ogama		4-Aug-96	GN	3.81	27	LKWH	318	450	1.40	F	1		8						Y	
Ogama		4-Aug-96	GN	3.81		LKWH	394													
Ogama		4-Aug-96	GN	6.35		LKWH	307													
Ogama		4-Aug-96	GN	6.35	29	LKWH	326	475	1.37				8							
Ogama		4-Aug-96	GN			LKWH														
Ogama		4-Aug-96	GN	3.81		LKWH	193													
Patch		3-Aug-96	GN	3.81	8	CISC	190	62	0.90	F	1		8						Y	
Patch		3-Aug-96	GN	6.35	9	CISC	229	"300"	"2.50"	F	2		13						Y	
Patch		3-Aug-96	GN	5.08	11	CISC	294	250	0.98	F	2		14							
Patch		3-Aug-96	GN	1.91		CISC	141													
Patch		3-Aug-96	GN	8.89		CISC	292													
Patch	GN4	20-Aug-97	GN	3.81	19	CISC	264	150	0.82	M	2	2	9	O, F						
Patch	GN9	20-Aug-97	GN	3.81	29	CISC	188	60	0.90											
Patch	GN9	20-Aug-97	GN	3.81	30	CISC	187	64	0.98											
Patch	GN9	20-Aug-97	GN	3.81	31	CISC	200	84	1.05											
Patch	GN9	20-Aug-97	GN	3.81	32	CISC	196	80	1.06											
Patch	GN9	20-Aug-97	GN	3.81	33	CISC	201	76	0.94											
Patch	GN9	20-Aug-97	GN	3.81	34	CISC	182	60	1.00											
Patch	GN9	20-Aug-97	GN	3.81	35	CISC	180	66	1.13											
Patch	GN10	20-Aug-97	GN	3.81	39	CISC	211	78	0.83											
Patch	GN11	20-Aug-97	GN	3.81	42	CISC	264	172	0.93											
Patch	GN11	20-Aug-97	GN	3.81	43	CISC	300	264	0.98	F	2	2	12	O, F						
Patch	GN11	20-Aug-97	GN	3.81	47	CISC	256	146	0.87	F	1	1	7	O						
Patch	GN11	20-Aug-97	GN	3.81	48	CISC	285	254	1.10	F	2	3	9	O						
Patch	GN11	20-Aug-97	GN	3.81	49	CISC	305	256	0.90	F	2	2	17	O						
Patch	GN11	20-Aug-97	GN	3.81	50	CISC	251	134	0.85	M	1	1	9	O						
Patch	GN15	23-Aug-97	GN	3.81	64	CISC	258	158	0.92											
Patch	GN15	23-Aug-97	GN	3.81	65	CISC	273	212	1.04	M	2	2								
Patch	GN15	23-Aug-97	GN	3.81	66	CISC	277	214	1.01	F	2	2								
Patch	GN15	23-Aug-97	GN	3.81	67	CISC	284	238	1.04	F	2	2								
Patch	GN16	23-Aug-97	GN	3.81	68	CISC	279	230	1.06	F	2	2								
Patch	GN19	23-Aug-97	GN	3.81	94	CISC	310	326	1.09	F	2	2								
Patch	GN19	23-Aug-97	GN	3.81	96	CISC	252	162	1.01	M	1	1								
Patch	GN20	24-Aug-97	GN	3.81	99	CISC	287	278	1.18	F	2	3								
Patch	GN23	24-Aug-97	GN	3.81	113	CISC	298	240	0.91	M	2	2								
Patch	GN23	24-Aug-97	GN	3.81	114	CISC	286	204	0.87	F	2	3								
Patch	GN23	24-Aug-97	GN	3.81	115	CISC	241	118	0.84	F	1	1								
Patch	GN24	24-Aug-97	GN	3.81	121	CISC	261	208	1.17	F	2	2	9	O						
Patch	GN24	24-Aug-97	GN	3.81	122	CISC														headless
Patch	GN24	24-Aug-97	GN	3.81	123	CISC	276	220	1.05	M	2	3	13	O						
Patch	GN25	24-Aug-97	GN	3.81	130	CISC	269	204	1.05	M	2	2	9	O						
Patch	GN29	25-Aug-97	GN	3.81	150	CISC	249	144	0.93	M	1	1								
Patch		20-Aug-95	GN		53	LKTR	300	268	0.99				7	O					Y	50% NNST, 25% amphipods
Patch		20-Aug-95	GN		54	LKTR	564	2425	1.35	M	2	2	13	O				Y	Y	90% isopods, 10% amphipods
Patch		3-Aug-96	GN	5.08		LKTR	397													
Patch		3-Aug-96	GN	5.08		LKTR														
Patch		3-Aug-96	GN	8.89		LKTR	418													
Patch		3-Aug-96	GN	8.89		LKTR	563													
Patch		3-Aug-96	GN	6.35		LKTR	724													
Patch		3-Aug-96	GN	6.35	10	LKTR	453	925	1.00	F	2		29						Y	
Patch		3-Aug-96	GN	5.08		LKTR	640													
Patch		3-Aug-96	GN	3.81		LKTR	404													
Patch		3-Aug-96	GN	2.54		LKTR	633													
Patch		3-Aug-96	GN	1.91		LKTR	650													
Patch		3-Aug-96	GN	1.91		LKTR	751													
Patch		3-Aug-96	GN	8.89	12	LKTR	368	550	1.10	M	1		13						Y	
Patch		3-Aug-96	GN	1.91		LKTR	672													
Patch		3-Aug-96	GN	1.91		LKTR	552													
Patch	GN1	20-Aug-97	GN	3.81	2	LKTR	587	1800	0.89					F	green	116				
Patch	GN2	20-Aug-97	GN	3.81	4	LKTR	703	3100	0.89				29	F	green	117				
Patch	GN2	20-Aug-97	GN	3.81	5	LKTR	325	400	1.17				10	F	green	119				
Patch	GN3	20-Aug-97	GN	3.81	7	LKTR	599	1250	0.58					F	green	121				
Patch	GN4	20-Aug-97	GN	3.81	16	LKTR	678	3400	1.09					F	green	128				
Patch	GN4	20-Aug-97	GN	3.81	17	LKTR	774	4600	0.99					F	green	129				
Patch	GN4	20-Aug-97	GN	3.81	18	LKTR	"259"	"550"	"3.17"				9	F	green	130				
Patch	GN5	20-Aug-97	GN	3.81	24	LKTR	814	5121	0.95				29	F	green	131				
Patch	GN5	20-Aug-97	GN	3.81	25	LKTR	732	3400	0.87					F	green	132				
Patch	GN6	20-Aug-97	GN	3.81	26	LKTR	347	400	0.96				9	F	green	133				
Patch	GN8	20-Aug-97	GN	3.81	27	LKTR	427	850	1.09					F	green	134				
Patch	GN8	20-Aug-97	GN	3.81	28	LKTR	357	418	0.92	F	1	1	8	O, F				Y		
Patch	GN9	20-Aug-97	GN	3.81	37	LKTR	757	3400	0.78					F	green	136				
Patch	GN9	20-Aug-97	GN	3.81	38	LKTR	664	2700	0.92					F	green	137				
Patch	GN10	20-Aug-97	GN	3.81	40	LKTR	678							F	green	138				
Patch	GN11	20-Aug-97	GN	3.81	44	LKTR	693							F	green	139				
Patch	GN11	20-Aug-97	GN	3.81	45	LKTR	460	970	1.00					F	green	140				
Patch	GN11	20-Aug-97	GN	3.81	46	LKTR	314	230	0.74				8	F	green	141				
Patch	GN14	23-Aug-97	GN	3.81	60	LKTR	683	2608	0.82	M	2	2	28	O, F				Y	Y	stomach empty
Patch	GN14	23-Aug-97	GN	3.81	61	LKTR	715	3198	0.87	M	2	2	27	O, F				Y	Y	stomach empty
Patch	GN17	23-Aug-97	GN	3.81	72	LKTR	732							F	green	144				
Patch	GN17	23-Aug-97	GN	3.81	74	LKTR	594	1740	0.83	M	2	2	25	O, F				Y	Y	stomach empty
Patch	GN17	23-Aug-97	GN	3.81	75	LKTR	690	3242	0.99	F	2	3	26	O, F				Y	Y	stomach empty
Patch	GN18	23-Aug-97	GN	3.81	78	LKTR	695	2230	0.66	M	2	2	22	O, F				Y	Y	stomach empty

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mortality	Comments / Stomach Content
Patch	GN18	23-Aug-97	GN	3.81	79	LKTR	679	2833	0.90	M	2	2	18	O, F				Y	Y	stomach empty
Patch	GN19	23-Aug-97	GN	3.81	89	LKTR	721	3516	0.94	M	2	2	24	O, F				Y	Y	100% CISC (305 mm)
Patch	GN19	23-Aug-97	GN	3.81	90	LKTR	608	2032	0.90	M	2	2	19	O, F				Y	Y	25% fish remain
Patch	GN19	23-Aug-97	GN	3.81	91	LKTR	397	606	0.97	M	1	1	15	O, F				Y		
Patch	GN19	23-Aug-97	GN	3.81	92	LKTR	897	7294	1.01	F	2	3	40	O, F				Y	Y	5% twigs
Patch	GN20	24-Aug-97	GN	3.81	100	LKTR	635	2476	0.97	F	2	3	25	O, F				Y	Y	stomach empty
Patch	GN20	24-Aug-97	GN	3.81	101	LKTR	697	2900	0.86	M	2	2	26	O, F				Y		
Patch	GN21	24-Aug-97	GN	3.81	105	LKTR	636	2362	0.92	F	2	2	18	O, F				Y	Y	10% fish
Patch	GN22	24-Aug-97	GN	3.81	107	LKTR	589	1700	0.83	M	2	2	18	O, F				Y	Y	stomach empty
Patch	GN22	24-Aug-97	GN	3.81	108	LKTR	627	2388	0.97	F	2	2	35	O, F				Y	Y	stomach empty
Patch	GN23	24-Aug-97	GN	3.81	116	LKTR	767	4860	1.08	F	2	2	31	O, F				Y	Y	100% LKWH (335 mm)
Patch	GN23	24-Aug-97	GN	3.81	117	LKTR	663	2800	0.96	M	2	2	19	O, F				Y	Y	10% fish (2 fish)
Patch	GN23	24-Aug-97	GN	3.81	118	LKTR	669	2503	0.84	F	2	2						Y	Y	stomach empty
Patch	GN23	24-Aug-97	GN	3.81	119	LKTR	693	2918	0.88	M	2	2						Y	Y	15% isopods
Patch	GN23	24-Aug-97	GN	3.81	120	LKTR	680	3362	1.07	F	2	2	23	O, F				Y	Y	100% fish remains
Patch	GN24	24-Aug-97	GN	3.81	124	LKTR	645	2640	0.98	M	2	2	24	O, F				Y	Y	5% fish remains
Patch	GN24	24-Aug-97	GN	3.81	125	LKTR	380	614	1.12	M	2	2	11	O, F				Y	Y	5% isopods
Patch	GN25	24-Aug-97	GN	3.81	129	LKTR	440	948	1.11	M	2	2	22	O, F				Y	Y	10% isopods
Patch	GN26	25-Aug-97	GN	3.81	136	LKTR	464	902	0.90	F	2	2	26	O, F				Y	Y	stomach empty
Patch	GN28	25-Aug-97	GN	3.81	139	LKTR	618								green	10				
Patch	GN28	25-Aug-97	GN	3.81	140	LKTR	805								green	11				
Patch	GN28	25-Aug-97	GN	3.81	141	LKTR	418	632	0.87						green	12				
Patch	GN29	25-Aug-97	GN	3.81	148	LKTR	745								green	19				
Patch	GN29	25-Aug-97	GN	3.81	149	LKTR	703								green	20				
Patch	GN30	25-Aug-97	GN	3.81	153	LKTR	402	620	0.95						green	22				
Patch	GN30	25-Aug-97	GN	3.81	154	LKTR	448	952	1.06						green	23				
Patch	GN32	25-Aug-97	GN	3.81	157	LKTR	915					"3"			green	25				
Patch	GN32	25-Aug-97	GN	3.81	160	LKTR	729								green	28				
Patch	GN32	25-Aug-97	GN	3.81	161	LKTR	697								green	29				
Patch	GN32	25-Aug-97	GN	3.81	162	LKTR	199	80	1.02											
Patch		3-Aug-96	GN	2.54		LKWH	452													
Patch		3-Aug-96	GN	8.89	13	LKWH	504	1650	1.29	F	2		31						Y	
Patch		3-Aug-96	GN	8.89	14	LKWH	468	1325	1.29	F	2		38							
Patch	GN1	20-Aug-97	GN	3.81	1	LKWH	402	900	1.39					F	green	115				
Patch	GN1	20-Aug-97	GN	3.81	3	LKWH	406	966	1.44	F	2	2	22	O, F				Y	Y	
Patch	GN3	20-Aug-97	GN	3.81	6	LKWH	463	1250	1.26					F	green	120				
Patch	GN3	20-Aug-97	GN	3.81	8	LKWH	433	1200	1.48					F	green	122				
Patch	GN3	20-Aug-97	GN	3.81	9	LKWH	393	910	1.50	M	1	1	18	O, F				Y	Y	
Patch	GN3	20-Aug-97	GN	3.81	10	LKWH	484	1674	1.48	F	2	2	25	O, F				Y	Y	
Patch	GN4	20-Aug-97	GN	3.81	11	LKWH	374	800	1.53				13	F	green	123				
Patch	GN4	20-Aug-97	GN	3.81	12	LKWH	330	500	1.39				8	F	green	124				
Patch	GN4	20-Aug-97	GN	3.81	13	LKWH	406	950	1.42					F	green	125				
Patch	GN4	20-Aug-97	GN	3.81	14	LKWH	359	800	1.73					F	green	126				
Patch	GN4	20-Aug-97	GN	3.81	15	LKWH	374	800	1.53					F	green	127				
Patch	GN4	20-Aug-97	GN	3.81	20	LKWH	312	300	0.99	M	1	1		O, F						
Patch	GN4	20-Aug-97	GN	3.81	21	LKWH	388	812	1.39	M	1	1	14	O, F				Y	Y	
Patch	GN4	20-Aug-97	GN	3.81	22	LKWH	430	1034	1.30	F	2	2	17	O, F				Y	Y	
Patch	GN4	20-Aug-97	GN	3.81	23	LKWH	449	1060	1.17	F	2	2	23	O, F				Y	Y	
Patch	GN9	20-Aug-97	GN	3.81	36	LKWH	414	900	1.27					F	green	135				
Patch	GN10	20-Aug-97	GN	3.81	41	LKWH	380	712	1.30	M	1	1	14	O, F				Y	Y	
Patch	GN11	20-Aug-97	GN	3.81	51	LKWH	432	890	1.10	M	1	1	25	O, F				Y	Y	
Patch	GN11	20-Aug-97	GN	3.81	52	LKWH	340	482	1.23	M	1	1	8	O, F						
Patch	GN11	20-Aug-97	GN	3.81	53	LKWH	355	554	1.24	M	1	1	14	O, F						
Patch	GN12	23-Aug-97	GN	3.81	54	LKWH	408	902	1.33	F	2	2	17	O, F				Y	Y	
Patch	GN12	23-Aug-97	GN	3.81	55	LKWH	426	1000	1.29	F	2	2	23	O, F				Y	Y	
Patch	GN12	23-Aug-97	GN	3.81	56	LKWH	449	1112	1.23	M	2	2	24	O, F				Y	Y	
Patch	GN13	23-Aug-97	GN	3.81	57	LKWH	432	956	1.19	M	2	3	27	O, F				Y	Y	
Patch	GN14	23-Aug-97	GN	3.81	58	LKWH	427	1155	1.48	F	2	3	29	O, F				Y	Y	
Patch	GN14	23-Aug-97	GN	3.81	59	LKWH	431	1078	1.35	M	1	1	30	O, F				Y	Y	
Patch	GN15	23-Aug-97	GN	3.81	62	LKWH	330	382	1.06					F	green	142				
Patch	GN15	23-Aug-97	GN	3.81	63	LKWH	332	430	1.18					F	green	143				
Patch	GN16	23-Aug-97	GN	3.81	69	LKWH	414	942	1.33	F	2	2	32	O, F				Y	Y	stomach empty
Patch	GN16	23-Aug-97	GN	3.81	70	LKWH	453	1226	1.32	F	2	2	24	O, F				Y	Y	
Patch	GN16	23-Aug-97	GN	3.81	71	LKWH	427	860	1.10	F	2	2	26	O, F				Y	Y	
Patch	GN17	23-Aug-97	GN	3.81	73	LKWH	342	460	1.15					F	green	145				
Patch	GN17	23-Aug-97	GN	3.81	76	LKWH	429	1064	1.35	F	2	3	21	O, F				Y	Y	
Patch	GN17	23-Aug-97	GN	3.81	77	LKWH	473	1216	1.15	M	2	2	37	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	80	LKWH	474	1538	1.44	M	2	3	35	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	81	LKWH	424	1088	1.43	M	2	2	27	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	82	LKWH	435	1162	1.41	M	2	3	43	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	83	LKWH	423	938	1.24	M	2	2	23	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	84	LKWH	390	734	1.24	M	1	1	14	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	85	LKWH	368	592	1.19	M	1	1	16	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	86	LKWH	393	698	1.15	M	1	1	23	O, F				Y	Y	
Patch	GN18	23-Aug-97	GN	3.81	87	LKWH	343	498	1.23	M	1	1		O						
Patch	GN18	23-Aug-97	GN	3.81	88	LKWH	312	260	0.86	F	1	1	8	O						
Patch	GN19	23-Aug-97	GN	3.81	93	LKWH	320	364	1.11	M	1	1	9	O						
Patch	GN19	23-Aug-97	GN	3.81	95	LKWH	269	222	1.14	M	1	1		O						
Patch	GN20	24-Aug-97	GN	3.81	97	LKWH	433	936	1.15						green	146				
Patch	GN20	24-Aug-97	GN	3.81	98	LKWH	387	688	1.19						green	147				
Patch	GN21	24-Aug-97	GN	3.81	102	LKWH	482	1257	1.12						green	148				
Patch	GN21	24-Aug-97	GN	3.81	103	LKWH	454	1222	1.31						green	149				
Patch	GN21	24-Aug-97	GN	3.81	104	LKWH	478	1460	1.34	M	2	2		O					Y	100% isopods
Patch	GN22	24-Aug-97	GN	3.81	106	LKWH	323	358	1.06						green	150				
Patch	GN23	24-Aug-97	GN	3.81	109	LKWH	445	910	1.03						green	1				

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mortality	Comments / Stomach Content
Patch	GN23	24-Aug-97	GN	3.81	110	LKWH	397	726	1.16						green	2				
Patch	GN23	24-Aug-97	GN	3.81	111	LKWH	393	790	1.30						green	3				
Patch	GN23	24-Aug-97	GN	3.81	112	LKWH	304	316	1.12	F	1	1								
Patch	GN25	24-Aug-97	GN	3.81	126	LKWH	446	1190	1.34	M	2	3		O					Y	10% zooplankton
Patch	GN25	24-Aug-97	GN	3.81	127	LKWH	453	1290	1.39	F	2	2		O					Y	100% isopods
Patch	GN25	24-Aug-97	GN	3.81	128	LKWH	392	718	1.19	M	1	1		O					Y	20% isopods
Patch	GN26	25-Aug-97	GN	3.81	131	LKWH	430	964	1.21						green	4				
Patch	GN26	25-Aug-97	GN	3.81	132	LKWH	400	724	1.13						green	5				
Patch	GN26	25-Aug-97	GN	3.81	133	LKWH	398	710	1.13						green	6				
Patch	GN26	25-Aug-97	GN	3.81	134	LKWH	411								green	7				
Patch	GN26	25-Aug-97	GN	3.81	135	LKWH	436	1188	1.43						green	8				
Patch	GN27	25-Aug-97	GN	3.81	137	LKWH	451	1064	1.16	F	2	3		O						
Patch	GN27	25-Aug-97	GN	3.81	138	LKWH	369	576	1.15						green	9				
Patch	GN29	25-Aug-97	GN	3.81	142	LKWH	448	1042	1.16						green	13				
Patch	GN29	25-Aug-97	GN	3.81	143	LKWH	452	1012	1.10						green	14				
Patch	GN29	25-Aug-97	GN	3.81	144	LKWH	427	772	0.99						green	15				
Patch	GN29	25-Aug-97	GN	3.81	145	LKWH	501	1444	1.15						green	16				
Patch	GN29	25-Aug-97	GN	3.81	146	LKWH	418	844	1.16						green	17				
Patch	GN29	25-Aug-97	GN	3.81	147	LKWH	415	620	0.87						green	18				
Patch	GN29	25-Aug-97	GN	3.81	151	LKWH	468	1746	1.70	F	2	3								
Patch	GN30	25-Aug-97	GN	3.81	152	LKWH	420	866	1.17						green	21				
Patch	GN31	25-Aug-97	GN	3.81	155	LKWH	428	942	1.20						green	24				
Patch	GN31	25-Aug-97	GN	3.81	156	LKWH	435	1046	1.27	F	2	3								
Patch	GN32	25-Aug-97	GN	3.81	158	LKWH	418	884	1.21						green	26				
Patch	GN32	25-Aug-97	GN	3.81	159	LKWH	408	772	1.14						green	27				
Patch	GN33	25-Aug-97	GN	3.81	163	LKWH	367	416	0.84						green	30				
Windy	GN10	17-Aug-97	GN	3.81	28	CISC	368	550	1.10	F	2	3	14	O, F						
Windy	GN26	22-Aug-97	GN	3.81	45	CISC	409	646	0.94				17	F	blue	658				
Windy	GN26	22-Aug-97	GN	3.81	46	CISC	364	486	1.01				17	F	blue	659				
Windy	GN26	22-Aug-97	GN	3.81	47	CISC	303	294	1.06	F	2	2	8	O, F						
Windy	GN26	22-Aug-97	GN	3.81	48	CISC	274	236	1.15	F	2	2	7	O, F						
Windy		1-Aug-96	GN	1.91	1	LKTR	470	950	0.92	F	2		18						Y	
Windy		1-Aug-96	GN	12.7	2	LKTR	451	950	1.04	F	2		13						Y	
Windy		1-Aug-96	GN	6.35	3	LKTR	458	875	0.91	F	1		11						Y	
Windy		1-Aug-96	GN	6.35	4	LKTR	411	650	0.94	M	1		11						Y	
Windy		2-Aug-96	GN	3.81		LKTR	472													
Windy		2-Aug-96	GN	3.81		LKTR	441													
Windy		2-Aug-96	GN	3.81		LKTR	435													
Windy		2-Aug-96	GN	8.89		LKTR	491													
Windy		2-Aug-96	GN	3.81		LKTR	443													
Windy		2-Aug-96	GN	3.81		LKTR	485													
Windy		2-Aug-96	GN	5.08		LKTR	449													
Windy		2-Aug-96	GN	5.08		LKTR	473													
Windy		2-Aug-96	GN	8.89		LKTR	931													
Windy		2-Aug-96	GN	8.89	5	LKTR	437	875	1.05	F	2		16						Y	
Windy		2-Aug-96	GN	3.81		LKTR	343													
Windy		2-Aug-96	GN	3.81		LKTR	371													
Windy		12-Aug-96	GN	8.89	52	LKTR	484	900	0.79	F	2		20						Y	
Windy		12-Aug-96	GN	5.08	53	LKTR	444	775	0.89	F	2		13						Y	
Windy		12-Aug-96	GN	5.08	54	LKTR	486	1250	1.09	M	2		28						Y	
Windy	GN1	17-Aug-97	GN	3.81	1	LKTR	963	"2116"	"0.24"				37	F	blue	627				"tadpole"
Windy	GN1	17-Aug-97	GN	3.81	2	LKTR	415	755	1.06					F	blue	628				
Windy	GN1	17-Aug-97	GN	3.81	3	LKTR	202	62	0.75	M	1	1		O, F						
Windy	GN2	17-Aug-97	GN	3.81	4	LKTR	445	1100	1.25					F	blue	629				
Windy	GN2	17-Aug-97	GN	3.81	5	LKTR	454	1200	1.28					F	blue	630				
Windy	GN3	17-Aug-97	GN	3.81	6	LKTR	937	9400	1.14					F	blue	631				
Windy	GN3	17-Aug-97	GN	3.81	7	LKTR	431	1050	1.31					F	blue	632				
Windy	GN3	17-Aug-97	GN	3.81	8	LKTR	442	1100	1.27					F	blue	633				
Windy	GN3	17-Aug-97	GN	3.81	9	LKTR	433	1000	1.23					F	blue	634				
Windy	GN3	17-Aug-97	GN	3.81	10	LKTR	420	900	1.21					F	blue	635				
Windy	GN5	17-Aug-97	GN	3.81	11	LKTR	460	1200	1.23					F	blue	636				
Windy	GN6	17-Aug-97	GN	3.81	12	LKTR	973	5000	0.54				54	F	blue	637				"tadpole"
Windy	GN6	17-Aug-97	GN	3.81	13	LKTR	438	1050	1.25					F	blue	638				
Windy	GN6	17-Aug-97	GN	3.81	14	LKTR	353	600	1.36				9	F	blue	639				
Windy	GN7	17-Aug-97	GN	3.81	15	LKTR	518	1700	1.22					F	blue	640				
Windy	GN7	17-Aug-97	GN	3.81	16	LKTR	442	1100	1.27					F	blue	641				
Windy	GN7	17-Aug-97	GN	3.81	17	LKTR	423	900	1.19					F	blue	642				
Windy	GN8	17-Aug-97	GN	3.81	18	LKTR	471	1200	1.15					F	blue	643				
Windy	GN8	17-Aug-97	GN	3.81	19	LKTR	454	1200	1.28					F	blue	644				
Windy	GN8	17-Aug-97	GN	3.81	20	LKTR	398	800	1.27					F	blue	645				
Windy	GN8	17-Aug-97	GN	3.81	21	LKTR	388	750	1.28				11	F	blue	646				
Windy	GN9	17-Aug-97	GN	3.81	22	LKTR	980	12000	1.27				45	F	blue	647				
Windy	GN9	17-Aug-97	GN	3.81	23	LKTR	972	10000	1.09						blue	648				
Windy	GN9	17-Aug-97	GN	3.81	24	LKTR	485	1250	1.10						blue	649				
Windy	GN9	17-Aug-97	GN	3.81	25	LKTR	443	1200	1.38						blue	650				
Windy	GN10	17-Aug-97	GN	3.81	26	LKTR	432	1100	1.36					F	blue	651				
Windy	GN10	17-Aug-97	GN	3.81	27	LKTR	440	1650	1.94					F	blue	652				
Windy	GN11	17-Aug-97	GN	3.81	29	LKTR	454	950	1.02					F	blue	653				
Windy	GN11	17-Aug-97	GN	3.81	30	LKTR	463	1100	1.11					F	blue	654				
Windy	GN12	17-Aug-97	GN	3.81	31	LKTR	438	900	1.07					F	blue	655				
Windy	GN14	17-Aug-97	GN	3.81	32	LKTR	438	900	1.07					F	blue	656				
Windy	GN14	17-Aug-97	GN	3.81	33	LKTR	425	800	1.04					F	blue	657				
Windy	GN14	17-Aug-97	GN	3.81	34	LKTR	421	750	1.01	F	2	2		O, F						
Windy	GN17	19-Aug-97	GN	3.81	35	LKTR	466	884	0.87	F	2	2	21	O, F				Y		
Windy	GN17	19-Aug-97	GN	3.81	36	LKTR	447	870	0.97	M	1	1	17	O, F				Y		

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Windy	GN20	19-Aug-97	GN	3.81	37	LKTR	434	822	1.01	F	2	2	16	O, F				Y	Y	stomach empty
Windy	GN21	19-Aug-97	GN	3.81	38	LKTR	447	852	0.95	M	2	3	21	O, F				Y		
Windy	GN23	19-Aug-97	GN	3.81	39	LKTR	455	858	0.91	M	1	1	19	O, F				Y		
Windy	GN23	19-Aug-97	GN	3.81	40	LKTR	463	966	0.97	F	2	3	24	O, F				Y		
Windy	GN23	19-Aug-97	GN	3.81	41	LKTR	436	816	0.98	F	2	2	15	O, F				Y		deep fork
Windy	GN24	19-Aug-97	GN	3.81	42	LKTR	422	768	1.02	F	2	3	15	O, F				Y	Y	stomach empty
Windy	GN24	19-Aug-97	GN	3.81	43	LKTR	402	656	1.01	M	2	2	12	O, F				Y		
Windy	GN24	19-Aug-97	GN	3.81	44	LKTR	400	630	0.98	F	2	2	13	O, F				Y	Y	stomach empty
Windy	GN26	22-Aug-97	GN	3.81	49	LKTR	446	972	1.10	M	2	3	19	O, F				Y		
Windy	GN26	22-Aug-97	GN	3.81	50	LKTR	456	998	1.05	M	2	2	27	O, F				Y		
Windy	GN26	22-Aug-97	GN	3.81	51	LKTR	470	1106	1.07	F	2	2	20	O, F				Y		
Windy	GN28	22-Aug-97	GN	3.81	52	LKTR	419	772	1.05	M	2	3	13	O, F				Y		
Windy	GN28	22-Aug-97	GN	3.81	53	LKTR	431	930	1.16	M	2	2	23	O, F				Y		
Windy	GN28	22-Aug-97	GN	3.81	54	LKTR	453	966	1.04	M	1	1	19	O, F				Y		
Windy	GN29	22-Aug-97	GN	3.81	55	LKTR	442	902	1.04	F	2	2	15	O, F				Y		
Windy	GN29	22-Aug-97	GN	3.81	56	LKTR	437	864	1.04	F	2	2	14	O, F				Y		
Windy	GN30	22-Aug-97	GN	3.81	57	LKTR	423	898	1.19	M	2	3	12	O, F				Y		
Windy	GN30	22-Aug-97	GN	3.81	58	LKTR	422	798	1.06	F	2	2	15	O, F				Y		
Windy	GN31	22-Aug-97	GN	3.81	59	LKTR	418	776	1.06	F	2	2	14	O, F				Y		
Windy	GN32	22-Aug-97	GN	3.81	60	LKTR	401	664	1.03	M	1	1	12	O, F				Y		
Windy	GN32	22-Aug-97	GN	3.81	61	LKTR	399	620	0.98	M	1	1	16	O, F				Y		
Windy	GN32	22-Aug-97	GN	3.81	62	LKTR	406	802	1.20	M	2	3	14	O, F				Y		
Windy	GN32	22-Aug-97	GN	3.81	63	LKTR	458	932	0.97	F	2	2	26	O, F				Y		
Windy		2-Aug-96	GN	3.81	6	LKWH	399	550	0.87	F	2		17							
Windy		2-Aug-96	GN	3.81	7	LKWH	419	600	0.82				20						Y	
Windy		12-Aug-96	BS	0.2		LKWH	54													
Windy		12-Aug-96	BS	0.2		LKWH	100													
Windy		12-Aug-96	BS	0.2		LKWH	102													
Windy		12-Aug-96	BS	0.2		LKWH	98													
Windy		12-Aug-96	BS	0.2		LKWH	102													
Windy		12-Aug-96	BS	0.2		LKWH	132													
Windy		12-Aug-96	BS	0.2		LKWH	92													
Windy		12-Aug-96	BS	0.2		LKWH	94													
Windy		12-Aug-96	BS	0.2		LKWH	98													
Windy		12-Aug-96	BS	0.2		LKWH	98													
Windy		12-Aug-96	BS	0.2		LKWH	136													
Windy		12-Aug-96	BS	0.2		LKWH	108													
Windy		12-Aug-96	BS	0.2		LKWH	104													
Windy		12-Aug-96	BS	0.2		LKWH	80													
Windy		12-Aug-96	BS	0.2		LKWH	160													
Windy		12-Aug-96	BS	0.2		LKWH	116													
Windy		12-Aug-96	BS	0.2		LKWH	50													
Windy		12-Aug-96	BS	0.2		LKWH	86													
Windy		12-Aug-96	BS	0.2		LKWH	56													
Windy		12-Aug-96	BS	0.2		LKWH	98													
Windy		12-Aug-96	BS	0.2		LKWH	89													
Windy		12-Aug-96	BS	0.2		LKWH	86													
Windy		12-Aug-96	BS	0.2		LKWH	92													
Windy		12-Aug-96	BS	0.2		LKWH	98													
Windy		12-Aug-96	BS	0.2		LKWH	94													
Windy		12-Aug-96	BS	0.2		LKWH	104													
Windy		12-Aug-96	BS	0.2		LKWH	100													
Windy		12-Aug-96	BS	0.2		LKWH	96													
Windy		12-Aug-96	BS	0.2		LKWH	98													
Windy		12-Aug-96	BS	0.2		LKWH	54													
Windy		12-Aug-96	BS	0.2		LKWH	52													
Windy		12-Aug-96	BS	0.2		LKWH	90													
Windy		12-Aug-96	BS	0.2		LKWH	56													
Windy		12-Aug-96	BS	0.2		LKWH	58													
Windy		12-Aug-96	BS	0.2		LKWH	52													
Windy		12-Aug-96	BS	0.2		LKWH	52													
Windy		12-Aug-96	BS	0.2		LKWH	104													
Windy		12-Aug-96	BS	0.2		LKWH	96													
Windy		12-Aug-96	BS	0.2		LKWH	54													
Windy		12-Aug-96	BS	0.2		LKWH	92													
Windy		12-Aug-96	BS	0.2		LKWH	89													
Windy		12-Aug-96	BS	0.2		LKWH	92													
Windy		12-Aug-96	BS	0.2		LKWH	92													
Windy		12-Aug-96	BS	0.2		LKWH	94													
Windy		12-Aug-96	BS	0.2		LKWH	89													
Windy		12-Aug-96	BS	0.2		LKWH	98													
Windy		12-Aug-96	BS	0.2		LKWH	56													
Windy		12-Aug-96	BS	0.2		LKWH	94													
Windy		12-Aug-96	BS	0.2		LKWH	48													
Windy		12-Aug-96	BS	0.2		LKWH	56													
Windy		12-Aug-96	BS	0.2		LKWH	54													
Windy		12-Aug-96	BS	0.2		LKWH	50													
Windy		12-Aug-96	BS	0.2		LKWH	92													
L. Roberts	GN1	26-Aug-00	GN	3.81	2	ARCH	183	89	1.45				2							
L. Roberts	GN2	26-Aug-00	GN	3.81	3	ARCH	352	510	1.17				6		blue	17				
L. Roberts	GN2	26-Aug-00	GN	3.81	5	ARCH	251	175	1.11				4							
L. Roberts	GN3	26-Aug-00	GN	3.81	6	ARCH	869	7250	1.10	M	2		9		blue	19				
L. Roberts	GN3	26-Aug-00	GN	3.81	10	ARCH	179	70	1.22				2							
L. Roberts	GN3	26-Aug-00	GN	3.81	12	ARCH	177	70	1.26				2							
L. Roberts	GN3	26-Aug-00	GN	3.81	14	ARCH	174	75	1.42				2							

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
L. Roberts	GN3	26-Aug-00	GN	3.81	15	ARCH	168	68	1.43				2							
L. Roberts	GN3	26-Aug-00	GN	3.81	24	ARCH	654	3375	1.21				8							
L. Roberts	GN3	26-Aug-00	GN	3.81	25	ARCH	199	99	1.26				2							
L. Roberts	GN4	26-Aug-00	GN	3.81	26	ARCH	297	370	1.41				4	F	blue	25				
L. Roberts	GN4	26-Aug-00	GN	3.81	27	ARCH	295	405	1.58					F	blue	26				
L. Roberts	GN4	26-Aug-00	GN	3.81	28	ARCH	329	505	1.42				4	F	blue	27				
L. Roberts	GN4	26-Aug-00	GN	3.81	33	ARCH	277	265	1.25	M	1	1	4	O, F					Y	100% tadpole shrimp
L. Roberts	GN5	26-Aug-00	GN	3.81	34	ARCH	420	850	1.15				3	F	blue	30				
L. Roberts	GN5	26-Aug-00	GN	3.81	36	ARCH	799	6800	1.33	F	2		9	F	blue	32, 33				
L. Roberts	GN5	26-Aug-00	GN	3.81	37	ARCH	267	285	1.50	M	1	1	3	O, F					Y	100% tadpole shrimp
L. Roberts	GN6	26-Aug-00	GN	3.81	41	ARCH	327	540	1.54				4	F	blue	37				
L. Roberts	GN6	26-Aug-00	GN	3.81	42	ARCH	675	3650	1.19	M	1	1	7	F					Y	stomach empty
L. Roberts	GN11	27-Aug-00	GN	3.81	50	ARCH	574	2500	1.32				6		blue	43				
L. Roberts	GN11	27-Aug-00	GN	3.81	51	ARCH	149	"100"	"3.02"				2							
L. Roberts	GN11	27-Aug-00	GN	3.81	52	ARCH	270	240	1.22	F	1	1	4	O					Y	20% tadpole shrimp
L. Roberts	GN11	27-Aug-00	GN	3.81	53	ARCH	250	195	1.25	F	1	1	4	O					Y	100% tadpole shrimp
L. Roberts	GN11	27-Aug-00	GN	3.81	54	ARCH	251	175	1.11				3							
L. Roberts	GN12	27-Aug-00	GN	3.81	55	ARCH	235	155	1.19				3							
L. Roberts	GN12	27-Aug-00	GN	3.81	56	ARCH	254	225	1.37				3							
L. Roberts	GN13	27-Aug-00	GN	3.81	57	ARCH	171	67	1.34				2							
L. Roberts	GN18	27-Aug-00	GN	3.81	62	ARCH	258	230	1.34	F	1	1	4	O					Y	stomach empty
L. Roberts	GN19	27-Aug-00	GN	3.81	64	ARCH	320	430	1.31				4							
L. Roberts	GN16	27-Aug-00	GN	3.81	59	BRWH	533	2000	1.32				12		blue	44				
L. Roberts	GN1	26-Aug-00	GN	3.81	1	LKTR	350	560	1.31				8		blue	16				
L. Roberts	GN2	26-Aug-00	GN	3.81	4	LKTR	288	310	1.30				4		blue	18				
L. Roberts	GN3	26-Aug-00	GN	3.81	7	LKTR	335	515	1.37				9		blue	20				
L. Roberts	GN3	26-Aug-00	GN	3.81	8	LKTR	367	730	1.48				10		blue	21				
L. Roberts	GN3	26-Aug-00	GN	3.81	9	LKTR	382	850	1.52				11		blue	22				
L. Roberts	GN3	26-Aug-00	GN	3.81	13	LKTR	355	635	1.42				10		blue	23				
L. Roberts	GN4	26-Aug-00	GN	3.81	29	LKTR	393	940	1.55				11	F	blue	28				
L. Roberts	GN4	26-Aug-00	GN	3.81	30	LKTR	523	1750	1.22				25	F	blue	29				
L. Roberts	GN5	26-Aug-00	GN	3.81	35	LKTR	331	455	1.25				9	F	blue	31				
L. Roberts	GN6	26-Aug-00	GN	3.81	38	LKTR	411	1030	1.48				13	F	blue	34				
L. Roberts	GN6	26-Aug-00	GN	3.81	39	LKTR	465	1125	1.12				22	F	blue	35				
L. Roberts	GN6	26-Aug-00	GN	3.81	40	LKTR	416	875	1.22				18	F	blue	36				
L. Roberts	GN7	26-Aug-00	GN	3.81	43	LKTR	367	680	1.38				8		blue	38				
L. Roberts	GN7	26-Aug-00	GN	3.81	44	LKTR	383	825	1.47				12		blue	39				
L. Roberts	GN7	26-Aug-00	GN	3.81	45	LKTR	351	645	1.49				10		blue	40				
L. Roberts	GN7	26-Aug-00	GN	3.81	46	LKTR	346	595	1.44				8		blue	41				
L. Roberts	GN8	26-Aug-00	GN	3.81	47	LKTR	455	1075	1.14				13		blue	42				
L. Roberts	GN14	27-Aug-00	GN	3.81	58	LKTR									blue	38	Y			
L. Roberts	GN17	27-Aug-00	GN	3.81	60	LKTR	"315"	"140"	"0.45"				12							
L. Roberts	GN18	27-Aug-00	GN	3.81	61	LKTR	439	550	0.65				14		blue	45				
L. Roberts	GN19	27-Aug-00	GN	3.81	63	LKTR	367	730	1.48				10		blue	46				
L. Roberts	GN3	26-Aug-00	GN	3.81	11	LKWH	208	115	1.28				6							
L. Roberts	GN3	26-Aug-00	GN	3.81	16	LKWH	174	70	1.33	M	1	1	4	O					Y	20% plant material
L. Roberts	GN3	26-Aug-00	GN	3.81	17	LKWH	200	105	1.31	F	1	1	4	O					Y	100% plant matter
L. Roberts	GN3	26-Aug-00	GN	3.81	18	LKWH	190	97	1.41	M	1	1	4	O					Y	stomach empty
L. Roberts	GN3	26-Aug-00	GN	3.81	19	LKWH	213	130	1.35	M	1	1	6	O					Y	stomach empty
L. Roberts	GN3	26-Aug-00	GN	3.81	20	LKWH	203	104	1.24	M	1	1	4	O					Y	40% plant matter
L. Roberts	GN3	26-Aug-00	GN	3.81	21	LKWH	"118"	"86"	"5.23"	M	1	1	4	O					Y	stomach empty
L. Roberts	GN3	26-Aug-00	GN	3.81	22	LSCS	169	61	1.26				2							
L. Roberts	GN3	26-Aug-00	GN	3.81	23	LSCS	180	73	1.25				3							
L. Roberts	GN4	26-Aug-00	GN	3.81	31	LSCS	190	92	1.34				2	F						
L. Roberts	GN4	26-Aug-00	GN	3.81	32	LSCS	200	91	1.14				6	F						
L. Roberts	GN8	26-Aug-00	GN	3.81	48	LSCS	221	115	1.07				5							
L. Roberts	GN8	26-Aug-00	GN	3.81	49	LSCS	188	89	1.34				2							
Pelvic	GN1	15-Aug-98	GN	3.81	2	CISC	260	295	1.68				13	F						
Pelvic	GN1	15-Aug-98	GN	3.81	3	CISC	310	300	1.01				14	F	yellow	246				
Pelvic	GN1	15-Aug-98	GN	3.81	4	CISC	224	122	1.09											
Pelvic	GN1	15-Aug-98	GN	3.81	5	CISC	301	324	1.19				17	F	yellow	247				
Pelvic	GN1	15-Aug-98	GN	3.81	6	CISC	195	84	1.13				5	F						
Pelvic	GN1	15-Aug-98	GN	3.81	7	CISC	212	108	1.13	F	1	1	4	O, F						
Pelvic	GN1	15-Aug-98	GN	3.81	8	CISC	249	184	1.19	M	1	1	5	O, F						mauled by LKTR (1)
Pelvic	GN2	15-Aug-98	GN	3.81	11	CISC	223	104	0.94				4	F						
Pelvic	GN2	15-Aug-98	GN	3.81	12	CISC	280	208	0.95				13	F						
Pelvic	GN2	15-Aug-98	GN	3.81	14	CISC	290	240	0.98	M	2	2	17	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	15	CISC	277	216	1.02	F	2	2	16	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	16	CISC	181	58	0.98	M	1	1	3	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	17	CISC	184	68	1.09	M	1	1	4	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	18	CISC	275	226	1.09	F	2	2	9	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	19	CISC	202	92	1.12	F	1	1	4	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	20	CISC	209	96	1.05	F	2	2	4	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	21	CISC	167	28	0.60	F	2	3	6	O, F						possibly least cisco
Pelvic	GN2	15-Aug-98	GN	3.81	22	CISC	285	200	0.86	M	2	2	12	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	23	CISC	284	224	0.98	M	2	2	14	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	24	CISC	200	76	0.95	M	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	37	CISC	"150"	"172"	"5.10"	F	2	3	8	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	38	CISC	281	212	0.96	F	2	3	13	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	39	CISC	322	220	0.66	M	2	3	12	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	40	CISC	286	236	1.01	M	2	3	12	O, F						mauled by LKTR (1)
Pelvic	GN3	15-Aug-98	GN	3.81	41	CISC	252	166	1.04	M	2	2	11	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	42	CISC	291	274	1.11	M	2	3	14	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	43	CISC	271	180	0.90	M	1	1	16	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	44	CISC	220	102	0.96	F	1	1	4	O, F						

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Pelvic	GN3	15-Aug-98	GN	3.81	45	CISC	218	116	1.12	F	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	46	CISC	205	96	1.11	M	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	47	CISC	216	108	1.07	F	1	1	5	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	48	CISC	172	50	0.98	M	2	3	8	O, F						possibly least cisco
Pelvic	GN3	15-Aug-98	GN	3.81	49	CISC	206	94	1.08	F	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	50	CISC	206	108	1.24	M	1	1	4	O, F						
Pelvic	GN4	15-Aug-98	GN	3.81	73	CISC													Y	headless
Pelvic	GN4	15-Aug-98	GN	3.81	74	CISC	205	88	1.02	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	75	CISC	196	84	1.12	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	76	CISC	197	94	1.23	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	77	CISC	190	88	1.28	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	78	CISC	201	104	1.28	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	79	CISC	200	94	1.18	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	80	CISC	204	102	1.20	F	2	2								
Pelvic	GN4	15-Aug-98	GN	3.81	81	CISC	207	106	1.20	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	82	CISC	199	94	1.19	F	1	1								
Pelvic	GN4	15-Aug-98	GN	3.81	83	CISC	200	118	1.48	M	1	1								
Pelvic	GN4	15-Aug-98	GN	3.81	84	CISC	178	84	1.49	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	85	CISC	208	122	1.36	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	86	CISC	183	94	1.53	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	87	CISC	202	110	1.33	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	88	CISC	205	114	1.32	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	89	CISC	204	124	1.46	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	90	CISC	198	108	1.39	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	91	CISC	178	54	0.96	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	92	CISC	221	84	0.78	F	1	1								
Pelvic	GN4	15-Aug-98	GN	3.81	93	CISC	195	74	1.00	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	94	CISC	206	80	0.92	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	95	CISC	204	78	0.92	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	96	CISC	245	142	0.97											
Pelvic	GN4	15-Aug-98	GN	3.81	97	CISC	293	258	1.03	F	2	2								
Pelvic	GN4	15-Aug-98	GN	3.81	98	CISC	232	134	1.07	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	99	CISC	236	128	0.97	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	100	CISC	208	82	0.91	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	101	CISC	197	64	0.84	F	1	1								
Pelvic	GN4	15-Aug-98	GN	3.81	102	CISC	220	112	1.05	F	1	1								
Pelvic	GN4	15-Aug-98	GN	3.81	103	CISC	196	78	1.04	M	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	104	CISC	203	86	1.03	F	2	3								
Pelvic	GN4	15-Aug-98	GN	3.81	105	CISC	310	368	1.24	M	2	3	15	O, F						
Pelvic	GN4	15-Aug-98	GN	3.81	106	CISC	283	234	1.03	F	2	2	14	O, F						
Pelvic	GN4	15-Aug-98	GN	3.81	107	CISC	280	276	1.26	F	2	3	18	O, F						
Pelvic	GN4	15-Aug-98	GN	3.81	108	CISC	270	214	1.09	F	2	3	16	O, F						
Pelvic	GN4	15-Aug-98	GN	3.81	109	CISC	208	90	1.00	F	2	3		O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	124	CISC	220	100	0.94	M	1	1	4	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	125	CISC	197	82	1.07	M	1	1	4	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	126	CISC	192	70	0.99	F	2	3	6	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	127	CISC	202	66	0.80	F	1	1	7	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	128	CISC	171	52	1.04	F	2	3	8	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	129	CISC	186	64	0.99	F	2	3	10	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	130	CISC	290	222	0.91	F	2	2	16	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	131	CISC	300	298	1.10	F	2	2	15	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	132	CISC	323	420	1.25	F	2	3	12	O, F						
Pelvic	GN7	16-Aug-98	GN	3.81	163	CISC	202	98	1.19	F	1	1								mauled by LKTR
Pelvic	GN7	16-Aug-98	GN	3.81	164	CISC	224	126	1.12	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	165	CISC	288	328	1.37	F	2	2								
Pelvic	GN7	16-Aug-98	GN	3.81	166	CISC	223	130	1.17	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	167	CISC	213	120	1.24	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	168	CISC	192	92	1.30	F	2	3								
Pelvic	GN7	16-Aug-98	GN	3.81	169	CISC	180	62	1.06	F	2	3								
Pelvic	GN7	16-Aug-98	GN	3.81	170	CISC	173	44	0.85	F	2	3								
Pelvic	GN7	16-Aug-98	GN	3.81	171	CISC	213	96	0.99	M	2	3								
Pelvic	GN7	16-Aug-98	GN	3.81	172	CISC	170	62	1.26	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	173	CISC	183	72	1.17	F	2	3								
Pelvic	GN7	16-Aug-98	GN	3.81	174	CISC	168	44	0.93	F	2	3								
Pelvic	GN7	16-Aug-98	GN	3.81	175	CISC	183	52	0.85	F	2	2								
Pelvic	GN7	16-Aug-98	GN	3.81	176	CISC	163	48	1.11	M	2	3								
Pelvic	GN7	16-Aug-98	GN	3.81	177	CISC	162	44	1.03	M	2	3								
Pelvic	GN8	16-Aug-98	GN	3.81	191	CISC	183	74	1.21				3	F						
Pelvic	GN9	16-Aug-98	GN	3.81	195	CISC	282	234	1.04				8	F						
Pelvic	GN9	16-Aug-98	GN	3.81	197	CISC	177	60	1.08				7	F						
Pelvic	GN9	16-Aug-98	GN	3.81	200	CISC	248	162	1.06	M	2	2								
Pelvic	GN9	16-Aug-98	GN	3.81	201	CISC	187	82	1.25	M	1	1								
Pelvic	GN9	16-Aug-98	GN	3.81	202	CISC	166	42	0.92	M	2	3								
Pelvic	GN9	16-Aug-98	GN	3.81	203	CISC	179	70	1.22	F	2	3								
Pelvic	GN10	16-Aug-98	GN	3.81	218	CISC													Y	headless
Pelvic	GN10	16-Aug-98	GN	3.81	219	CISC	183	72	1.17	M	1	1								
Pelvic	GN10	16-Aug-98	GN	3.81	220	CISC	312	360	1.19	F	2	3								
Pelvic	GN10	16-Aug-98	GN	3.81	221	CISC	292	276	1.11	F	2	3								
Pelvic	GN10	16-Aug-98	GN	3.81	222	CISC	248	170	1.11	M	1	1								
Pelvic	GN11	17-Aug-98	GN	3.81	232	CISC	190	68	0.99	M	2	3	7	O, F						
Pelvic	GN11	17-Aug-98	GN	3.81	233	CISC	211	84	0.89	M	2	3	7	O, F						
Pelvic	GN11	17-Aug-98	GN	3.81	234	CISC	198	88	1.13	M	1	1	4	O, F						
Pelvic	GN11	17-Aug-98	GN	3.81	235	CISC	193	66	0.92	F	2	1	12	O, F						
Pelvic	GN11	17-Aug-98	GN	3.81	236	CISC	157	36	0.93	M	2	3	6	O, F						
Pelvic	GN11	17-Aug-98	GN	3.81	237	CISC	292	284	1.14	M	2	3	14	O, F						

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mortality	Comments / Stomach Content
Pelvic	GN11	17-Aug-98	GN	3.81	238	CISC	293	289	1.15	M	2	3	7	O, F						
Pelvic	GN11	17-Aug-98	GN	3.81	239	CISC	260	205	1.17	M	1	1	5	O, F						
Pelvic	GN12	17-Aug-98	GN	3.81	261	CISC	162	40	0.94	F	2	3								
Pelvic	GN12	17-Aug-98	GN	3.81	262	CISC	170	54	1.10	F	2	3								
Pelvic	GN12	17-Aug-98	GN	3.81	263	CISC	183	60	0.98	M	2	3								
Pelvic	GN12	17-Aug-98	GN	3.81	264	CISC	201	72	0.89	M	2	3								
Pelvic	GN12	17-Aug-98	GN	3.81	265	CISC	195	78	1.05	F	2	3								
Pelvic	GN12	17-Aug-98	GN	3.81	266	CISC	171	54	1.08	F	2	3								
Pelvic	GN12	17-Aug-98	GN	3.81	267	CISC	173	52	1.00	F	2	3								
Pelvic	GN12	17-Aug-98	GN	3.81	268	CISC	176	48	0.88	F	2	1								
Pelvic	GN12	17-Aug-98	GN	3.81	269	CISC	163	46	1.06	F	2	3								
Pelvic	GN13	17-Aug-98	GN	3.81	274	CISC	170	48	0.98				5	F						
Pelvic	GN13	17-Aug-98	GN	3.81	275	CISC	295	288	1.12				18	F						
Pelvic	GN13	17-Aug-98	GN	3.81	276	CISC	182	66	1.09				8	F						
Pelvic	GN13	17-Aug-98	GN	3.81	277	CISC	172	42	0.83				7	F						
Pelvic	GN13	17-Aug-98	GN	3.81	286	CISC	200	52	0.65	F	2	3								
Pelvic	GN13	17-Aug-98	GN	3.81	287	CISC	184	68	1.09	M	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	288	CISC	176	56	1.03	F	2	3								
Pelvic	GN13	17-Aug-98	GN	3.81	289	CISC	159	42	1.04	M	2	3								
Pelvic	GN13	17-Aug-98	GN	3.81	290	CISC	175	48	0.90	F	2	3								
Pelvic	GN13	17-Aug-98	GN	3.81	291	CISC	211	92	0.98	M	2	3								
Pelvic	GN14	17-Aug-98	GN	3.81	296	CISC	192	56	0.79											
Pelvic	GN14	17-Aug-98	GN	3.81	311	CISC	168	46	0.97	M	2	3								
Pelvic	GN14	17-Aug-98	GN	3.81	312	CISC	208	106	1.18	F	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	314	CISC	174	52	0.99	M	2	3								
Pelvic	GN14	17-Aug-98	GN	3.81	315	CISC	183	60	0.98	F	2	3								
Pelvic	GN14	17-Aug-98	GN	3.81	316	CISC	174	56	1.06	F	2	3								
Pelvic	GN14	17-Aug-98	GN	3.81	317	CISC	158	42	1.06	M	2	3								
Pelvic	GN15	17-Aug-98	GN	3.81	320	CISC	337	480	1.25						yellow	321				
Pelvic	GN15	17-Aug-98	GN	3.81	334	CISC	211	92	0.98	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	349	CISC	"467"	"236"	"0.23"	M	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	350	CISC	172	52	1.02	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	352	CISC	175	52	0.97	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	353	CISC	195	58	0.78	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	354	CISC	181	64	1.08	F	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	355	CISC	190	56	0.82	F	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	356	CISC	175	52	0.97	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	358	CISC	185	62	0.98	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	359	CISC	"135"	"290"	"11.79"	F	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	360	CISC	168	46	0.97	M	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	361	CISC	204	70	0.82	M	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	362	CISC	273	228	1.12	M	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	364	CISC	187	66	1.01	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	366	CISC	190	60	0.87	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	367	CISC	180	50	0.86	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	368	CISC	181	60	1.01	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	379	CISC	198	78	1.00	F	2	3								
Pelvic	GN1	15-Aug-98	GN	3.81	1	LKTR	873	6600	0.99				27	F	yellow	245				
Pelvic	GN3	15-Aug-98	GN	3.81	69	LKTR	458	1010	1.05	F	2	3	26	O, F				Y	Y	stomach empty
Pelvic	GN3	15-Aug-98	GN	3.81	70	LKTR	430	1102	1.39	M	2	3	17	O, F				Y	Y	stomach empty
Pelvic	GN3	15-Aug-98	GN	3.81	71	LKTR	457	982	1.03	F	2	1	20	O, F				Y	Y	stomach empty
Pelvic	GN3	15-Aug-98	GN	3.81	72	LKTR	753	4250	1.00	M	2	3	24	O, F					Y	
Pelvic	GN4	15-Aug-98	GN	3.81	114	LKTR	623	2550	1.05	F	2	1	23	O, F				Y	Y	10% fish
Pelvic	GN6	16-Aug-98	GN	3.81	144	LKTR	667	2800	0.94	F	2	2	25	O, F				Y	Y	30% CISC
Pelvic	GN6	16-Aug-98	GN	3.81	145	LKTR	650	3000	1.09	F	2	3	24	F				Y	Y	stomach empty
Pelvic	GN7	16-Aug-98	GN	3.81	184	LKTR	435	952	1.16	M	2	3	24	O, F				Y	Y	stomach empty
Pelvic	GN7	16-Aug-98	GN	3.81	185	LKTR	435	856	1.04	M	1	1	8	O, F				Y	Y	stomach empty
Pelvic	GN9	16-Aug-98	GN	3.81	204	LKTR	442	964	1.12	M	1	1	8	O, F				Y	Y	100% CISC (3 fish)
Pelvic	GN9	16-Aug-98	GN	3.81	205	LKTR	456	1062	1.12	F	1	1	11	O, F				Y	Y	stomach empty
Pelvic	GN11	17-Aug-98	GN	3.81	223	LKTR	915	8600	1.12				39	F	yellow	334		Y		
Pelvic	GN11	17-Aug-98	GN	3.81	240	LKTR	646	2850	1.06	M	2	3	28	O, F				Y	Y	stomach empty
Pelvic	GN12	17-Aug-98	GN	3.81	241	LKTR	520	1788	1.27	M	2	3	22	O, F				Y	Y	100% LKWH
Pelvic	GN12	17-Aug-98	GN	3.81	242	LKTR	"328"	"2425"	"6.87"	F	2	1	"18"	O, F				Y	Y	15% unidentified
Pelvic	GN12	17-Aug-98	GN	3.81	243	LKTR	694	3225	0.96	F	2	1	24	O, F				Y	Y	50% CISC (2 fish)
Pelvic	GN12	17-Aug-98	GN	3.81	244	LKTR	446	1028	1.16	F	2	3	25	O, F				Y	Y	stomach empty
Pelvic	GN15	17-Aug-98	GN	3.81	335	LKTR	159	36	0.90	M	"2"	"2"								
Pelvic	GN15	17-Aug-98	GN	3.81	336	LKTR	406	892	1.33	F	2	3	21	O, F				Y	Y	stomach empty
Pelvic	GN16	17-Aug-98	GN	3.81	337	LKTR	431	880	1.10	F	2	1	25	O, F				Y	Y	stomach empty
Pelvic	GN16	17-Aug-98	GN	3.81	338	LKTR	438	958	1.14	F	2	1	23	O, F				Y	Y	
Pelvic	GN16	17-Aug-98	GN	3.81	339	LKTR	670	2990	0.99	M	2	3	32	O, F				Y	Y	90% CISC (3 fish)
Pelvic	GN16	17-Aug-98	GN	3.81	340	LKTR	430	1014	1.28	M	2	3	24	O, F				Y	Y	
Pelvic	GN16	17-Aug-98	GN	3.81	341	LKTR	476	1150	1.07				22	F	yellow	317				
Pelvic	GN16	17-Aug-98	GN	3.81	342	LKTR	415	830	1.16				20	F	yellow	316				
Pelvic	GN16	17-Aug-98	GN	3.81	343	LKTR	517	1480	1.07				19	F	yellow	315				
Pelvic	GN16	17-Aug-98	GN	3.81	344	LKTR	450	1000	1.10				23	F	yellow	314				
Pelvic	GN16	17-Aug-98	GN	3.81	345	LKTR	460	980	1.01				17	F	yellow	313				
Pelvic	GN16	17-Aug-98	GN	3.81	346	LKTR	435	980	1.19				19	F	yellow	312				
Pelvic	GN16	17-Aug-98	GN	3.81	347	LKTR	438	920	1.09				22	F	yellow	311				
Pelvic	GN16	17-Aug-98	GN	3.81	390	LKTR	637	1600	0.62	F	2	1	29	O, F					Y	stomach empty
Pelvic	GN1	15-Aug-98	GN	3.81	9	LKWH	260	234	1.33	F	1	1	5	O, F						
Pelvic	GN1	15-Aug-98	GN	3.81	10	LKWH	261	200	1.12				5	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	13	LKWH	275	232	1.12				5	F						
Pelvic	GN2	15-Aug-98	GN	3.81	25	LKWH	237	142	1.07	M	1	1	4	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	26	LKWH	223	130	1.17	F	1	1	4	O, F						
Pelvic	GN2	15-Aug-98	GN	3.81	27	LKWH	278	250	1.16	F	1	1	7	O, F						

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mortality	Comments / Stomach Content
Pelvic	GN2	15-Aug-98	GN	3.81	28	LKWH	381	676	1.22	F	2	1	17	O, F				Y	Y	
Pelvic	GN2	15-Aug-98	GN	3.81	29	LKWH	341	512	1.29	M	1	1	14	O, F				Y	Y	
Pelvic	GN2	15-Aug-98	GN	3.81	30	LKWH	370	650	1.28	F	2	3	15	O, F				Y	Y	
Pelvic	GN2	15-Aug-98	GN	3.81	31	LKWH	411	954	1.37	F	2	3	24	O, F				Y	Y	
Pelvic	GN2	15-Aug-98	GN	3.81	32	LKWH	410	876	1.27	M	1	1	24	O, F				Y	Y	
Pelvic	GN2	15-Aug-98	GN	3.81	33	LKWH	379	714	1.31	F	1	1	16	O, F				Y	Y	
Pelvic	GN3	15-Aug-98	GN	3.81	34	LKWH	260	194	1.10				5	F						
Pelvic	GN3	15-Aug-98	GN	3.81	35	LKWH	291	306	1.24				6	F						
Pelvic	GN3	15-Aug-98	GN	3.81	36	LKWH	302	336	1.22				7	F	yellow	248				
Pelvic	GN3	15-Aug-98	GN	3.81	51	LKWH	224	148	1.32	M	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	52	LKWH	223	134	1.21	M	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	53	LKWH	233	154	1.22	M	1	1	5	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	54	LKWH	155	52	1.40	M	1	1	2	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	55	LKWH	161	56	1.34	M	1	1	2	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	56	LKWH	230	168	1.38	M	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	57	LKWH	252	178	1.11	M	1	1	6	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	58	LKWH	241	170	1.21	M	1	1	5	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	59	LKWH	227	144	1.23	M	1	1	4	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	60	LKWH	164	50	1.13	M	1	1	2	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	61	LKWH	173	62	1.20	F	1	1	2	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	62	LKWH	160	52	1.27				2	O, F						
Pelvic	GN3	15-Aug-98	GN	3.81	63	LKWH	399	698	1.10	M	1	1	30	O, F				Y	Y	
Pelvic	GN3	15-Aug-98	GN	3.81	64	LKWH	377	732	1.37	M	2	2	22	O, F				Y	Y	
Pelvic	GN3	15-Aug-98	GN	3.81	65	LKWH	395	816	1.32	F	2	2	21	O, F				Y	Y	
Pelvic	GN3	15-Aug-98	GN	3.81	66	LKWH	365	612	1.26	M	1	1	14	O, F				Y	Y	
Pelvic	GN3	15-Aug-98	GN	3.81	67	LKWH	381	734	1.33	F	2	3	14	O, F				Y	Y	
Pelvic	GN3	15-Aug-98	GN	3.81	68	LKWH	316	412	1.31	F	1	1	10	O, F				Y	Y	
Pelvic	GN4	15-Aug-98	GN	3.81	110	LKWH	409	910	1.33	F	2	1	24	O, F				Y	Y	
Pelvic	GN4	15-Aug-98	GN	3.81	111	LKWH	400	878	1.37	F	2	2	29	O, F				Y	Y	
Pelvic	GN4	15-Aug-98	GN	3.81	112	LKWH	382	676	1.21	M	1	1	23	O, F				Y	Y	
Pelvic	GN4	15-Aug-98	GN	3.81	113	LKWH	407	824	1.22	M	2	1	34	O, F				Y	Y	
Pelvic	GN6	16-Aug-98	GN	3.81	115	LKWH	345	500	1.22				10	F	yellow	249				
Pelvic	GN6	16-Aug-98	GN	3.81	116	LKWH	322	410	1.23				9	F	yellow	250				
Pelvic	GN6	16-Aug-98	GN	3.81	117	LKWH	385	750	1.31											
Pelvic	GN6	16-Aug-98	GN	3.81	118	LKWH	385	710	1.24				15	F	yellow	350				
Pelvic	GN6	16-Aug-98	GN	3.81	119	LKWH	370	706	1.39				15	F	yellow	349				
Pelvic	GN6	16-Aug-98	GN	3.81	120	LKWH	298	310	1.17				7							
Pelvic	GN6	16-Aug-98	GN	3.81	121	LKWH	"232"	"325"	"2.60"	M	1	1								
Pelvic	GN6	16-Aug-98	GN	3.81	122	LKWH	300	314	1.16	F	1	1								
Pelvic	GN6	16-Aug-98	GN	3.81	123	LKWH	306	345	1.20	F	1	1								
Pelvic	GN6	16-Aug-98	GN	3.81	133	LKWH	245	172	1.17	M	1	1	4	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	134	LKWH	164	54	1.22	M	1	1	2	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	135	LKWH	215	120	1.21	M	1	1	4	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	136	LKWH	248	180	1.18	F	1	1	5	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	137	LKWH	262	220	1.22	M	1	1	6	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	138	LKWH	172	60	1.18	M	1	1	2	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	139	LKWH	228	148	1.25	F	1	1	5	O, F						
Pelvic	GN6	16-Aug-98	GN	3.81	140	LKWH	370	722	1.43	F	2	3	20	O, F				Y	Y	
Pelvic	GN6	16-Aug-98	GN	3.81	141	LKWH	383	698	1.24	F	2	2	22	O, F				Y	Y	
Pelvic	GN6	16-Aug-98	GN	3.81	142	LKWH	382	748	1.34	F	2	2	21	O, F				Y	Y	
Pelvic	GN6	16-Aug-98	GN	3.81	143	LKWH	381	754	1.36	M	2	3	22	O, F				Y	Y	
Pelvic	GN7	16-Aug-98	GN	3.81	146	LKWH	420	1060	1.43				18	F	yellow	47, 348				
Pelvic	GN7	16-Aug-98	GN	3.81	147	LKWH	415	860	1.20				20	F	yellow	346				
Pelvic	GN7	16-Aug-98	GN	3.81	148	LKWH	388	700	1.20				16	F	yellow	345				
Pelvic	GN7	16-Aug-98	GN	3.81	149	LKWH	415	840	1.18				27	F	yellow	344				
Pelvic	GN7	16-Aug-98	GN	3.81	150	LKWH	302	330	1.20				8	F	yellow	342				
Pelvic	GN7	16-Aug-98	GN	3.81	151	LKWH	245	180	1.22				5	F						
Pelvic	GN7	16-Aug-98	GN	3.81	152	LKWH	297	320	1.22				7	F						
Pelvic	GN7	16-Aug-98	GN	3.81	153	LKWH	253	200	1.24				5	F						
Pelvic	GN7	16-Aug-98	GN	3.81	154	LKWH	230	150	1.23	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	155	LKWH	223	134	1.21	F	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	156	LKWH	228	158	1.33	F	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	157	LKWH	261	234	1.32	F	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	158	LKWH	250	216	1.38	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	159	LKWH	236	180	1.37	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	160	LKWH	237	166	1.25	F	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	161	LKWH	226	142	1.23	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	162	LKWH	252	198	1.24	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	178	LKWH	160	54	1.32	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	179	LKWH	167	54	1.16	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	180	LKWH	167	54	1.16	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	181	LKWH	160	52	1.27	M	1	1								
Pelvic	GN7	16-Aug-98	GN	3.81	182	LKWH	406	806	1.20	M	2	3	32	O, F				Y	Y	
Pelvic	GN7	16-Aug-98	GN	3.81	183	LKWH	386	722	1.26	F	2	2	25	O, F				Y	Y	
Pelvic	GN8	16-Aug-98	GN	3.81	186	LKWH	315	338	1.08				8	F	yellow	342				
Pelvic	GN8	16-Aug-98	GN	3.81	187	LKWH	228	120	1.01				4	F						
Pelvic	GN8	16-Aug-98	GN	3.81	188	LKWH	258	198	1.15				5	F						
Pelvic	GN8	16-Aug-98	GN	3.81	189	LKWH	158	54	1.37				2	F						
Pelvic	GN8	16-Aug-98	GN	3.81	190	LKWH	196	84	1.12				4	F						
Pelvic	GN9	16-Aug-98	GN	3.81	192	LKWH	387	760	1.31				22	F	yellow	341				
Pelvic	GN9	16-Aug-98	GN	3.81	193	LKWH	411	800	1.15				27	F	yellow	340				
Pelvic	GN9	16-Aug-98	GN	3.81	194	LKWH	410	820	1.19				25	F	yellow	339				
Pelvic	GN9	16-Aug-98	GN	3.81	196	LKWH	297	290	1.11				7	F						
Pelvic	GN9	16-Aug-98	GN	3.81	198	LKWH	166	52	1.14	M	1	1								
Pelvic	GN9	16-Aug-98	GN	3.81	199	LKWH	407	780	1.16	M	2	1								

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Pelvic	GN10	16-Aug-98	GN	3.81	206	LKWH	420	880	1.19				23	F	yellow	338				
Pelvic	GN10	16-Aug-98	GN	3.81	207	LKWH	380	700	1.28				21	F	yellow	337				
Pelvic	GN10	16-Aug-98	GN	3.81	208	LKWH	403	900	1.38				21	F	yellow	336				
Pelvic	GN10	16-Aug-98	GN	3.81	209	LKWH	345	500	1.22				14	F	yellow	335				
Pelvic	GN10	16-Aug-98	GN	3.81	210	LKWH	286	265	1.13				7	F						
Pelvic	GN10	16-Aug-98	GN	3.81	211	LKWH	233	140	1.11				4	F						
Pelvic	GN10	16-Aug-98	GN	3.81	212	LKWH	225	134	1.18				4	F						
Pelvic	GN10	16-Aug-98	GN	3.81	213	LKWH	380	700	1.28	F	2	2								
Pelvic	GN10	16-Aug-98	GN	3.81	214	LKWH	231	140	1.14	F	1	1								
Pelvic	GN10	16-Aug-98	GN	3.81	215	LKWH	260	180	1.02	M	1	1								
Pelvic	GN10	16-Aug-98	GN	3.81	216	LKWH	253	160	0.99	M	1	1								
Pelvic	GN10	16-Aug-98	GN	3.81	217	LKWH	177	58	1.05	M	1	1								
Pelvic	GN11	17-Aug-98	GN	3.81	224	LKWH	405	722	1.09				"2"	F	yellow	333				
Pelvic	GN11	17-Aug-98	GN	3.81	225	LKWH	370	680	1.34				16	F	yellow	332				
Pelvic	GN11	17-Aug-98	GN	3.81	226	LKWH	404	824	1.25				24	F	yellow	331				
Pelvic	GN11	17-Aug-98	GN	3.81	227	LKWH	405	840	1.26				28	F	yellow	330				
Pelvic	GN11	17-Aug-98	GN	3.81	228	LKWH	321	420	1.27				9	F	yellow	329				
Pelvic	GN11	17-Aug-98	GN	3.81	229	LKWH	287	270	1.14				7	F						
Pelvic	GN11	17-Aug-98	GN	3.81	230	LKWH	227	130	1.11	F	1	1	4	O, F						
Pelvic	GN11	17-Aug-98	GN	3.81	231	LKWH	227	135	1.15	M	1	1	4	O, F						
Pelvic	GN12	17-Aug-98	GN	3.81	245	LKWH	362	600	1.26				15	F	yellow	328				
Pelvic	GN12	17-Aug-98	GN	3.81	246	LKWH	251	182	1.15				5	F						
Pelvic	GN12	17-Aug-98	GN	3.81	247	LKWH	261	190	1.07				5	F						
Pelvic	GN12	17-Aug-98	GN	3.81	248	LKWH	283	230	1.01				7	F						
Pelvic	GN12	17-Aug-98	GN	3.81	249	LKWH	284	260	1.14				6	F						
Pelvic	GN12	17-Aug-98	GN	3.81	250	LKWH	290	280	1.15	M	1	1	7	O, F						
Pelvic	GN12	17-Aug-98	GN	3.81	251	LKWH	285	272	1.17	M	1	1	7	O, F						
Pelvic	GN12	17-Aug-98	GN	3.81	252	LKWH	233	144	1.14	F	1	1	4	O, F						
Pelvic	GN12	17-Aug-98	GN	3.81	253	LKWH	219	134	1.28	F	1	1	4	O, F						
Pelvic	GN12	17-Aug-98	GN	3.81	254	LKWH	211	120	1.28	M	1	1	4	O, F						
Pelvic	GN12	17-Aug-98	GN	3.81	255	LKWH	160	62	1.51	M	1	1								
Pelvic	GN12	17-Aug-98	GN	3.81	256	LKWH	153	50	1.40	M	1	1								
Pelvic	GN12	17-Aug-98	GN	3.81	257	LKWH	214	106	1.08	F	1	1								
Pelvic	GN12	17-Aug-98	GN	3.81	258	LKWH	202	105	1.27	M	1	1								
Pelvic	GN12	17-Aug-98	GN	3.81	259	LKWH	281	266	1.20	F	1	1								
Pelvic	GN12	17-Aug-98	GN	3.81	260	LKWH	383	656	1.17	M	1	1	17	O, F						
Pelvic	GN13	17-Aug-98	GN	3.81	270	LKWH	278	142	0.66				7	F						
Pelvic	GN13	17-Aug-98	GN	3.81	271	LKWH	375	660	1.25				13	F	yellow	327				
Pelvic	GN13	17-Aug-98	GN	3.81	272	LKWH	288	280	1.17				6	F						
Pelvic	GN13	17-Aug-98	GN	3.81	273	LKWH	230	142	1.17				4	F						
Pelvic	GN13	17-Aug-98	GN	3.81	278	LKWH	231	142	1.15	M	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	279	LKWH	222	146	1.33	F	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	280	LKWH	215	124	1.25	M	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	281	LKWH	225	160	1.40	F	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	282	LKWH	167	56	1.20	M	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	283	LKWH	248	180	1.18	M	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	284	LKWH	278	252	1.17	M	1	1								
Pelvic	GN13	17-Aug-98	GN	3.81	285	LKWH	332	450	1.23	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	292	LKWH	403	880	1.34				15	F	yellow	326				
Pelvic	GN14	17-Aug-98	GN	3.81	293	LKWH	362	610	1.29				14	F	yellow	325				
Pelvic	GN14	17-Aug-98	GN	3.81	294	LKWH	"425"	"1700"	"2.21"				35	F	yellow	324				
Pelvic	GN14	17-Aug-98	GN	3.81	295	LKWH	225	120	1.05											
Pelvic	GN14	17-Aug-98	GN	3.81	297	LKWH	244	158	1.09	F	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	298	LKWH	266	220	1.17	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	299	LKWH	211													
Pelvic	GN14	17-Aug-98	GN	3.81	300	LKWH	175	66	1.23	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	301	LKWH	224	130	1.16	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	302	LKWH	234	160	1.25	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	303	LKWH	252	186	1.16	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	304	LKWH	262	226	1.26	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	305	LKWH	349	530	1.25	F	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	306	LKWH	260	208	1.18	F	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	307	LKWH	232	134	1.07	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	308	LKWH	230	152	1.25	F	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	309	LKWH	174	62	1.18	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	310	LKWH	168	56	1.18	M	1	1								
Pelvic	GN14	17-Aug-98	GN	3.81	313	LKWH	177	64	1.15	F	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	318	LKWH	407	880	1.31				24	F	yellow	323				
Pelvic	GN15	17-Aug-98	GN	3.81	319	LKWH	"323"	"750"	"2.23"						yellow	322				
Pelvic	GN15	17-Aug-98	GN	3.81	321	LKWH	390	790	1.33						yellow	320				
Pelvic	GN15	17-Aug-98	GN	3.81	322	LKWH	347	554	1.33						yellow	319				
Pelvic	GN15	17-Aug-98	GN	3.81	323	LKWH	320	376	1.15						yellow	318				
Pelvic	GN15	17-Aug-98	GN	3.81	324	LKWH	252	182	1.14											
Pelvic	GN15	17-Aug-98	GN	3.81	325	LKWH	240	150	1.09											
Pelvic	GN15	17-Aug-98	GN	3.81	326	LKWH	285	284	1.23	M	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	327	LKWH	253	218	1.35	F	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	328	LKWH	218	110	1.06	M	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	329	LKWH	230	148	1.22	F	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	330	LKWH	227	136	1.16	M	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	331	LKWH	216	120	1.19	M	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	332	LKWH	217	110	1.08	M	1	1								
Pelvic	GN15	17-Aug-98	GN	3.81	333	LKWH	265	206	1.11	F	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	348	LKWH	418	900	1.23						yellow	310				
Pelvic	GN16	17-Aug-98	GN	3.81	351	LKWH	160	50	1.22	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	357	LKWH	236	154	1.17	F	1	1								

Appendix D8. Raw data for fish captured in Doris Hinge lakes, 1995-2000.

Lake	Site #	Date	Samp Meth.	Mesh (cm)	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Re-capt	Tissues	Mort-ality	Comments / Stomach Content
Pelvic	GN16	17-Aug-98	GN	3.81	363	LKWH	217	126	1.23	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	365	LKWH	172	60	1.18	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	369	LKWH	374	678	1.30	F	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	370	LKWH	407	890	1.32	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	371	LKWH	403	800	1.22	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	372	LKWH	388	820	1.40	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	373	LKWH	399	910	1.43	F	2	3								
Pelvic	GN16	17-Aug-98	GN	3.81	374	LKWH	419	940	1.28	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	375	LKWH	382	710	1.27	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	376	LKWH	394	770	1.26	F	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	377	LKWH	354	560	1.26	F	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	378	LKWH	377	610	1.14	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	380	LKWH	168	66	1.39	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	381	LKWH	275	262	1.26	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	382	LKWH	415	930	1.30	F	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	383	LKWH	"367"	"40"	"0.08"	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	384	LKWH	388	740	1.27	M	2	2								
Pelvic	GN16	17-Aug-98	GN	3.81	385	LKWH	383	690	1.23	F	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	386	LKWH	380	740	1.35	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	387	LKWH	380	700	1.28	F	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	388	LKWH	371	650	1.27	M	1	1								
Pelvic	GN16	17-Aug-98	GN	3.81	389	LKWH	380	700	1.28	M	2	2								

CODES:

Sampling Method

GN Gill nets
BS Beach seines

Species

ARCH Arctic char
CISC Cisco
LKTR Lake trout
LKWH Lake whitefish
BRWH Broad whitefish
LSCS Least cisco
NNST Ninespine stickleback
SLSC Slimy sculpin

FL Fork Length

Condition Factor (CF)

CF = Weight [in g] x 10^5 / (FL [in mm])^3

Sex

F Female
M Male

Maturity

1 Immature
2 Mature

Reproductive Status

1 Undeveloped
2 Green
3 Ripe

Ageing Structure

O Otoliths
S Scales
F Fin rays

Tissues

Y Tissue samples taken for metals analyses

Recapt

Y Recaptured fish (previously tagged)

" " Values in parenthesis were not used in data analysis
(lengths did not agree with weights or maturity data were suspect)

Appendix D9. Catch and catch-per-unit-effort (CPUE) for fish captured in Doris Hinge streams, 1995-2000.

Stream	Site	Date	Method	Arctic char		Lake trout		Lake whitefish		Cisco		Slimy sculpin		Ninespine stickleback		Unknown		All Species	
				n	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE	*n*	CPUE
Doris Outflow	#25d/s	19-Aug-95	AL	*2*	n/a													*2*	n/a
	#25d/s	20-Aug-95	EF	*3*	n/a					*3*	n/a			*9*	n/a			*15*	n/a
	#25d/s	14-Aug-97	EF	*7*	1.2	*6*	1.1	*1*	0.2	*7*	1.2			*7*	1.2			*28*	4.9
	#25u/s	7-Jul-96	EF			*5*	0.3	*1*	0.1							*2*	0.1	*8*	0.5
	#25u/s	14-Aug-97	EF			*1*	0.2											*1*	0.2
	#25u/s	25-Aug-00	EF											*19*				*19*	0.0
Doris Inflow	#04	21-Jun-97	EF											*3*	0.2			*3*	0.2
Tail Outflow	#03	20-Jun-97	EF											*1*	0.2			*1*	0.2
	#03	25-Jun-00	EF															*0*	0.0
Ogama Outflow	#22	18-Aug-95	AL			*5*	n/a											*5*	n/a
	#22	7-Jul-96	EF															*0*	0.0
	#22	15-Aug-97	EF			*1*	0.1	*2*	0.2					*25*	2.6			*28*	2.9
Ogama Inflow	#20	20-Aug-95	EF											*6*	n/a			*6*	n/a
	#20	7-Jul-96	EF					*1*	n/a									*1*	n/a
	#20	14-Aug-97	EF			*2*	0.3			*1*	0.2			*23*	3.7			*26*	4.2
	#01	20-Jun-97	EF			*14*	3.0											*14*	3.0
	#06	21-Jun-97	EF															*0*	0.0
	#09	22-Jun-97	EF											*2*	3.8			*2*	3.8
	#14	23-Jun-97	EF											*2*	0.2			*2*	0.2
Patch Inflow	#05	21-Jun-97	EF											*11*	1.7			*11*	1.7
	#07	21-Jun-97	EF											*1*	0.2			*1*	0.2
	#08	21-Jun-97	EF											*26*	8.0			*26*	8.0
	#11	22-Jun-97	EF			*4*	1.7							*30*	12.2			*34*	13.9
Windy Outflow	#02	20-Jun-97	EF	*1*	0.1	*2*	0.2											*3*	0.3
	#10	22-Jun-97	EF			*9*	1.9											*9*	1.9
Windy Inflow	#13	23-Jun-97	EF											*51*	74.6			*51*	74.6
Glenn Outflow	#12	23-Jun-97	EF	*2*	0.2	*5*	0.5											*7*	0.7
	#28	15-Aug-97	EF	*3*	0.3									*4*	0.4			*7*	0.7
	#28	25-Jun-00	EF															*0*	0.0
	#28	20-Aug-00	EF	*13*	n/a	*1*	n/a					*3*	n/a					*17*	n/a
L. Roberts Outflow	#26	14-Aug-97	EF	*10*	0.9	*3*	0.3							*11*	1.0			*24*	2.2
	#26	25-Aug-00	EF															*0*	0.0
Total				***41***		***58***		***5***		***11***		***3***		***231***		***2***		***351***	

NOTE: EF = backpack electrofishing; AL = angling with lures; n/a = effort data not available

CPUE values are based on number of fish captured or observed per minute of active sampling.

Appendix D10. Size and age statistics for fish captured in Doris Hinge streams, 1995-2000.

Stream	Year	Species	Fork Length (mm)					Weight (g)					Condition Factor					Age (years)				
			n	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max	*n*	**Mean**	SD	Min	Max
Doris Outflow	1995	Arctic char	*5*	**215**	29	175	243											*4*	**2.0**	0.0	2	2
		Cisco	*3*	**183**	63	130	253											*2*	**2.5**	0.7	2	3
		Ninespine stickleback	*9*	**49**	7	40	61															
	1996	Lake trout	*5*	**83**	8	71	92															
		Lake whitefish	*1*	**78**	-	78	78															
	1997	Arctic char	*7*	**170**	83	91	303	*5*	**127**	127	10	342	*5*	**1.18**	0.18	0.88	1.33					
		Lake trout	*6*	**326**	88	202	447	*6*	**391**	258	84	800	*6*	**0.99**	0.07	0.90	1.07					
		Lake whitefish	*1*	**493**	-	493	493	*1*	**1375**	-	1375	1375	*1*	**1.15**	-	1.15	1.15					
		Cisco	*7*	**245**	23	209	276	*7*	**153**	40	92	206	*7*	**1.01**	0.05	0.97	1.12					
		Ninespine stickleback	*7*	**55**	4	50	62															
	2000	Ninespine stickleback	*19*	**38**	14	24	81															
	1995-2000	Arctic char	*12*	**189**	68	91	303	*5*	**127**	127	10	342	*5*	**1.18**	0.18	0.88	1.33	4	**2.0**	0.0	2	2
		Lake trout	*11*	**216**	142	71	447	*6*	**391**	258	84	800	*6*	**0.99**	0.07	0.90	1.07					
		Lake whitefish	*2*	**286**	293	78	493	*1*	**1375**	-	1375	1375	*1*	**1.15**	-	1.15	1.15					
		Cisco	*10*	**227**	47	130	276	*7*	**153**	40	92	206	*7*	**1.01**	0.05	0.97	1.12	*2*	**2.5**	0.7	2	3
		Ninespine stickleback	*35*	**44**	13	24	81															
Doris Inflow	1997	Ninespine stickleback	*3*	**45**	7	38	52															
Ogama Outflow	1995	Lake trout	*5*	**558**	71	468	647															
	1997	Lake trout	*1*	**463**	-	463	463	*1*	**1175**	-	1175	1175	*1*	**1.18**	-	1.18	1.18					
		Lake whitefish	*2*	**302**	21	287	316	*2*	**320**	57	280	360	*2*	**1.16**	0.03	1.14	1.18					
		Ninespine stickleback	*10*	**56**	14	18	72															
	1995-1997	Lake trout	*6*	**542**	68	463	647	*1*	**1175**	-	1175	1175	*1*	**1.18**	-	1.18	1.18					
		Lake whitefish	*2*	**302**	21	287	316	*2*	**320**	57	280	360	*2*	**1.16**	0.03	1.14	1.18					
		Ninespine stickleback	*10*	**56**	14	18	72															
Ogama Inflows	1995	Ninespine stickleback	*6*	**42**	6	35	51															
	1996	Lake whitefish	*1*	**323**	-	323	323															
	1997	Lake trout	*6*	**681**	67	563	750	*6*	**3138**	988	1650	4400	*6*	**0.96**	0.07	0.85	1.04					
		Cisco	*1*	**206**	-	206	206	*1*	**74**	-	74	74	*1*	**0.85**	-	0.85	0.85					
		Ninespine stickleback	*7*	**55**	5	49	63															
	1995-1997	Lake trout	*6*	**681**	67	563	750	*6*	**3138**	988	1650	4400	*6*	**0.96**	0.07	0.85	1.04					
		Lake whitefish	*1*	**323**	-	323	323															
		Cisco	*1*	**206**	-	206	206	*1*	**74**	-	74	74	*1*	**0.85**	-	0.85	0.85					
		Ninespine stickleback	*13*	**49**	9	35	63															
Patch Inflows	1997	Ninespine stickleback	*68*	**46**	12	28	71															
Windy Outflow	1997	Arctic char	*1*	**185**	-	185	185	*1*	**36**	-	36	36	*1*	**0.57**	-	0.57	0.57					
		Lake trout	*6*	**546**	119	444	744	*6*	**1838**	940	1150	3600	*6*	**1.09**	0.18	0.84	1.31					
Windy Inflow	1997	Ninespine stickleback	*8*	**38**	12	24	62															
Glenn Outflow	1997	Arctic char	*4*	**304**	198	194	600	*4*	**703**	1265	60	2600	*4*	**0.91**	0.20	0.79	1.20					
		Lake trout	*1*	**390**	-	390	390	*1*	**570**	-	570	570	*1*	**0.96**	-	0.96	0.96					
	2000	Arctic char	*1*	**820**	-	820	820	*1*	**5150**	-	5150	5150	*1*	**0.93**	-	0.93	0.93					
		Lake trout	*1*	**142**	-	142	142	*1*	**43**	-	43	43	*1*	**1.50**	-	1.50	1.50					
	1997-2000	Arctic char	*5*	**407**	288	194	820	*5*	**1592**	2271	60	5150	*5*	**0.91**	0.17	0.79	1.20					
		Lake trout	*2*	**266**	175	142	390	*2*	**307**	373	43	570	*2*	**1.23**	0.38	0.96	1.50					
Little Roberts Outflow	1997	Arctic char	*10*	**146**	37	85	200	*10*	**39**	27	6	94	*10*	**1.03**	0.15	0.73	1.26					
		Lake trout	*3*	**253**	48	208	303	*3*	**181**	113	88	306	*3*	**1.01**	0.08	0.96	1.10					
		Ninespine stickleback	*11*	**47**	5	38	54															

NOTE: All sampling methods and sites combined

Appendix D11. Raw data for fish captured in Doris Hinge streams, 1995-2000.

Stream	Site #	Date	Samp Meth.	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Recap-ture	Mor-tality	Comments
Doris Outflow	#25d/s	19-Aug-95	AL	14	ARCH	223						2	S					
Doris Outflow	#25d/s	19-Aug-95	AL	15	ARCH	243						2	S					
Doris Outflow	#25d/s	20-Aug-95	EF	47	ARCH	237						2	S					
Doris Outflow	#25d/s	20-Aug-95	EF	48	ARCH	195						2	S					
Doris Outflow	#25d/s	20-Aug-95	EF	51	ARCH	175							S					
Doris Outflow	#25d/s	14-Aug-97	EF	13	ARCH	187	86	1.32					F					
Doris Outflow	#25d/s	14-Aug-97	EF	16	ARCH	303	342	1.23	M	1	1		O, F				Y	hybrid?; 100% fly larvae
Doris Outflow	#25d/s	14-Aug-97	EF	17	ARCH	182	70	1.16					F					
Doris Outflow	#25d/s	14-Aug-97	EF	19	ARCH	91	10	1.33					F					
Doris Outflow	#25d/s	14-Aug-97	EF	23	ARCH	92											Y	
Doris Outflow	#25d/s	14-Aug-97	EF	24	ARCH	93											Y	
Doris Outflow	#25d/s	14-Aug-97	EF	25	ARCH	243	126	0.88	F	1	1		O					
Doris Outflow	#25d/s	20-Aug-95	EF	49	CISC	165						3	S				Y	
Doris Outflow	#25d/s	20-Aug-95	EF	50	CISC	130						2	S				Y	
Doris Outflow	#25d/s	20-Aug-95	EF	52	CISC	253							S					
Doris Outflow	#25d/s	14-Aug-97	EF	1	CISC	250	162	1.04					F			Y		below falls, recap, 1 pt
Doris Outflow	#25d/s	14-Aug-97	EF	7	CISC	223	108	0.97					F					
Doris Outflow	#25d/s	14-Aug-97	EF	11	CISC	209	92	1.01					F					
Doris Outflow	#25d/s	14-Aug-97	EF	15	CISC	258	166	0.97					F					
Doris Outflow	#25d/s	14-Aug-97	EF	26	CISC	276	206	0.98	F	2	2		O					below falls
Doris Outflow	#25d/s	14-Aug-97	EF	27	CISC	242	159	1.12		"1"	"1"		O					
Doris Outflow	#25d/s	14-Aug-97	EF	28	CISC	260	176	1.00		"1"	"2"		O					
Doris Outflow	#25u/s	7-Jul-96	EF		LKTR	80												Pass #2
Doris Outflow	#25u/s	7-Jul-96	EF		LKTR	71												Pass #2
Doris Outflow	#25u/s	7-Jul-96	EF		LKTR	92												Pass #2
Doris Outflow	#25u/s	7-Jul-96	EF		LKTR	90												Pass #2
Doris Outflow	#25u/s	7-Jul-96	EF		LKTR	82												Pass #2
Doris Outflow	#25d/s	14-Aug-97	EF	2	LKTR	384	550	0.97					F	orange	193			
Doris Outflow	#25d/s	14-Aug-97	EF	4	LKTR	447	800	0.90					F	orange	195			
Doris Outflow	#25d/s	14-Aug-97	EF	5	LKTR	346	386	0.93					F	orange	196			
Doris Outflow	#25d/s	14-Aug-97	EF	6	LKTR	323	350	1.04					F	orange	197			
Doris Outflow	#25d/s	14-Aug-97	EF	8	LKTR	255	178	1.07					F					
Doris Outflow	#25d/s	14-Aug-97	EF	14	LKTR	202	84	1.02					F					
Doris Outflow	#25u/s	7-Jul-96	EF		LKWH	78												Pass #1
Doris Outflow	#25d/s	14-Aug-97	EF	3	LKWH	493	1375	1.15					F	orange	194			
Doris Outflow	#25d/s	20-Aug-95	EF	32	NNST	46												
Doris Outflow	#25d/s	20-Aug-95	EF	33	NNST	52												
Doris Outflow	#25d/s	20-Aug-95	EF	34	NNST	42												
Doris Outflow	#25d/s	20-Aug-95	EF	35	NNST	47												
Doris Outflow	#25d/s	20-Aug-95	EF	36	NNST	56												
Doris Outflow	#25d/s	20-Aug-95	EF	37	NNST	61												
Doris Outflow	#25d/s	20-Aug-95	EF	38	NNST	40												
Doris Outflow	#25d/s	20-Aug-95	EF	39	NNST	51												
Doris Outflow	#25d/s	20-Aug-95	EF	40	NNST	43												
Doris Outflow	#25d/s	14-Aug-97	EF	9	NNST	59												
Doris Outflow	#25d/s	14-Aug-97	EF	10	NNST	52												
Doris Outflow	#25d/s	14-Aug-97	EF	12	NNST	62												
Doris Outflow	#25d/s	14-Aug-97	EF	18	NNST	54												
Doris Outflow	#25d/s	14-Aug-97	EF	20	NNST	55												
Doris Outflow	#25d/s	14-Aug-97	EF	21	NNST	52												
Doris Outflow	#25d/s	14-Aug-97	EF	22	NNST	50												
Doris Outflow	#25u/s	25-Aug-00	EF	1	NNST	45												
Doris Outflow	#25u/s	25-Aug-00	EF	2	NNST	35												
Doris Outflow	#25u/s	25-Aug-00	EF	3	NNST	34												
Doris Outflow	#25u/s	25-Aug-00	EF	4	NNST	39												
Doris Outflow	#25u/s	25-Aug-00	EF	5	NNST	81												
Doris Outflow	#25u/s	25-Aug-00	EF	6	NNST	34												
Doris Outflow	#25u/s	25-Aug-00	EF	7	NNST	28												
Doris Outflow	#25u/s	25-Aug-00	EF	8	NNST	36												
Doris Outflow	#25u/s	25-Aug-00	EF	9	NNST	37												
Doris Outflow	#25u/s	25-Aug-00	EF	10	NNST	28												
Doris Outflow	#25u/s	25-Aug-00	EF	11	NNST	32												
Doris Outflow	#25u/s	25-Aug-00	EF	12	NNST	37												
Doris Outflow	#25u/s	25-Aug-00	EF	13	NNST	71												
Doris Outflow	#25u/s	25-Aug-00	EF	14	NNST	24												
Doris Outflow	#25u/s	25-Aug-00	EF	15	NNST	43												
Doris Outflow	#25u/s	25-Aug-00	EF	16	NNST	31												
Doris Outflow	#25u/s	25-Aug-00	EF	17	NNST	37												
Doris Outflow	#25u/s	25-Aug-00	EF	18	NNST	26												
Doris Outflow	#25u/s	25-Aug-00	EF	19	NNST	32												
Doris Outflow	#25u/s	7-Jul-96	EF		Unknown	48												Pass #2
Doris Outflow	#25u/s	7-Jul-96	EF		Unknown	52												Pass #2
Doris Inflow	#04	21-Jun-97	EF	33	NNST	52												Released
Doris Inflow	#04	21-Jun-97	EF	34	NNST	44												Released
Doris Inflow	#04	21-Jun-97	EF	35	NNST	38												Released
Ogama Outflow	#22	18-Aug-95	AL	16	LKTR	535												
Ogama Outflow	#22	18-Aug-95	AL	17	LKTR	530												
Ogama Outflow	#22	18-Aug-95	AL	18	LKTR	609												
Ogama Outflow	#22	18-Aug-95	AL	19	LKTR	468												
Ogama Outflow	#22	18-Aug-95	AL	20	LKTR	647												
Ogama Outflow	#22	15-Aug-97	EF	59	LKTR	463	1175	1.18					F	white	161			
Ogama Outflow	#22	15-Aug-97	EF	60	LKWH	316	360	1.14					F	white	160			
Ogama Outflow	#22	15-Aug-97	EF	61	LKWH	287	280	1.18					F	white	159			
Ogama Outflow	#22	15-Aug-97	EF	62	NNST	52												

Appendix D11. Raw data for fish captured in Doris Hinge streams, 1995-2000.

Stream	Site #	Date	Samp Meth.	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Recap-ture	Mor-tality	Comments
Ogama Outflow	#22	15-Aug-97	EF	63	NNST	60												
Ogama Outflow	#22	15-Aug-97	EF	64	NNST	72												
Ogama Outflow	#22	15-Aug-97	EF	65	NNST	59												
Ogama Outflow	#22	15-Aug-97	EF	66	NNST	56												
Ogama Outflow	#22	15-Aug-97	EF	67	NNST	64												
Ogama Outflow	#22	15-Aug-97	EF	68	NNST	57												
Ogama Outflow	#22	15-Aug-97	EF	69	NNST	58												
Ogama Outflow	#22	15-Aug-97	EF	70	NNST	65												
Ogama Outflow	#22	15-Aug-97	EF	71	NNST	18												
Ogama Inflow	#20	14-Aug-97	EF	53	CISC	206	74	0.85					F					
Ogama Inflow	#01	20-Jun-97	EF	26	LKTR	750	4400	1.04					F	red	97			Released
Ogama Inflow	#01	20-Jun-97	EF	27	LKTR	694	3300	0.99	"M"				F	red	96			Released
Ogama Inflow	#01	20-Jun-97	EF	28	LKTR	714	3600	0.99	"M"				F	red	95			Released
Ogama Inflow	#01	20-Jun-97	EF	29	LKTR	718	3550	0.96	"M"				F	red	94			Released
Ogama Inflow	#20	14-Aug-97	EF	54	LKTR	649	2325	0.85					F	orange	199			
Ogama Inflow	#20	14-Aug-97	EF	55	LKTR	563	1650	0.92					F	orange	200			
Ogama Inflow	#20	7-Jul-96	EF		LKWH	323												Pass #1
Ogama Inflow	#20	20-Aug-95	EF	41	NNST	42												
Ogama Inflow	#20	20-Aug-95	EF	42	NNST	47												
Ogama Inflow	#20	20-Aug-95	EF	43	NNST	51												
Ogama Inflow	#20	20-Aug-95	EF	44	NNST	35												
Ogama Inflow	#20	20-Aug-95	EF	45	NNST	37												
Ogama Inflow	#20	20-Aug-95	EF	46	NNST	41												
Ogama Inflow	#09	22-Jun-97	EF	74	NNST	51												Released
Ogama Inflow	#09	22-Jun-97	EF	75	NNST	62												Released
Ogama Inflow	#14	23-Jun-97	EF	120	NNST	63												Released
Ogama Inflow	#14	23-Jun-97	EF	121	NNST	54												Released
Ogama Inflow	#20	14-Aug-97	EF	56	NNST	53												
Ogama Inflow	#20	14-Aug-97	EF	57	NNST	49												
Ogama Inflow	#20	14-Aug-97	EF	58	NNST	55												
Patch Inflow	#05	21-Jun-97	EF	36	NNST	67												Released
Patch Inflow	#05	21-Jun-97	EF	37	NNST	68												Released
Patch Inflow	#05	21-Jun-97	EF	38	NNST	67												Released
Patch Inflow	#05	21-Jun-97	EF	39	NNST	28												Released
Patch Inflow	#05	21-Jun-97	EF	40	NNST	71												Released
Patch Inflow	#05	21-Jun-97	EF	41	NNST	38												Released
Patch Inflow	#05	21-Jun-97	EF	42	NNST	36												Released
Patch Inflow	#05	21-Jun-97	EF	43	NNST	36												Released
Patch Inflow	#05	21-Jun-97	EF	44	NNST	38												Released
Patch Inflow	#05	21-Jun-97	EF	45	NNST	37												Released
Patch Inflow	#05	21-Jun-97	EF	46	NNST	39												Released
Patch Inflow	#07	21-Jun-97	EF	47	NNST	54												Released
Patch Inflow	#08	21-Jun-97	EF	48	NNST	38												Released
Patch Inflow	#08	21-Jun-97	EF	49	NNST	51												Released
Patch Inflow	#08	21-Jun-97	EF	50	NNST	52												Released
Patch Inflow	#08	21-Jun-97	EF	51	NNST	41												Released
Patch Inflow	#08	21-Jun-97	EF	52	NNST	46												Released
Patch Inflow	#08	21-Jun-97	EF	53	NNST	45												Released
Patch Inflow	#08	21-Jun-97	EF	54	NNST	45												Released
Patch Inflow	#08	21-Jun-97	EF	55	NNST	45												Released
Patch Inflow	#08	21-Jun-97	EF	56	NNST	50												Released
Patch Inflow	#08	21-Jun-97	EF	57	NNST	43												Released
Patch Inflow	#08	21-Jun-97	EF	58	NNST	35												Released
Patch Inflow	#08	21-Jun-97	EF	59	NNST	43												Released
Patch Inflow	#08	21-Jun-97	EF	60	NNST	44												Released
Patch Inflow	#08	21-Jun-97	EF	61	NNST	45												Released
Patch Inflow	#08	21-Jun-97	EF	62	NNST	35												Released
Patch Inflow	#08	21-Jun-97	EF	63	NNST	34												Released
Patch Inflow	#08	21-Jun-97	EF	64	NNST	42												Released
Patch Inflow	#08	21-Jun-97	EF	65	NNST	32												Released
Patch Inflow	#08	21-Jun-97	EF	66	NNST	40												Released
Patch Inflow	#08	21-Jun-97	EF	67	NNST	28												Released
Patch Inflow	#08	21-Jun-97	EF	68	NNST	34												Released
Patch Inflow	#08	21-Jun-97	EF	69	NNST	41												Released
Patch Inflow	#08	21-Jun-97	EF	70	NNST	34												Released
Patch Inflow	#08	21-Jun-97	EF	71	NNST	29												Released
Patch Inflow	#08	21-Jun-97	EF	72	NNST	36												Released
Patch Inflow	#08	21-Jun-97	EF	73	NNST	30												Released
Patch Inflow	#11	22-Jun-97	EF	80	NNST	55												Released
Patch Inflow	#11	22-Jun-97	EF	81	NNST	48												Released
Patch Inflow	#11	22-Jun-97	EF	82	NNST	57												Released
Patch Inflow	#11	22-Jun-97	EF	83	NNST	67												Released
Patch Inflow	#11	22-Jun-97	EF	84	NNST	34												Released
Patch Inflow	#11	22-Jun-97	EF	85	NNST	55												Released
Patch Inflow	#11	22-Jun-97	EF	86	NNST	59												Released
Patch Inflow	#11	22-Jun-97	EF	87	NNST	54												Released
Patch Inflow	#11	22-Jun-97	EF	88	NNST	49												Released
Patch Inflow	#11	22-Jun-97	EF	89	NNST	40												Released
Patch Inflow	#11	22-Jun-97	EF	90	NNST	57												Released
Patch Inflow	#11	22-Jun-97	EF	91	NNST	57												Released
Patch Inflow	#11	22-Jun-97	EF	92	NNST	55												Released
Patch Inflow	#11	22-Jun-97	EF	93	NNST	68												Released
Patch Inflow	#11	22-Jun-97	EF	94	NNST	36												Released
Patch Inflow	#11	22-Jun-97	EF	95	NNST	63												Released

Appendix D11. Raw data for fish captured in Doris Hinge streams, 1995-2000.

Stream	Site #	Date	Samp Meth.	Sample #	Species	FL (mm)	Weight (g)	Cond. Fact.	Sex	Mat.	Rep. Stat.	Age (yr)	Age Str.	Tag Color	Tag #	Recap-ture	Mor-tality	Comments
Patch Inflow	#11	22-Jun-97	EF	96	NNST	34												Released
Patch Inflow	#11	22-Jun-97	EF	97	NNST	30												Released
Patch Inflow	#11	22-Jun-97	EF	98	NNST	54												Released
Patch Inflow	#11	22-Jun-97	EF	99	NNST	47												Released
Patch Inflow	#11	22-Jun-97	EF	100	NNST	62												Released
Patch Inflow	#11	22-Jun-97	EF	101	NNST	67												Released
Patch Inflow	#11	22-Jun-97	EF	102	NNST	43												Released
Patch Inflow	#11	22-Jun-97	EF	103	NNST	69												Released
Patch Inflow	#11	22-Jun-97	EF	104	NNST	49												Released
Patch Inflow	#11	22-Jun-97	EF	105	NNST	48												Released
Patch Inflow	#11	22-Jun-97	EF	106	NNST	35												Released
Patch Inflow	#11	22-Jun-97	EF	107	NNST	39												Released
Patch Inflow	#11	22-Jun-97	EF	108	NNST	34												Released
Patch Inflow	#11	22-Jun-97	EF	109	NNST	28												Released
Windy Outflow	#02	20-Jun-97	EF	30	ARCH	185	36	0.57					F					Released
Windy Outflow	#02	20-Jun-97	EF	31	LKTR	744	3600	0.87					F	red	93			Released
Windy Outflow	#02	20-Jun-97	EF	32	LKTR	676	2600	0.84					F	red	92			Released
Windy Outflow	#10	22-Jun-97	EF	76	LKTR	448	1150	1.28					F	red	91			Released
Windy Outflow	#10	22-Jun-97	EF	77	LKTR	444	1150	1.31					F	red	90			Released
Windy Outflow	#10	22-Jun-97	EF	78	LKTR	494	1300	1.08					F	red	89			Released
Windy Outflow	#10	22-Jun-97	EF	79	LKTR	471	1225	1.17					F	red	88			Released
Windy Inflow	#13	23-Jun-97	EF	112	NNST	62												Released
Windy Inflow	#13	23-Jun-97	EF	113	NNST	24												Released
Windy Inflow	#13	23-Jun-97	EF	114	NNST	37												Released
Windy Inflow	#13	23-Jun-97	EF	115	NNST	45												Released
Windy Inflow	#13	23-Jun-97	EF	116	NNST	39												Released
Windy Inflow	#13	23-Jun-97	EF	117	NNST	37												Released
Windy Inflow	#13	23-Jun-97	EF	118	NNST	27												Released
Windy Inflow	#13	23-Jun-97	EF	119	NNST	33												Released
Glenn Outflow	#12	23-Jun-97	EF	110	ARCH	600	2600	1.20					F	red	85			Released
Glenn Outflow	#28	15-Aug-97	EF	72	ARCH	215	82	0.83					F					
Glenn Outflow	#28	15-Aug-97	EF	73	ARCH	205	68	0.79					F					
Glenn Outflow	#28	15-Aug-97	EF	74	ARCH	194	60	0.82					F					
Glenn Outflow	#28	20-Aug-00	EF	1	ARCH	820	5150	0.93	F	2	1		O				Y	back broken; mortality
Glenn Outflow	#12	23-Jun-97	EF	111	LKTR	390	570	0.96					F	red	84			Released
Glenn Outflow	#28	20-Aug-00	EF	2	LKTR	142	43	1.50					S					
Glenn Outflow	#28	20-Aug-00	EF	3	SLSC												Y	juvenile; preserved
Glenn Outflow	#28	20-Aug-00	EF	4	SLSC												Y	juvenile; preserved
Glenn Outflow	#28	20-Aug-00	EF	5	SLSC												Y	juvenile; preserved
L. Roberts Outflow	#26	14-Aug-97	EF	32	ARCH	124	14	0.73					F					
L. Roberts Outflow	#26	14-Aug-97	EF	36	ARCH	200	94	1.18					F					
L. Roberts Outflow	#26	14-Aug-97	EF	39	ARCH	167	46	0.99					F					
L. Roberts Outflow	#26	14-Aug-97	EF	40	ARCH	154	46	1.26					F					
L. Roberts Outflow	#26	14-Aug-97	EF	41	ARCH	165	52	1.16					F					
L. Roberts Outflow	#26	14-Aug-97	EF	42	ARCH	167	52	1.12					F					
L. Roberts Outflow	#26	14-Aug-97	EF	43	ARCH	175	52	0.97					F					
L. Roberts Outflow	#26	14-Aug-97	EF	44	ARCH	132	22	0.96					F					
L. Roberts Outflow	#26	14-Aug-97	EF	45	ARCH	93	8	0.99					F					
L. Roberts Outflow	#26	14-Aug-97	EF	46	ARCH	85	6	0.98					F					
L. Roberts Outflow	#26	14-Aug-97	EF	29	LKTR	303	306	1.10					F	orange	198			
L. Roberts Outflow	#26	14-Aug-97	EF	35	LKTR	249	148	0.96					F					
L. Roberts Outflow	#26	14-Aug-97	EF	37	LKTR	208	88	0.98					F					
L. Roberts Outflow	#26	14-Aug-97	EF	30	NNST	48												
L. Roberts Outflow	#26	14-Aug-97	EF	31	NNST	50												
L. Roberts Outflow	#26	14-Aug-97	EF	33	NNST	47												
L. Roberts Outflow	#26	14-Aug-97	EF	34	NNST	51												
L. Roberts Outflow	#26	14-Aug-97	EF	38	NNST	54												
L. Roberts Outflow	#26	14-Aug-97	EF	47	NNST	50												
L. Roberts Outflow	#26	14-Aug-97	EF	48	NNST	49												
L. Roberts Outflow	#26	14-Aug-97	EF	49	NNST	41												
L. Roberts Outflow	#26	14-Aug-97	EF	50	NNST	38												
L. Roberts Outflow	#26	14-Aug-97	EF	51	NNST	42												
L. Roberts Outflow	#26	14-Aug-97	EF	52	NNST	45												

CODES:

Sampling Method

AL	Angling
EF	Backpack electrofishing

Species

ARCH	Arctic char
CISC	Cisco
LKTR	Lake trout
LKWH	Lake whitefish
LSCS	Least cisco
NNST	Ninespine stickleback
SLSC	Slimy sculpin

Sex

F	Female
M	Male

Maturity

1	Immature
2	Mature

Reproductive Status

1	Undeveloped
2	Green
3	Ripe

Ageing Structure

O	Otoliths
S	Scales
F	Fin rays

Recap

Y Recaptured fish (previously tagged).

" " Values in parenthesis were not used in data summaries.

Site numbers based on Rescan (1998) designations.

Condition Factor (CF)

$CF = \text{Weight [in g]} \times 10^5 / (\text{FL [in mm]})^3$

FL = Fork Length

Appendix D12. Metal concentrations (µg/g dry weight) and moisture content (%) in fish tissues from Doris Hinge lakes, 1995-1998.

Parameter		Doris Lake							Tail Lake			Patch Lake				Windy Lake		Pelvic Lake			
		Lake Trout		Lake Whitefish			Lake Whitefish		Lake Trout			Lake Trout		Lake Whitefish		Lake Trout		Lake Trout		Lake Whitefish	
		Liver	Muscle	Kidney	Liver	Muscle	Liver	Muscle	Kidney	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle
		1997	1997	1995	1995	1995	1997	1997	1995	1995	1995	1997	1997	1997	1997	1997	1997	1998	1998	1998	1998
Number sampled		*22*	*22*	*3*	*3*	*3*	*29*	*29*	*5*	*5*	*5*	*25*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
Aluminum	*n<DL*[a]	*19*	*22*				*19*	*29*				*14*	*25*	*6*	*26*	*1*	*25*	*9*	*21*	*13*	*22*
	Mean	**16.9**	**12.6**				**23.0**	**12.5**				**38.5**	**12.0**	**33.6**	**12.2**	**72.5**	**12.1**	**34.1**	**12.1**	**25.3**	**12.4**
	SD[b]	14.1	1.2				18.3	1.1				51.1	1.1	18.3	0.7	59.3	0.9	28.9	0.6	18.4	0.6
	Min.	9.1	10.7				10.2	10.8				9.3	10.2	9.5	11.0	12.3	10.6	9.8	11.0	10.4	11.7
	Max.	61.9	15.8				81.2	16.6				186.6	15.6	89.9	13.4	227.3	14.0	96.5	13.2	63.1	14.3
Arsenic	*n<DL*[a]	*15*	*8*	*3*	*3*	*3*	*5*	*29*	*2*	*5*	*3*	*6*	*6*	*0*	*6*	*0*	*1*	*10*	*17*	*8*	*21*
	Mean	**0.18**	**0.29**	**0.03**	**0.02**	**0.02**	**0.41**	**0.13**	**0.78**	**0.03**	**0.04**	**0.43**	**0.39**	**1.19**	**0.34**	**1.95**	**0.38**	**0.21**	**0.15**	**0.23**	**0.13**
	SD[b]	0.11	0.15	0.00	0.00	0.00	0.22	0.01	1.05	0.00	0.03	0.40	0.21	0.70	0.15	0.69	0.10	0.11	0.06	0.09	0.04
	Min.	0.11	0.11	0.02	0.02	0.02	0.11	0.11	0.02	0.02	0.02	0.12	0.11	0.29	0.11	0.77	0.14	0.10	0.11	0.11	0.12
	Max.	0.45	0.53	0.03	0.03	0.02	0.94	0.17	2.49	0.03	0.10	1.96	0.77	2.78	0.63	3.61	0.58	0.46	0.29	0.38	0.30
Barium	*n<DL*[a]	*22*	*22*				*29*	*29*				*25*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
	Mean	**1.19**	**1.26**				**1.28**	**1.25**				**1.20**	**1.20**	**1.16**	**1.22**	**1.20**	**1.21**	**1.15**	**1.21**	**1.20**	**1.24**
	SD[b]	0.14	0.12				0.10	0.11				0.11	0.11	0.11	0.07	0.15	0.09	0.17	0.06	0.09	0.06
	Min.	0.91	1.07				1.02	1.08				0.93	1.02	0.90	1.10	0.94	1.06	0.82	1.10	1.02	1.17
	Max.	1.52	1.58				1.46	1.66				1.46	1.56	1.40	1.34	1.42	1.40	1.44	1.32	1.43	1.43
Beryllium	*n<DL*[a]	*22*	*22*				*29*	*29*				*25*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
	Mean	**0.48**	**0.51**				**0.51**	**0.50**				**0.48**	**0.48**	**0.46**	**0.49**	**0.48**	**0.48**	**0.46**	**0.48**	**0.48**	**0.50**
	SD[b]	0.05	0.05				0.04	0.04				0.04	0.04	0.04	0.03	0.06	0.04	0.07	0.02	0.04	0.02
	Min.	0.36	0.43				0.41	0.43				0.37	0.41	0.36	0.44	0.38	0.42	0.33	0.44	0.41	0.47
	Max.	0.61	0.63				0.58	0.66				0.58	0.63	0.56	0.54	0.57	0.56	0.57	0.53	0.57	0.57
Cadmium	*n<DL*[a]	*11*	*22*	*0*	*0*	*3*	*6*	*29*	*0*	*0*	*5*	*9*	*25*	*1*	*26*	*6*	*25*	*8*	*21*	*0*	*22*
	Mean	**0.09**	**0.05**	**1.82**	**0.30**	**0.00**	**0.18**	**0.05**	**2.67**	**0.33**	**0.005**	**0.14**	**0.05**	**0.30**	**0.05**	**0.15**	**0.05**	**0.14**	**0.05**	**0.42**	**0.05**
	SD[b]	0.06	0.00	1.53	0.12	0.00	0.11	0.00	2.10	0.19	0.001	0.12	0.00	0.19	0.00	0.09	0.00	0.11	0.00	0.25	0.00
	Min.	0.04	0.04	0.66	0.18	0.00	0.05	0.04	0.55	0.09	0.004	0.04	0.04	0.05	0.04	0.05	0.04	0.03	0.04	0.10	0.05
	Max.	0.22	0.06	3.56	0.42	0.00	0.47	0.07	5.65	0.58	0.005	0.48	0.06	0.86	0.05	0.34	0.06	0.38	0.05	1.00	0.06
Calcium	*n<DL*[a]	*0*	*0*				*0*	*0*				*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	**302**	**653**				**468**	**794**				**309**	**741**	**442**	**895**	**279**	**581**	**328**	**483**	**355**	**873**
	SD[b]	76	383				579	278				92	335	399	305	59	217	89	182	137	251
	Min.	192	295				191	415				3	301	222	441	195	296	219	262	220	535
	Max.	526	1742				3134	1424				469	1591	1986	1503	407	1233	579	1000	770	1340
Chromium	*n<DL*[a]	*22*	*22*				*29*	*29*				*25*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
	Mean	**1.19**	**1.26**				**1.28**	**1.25**				**1.20**	**1.20**	**1.16**	**1.22**	**1.20**	**1.21**	**1.15**	**1.21**	**1.20**	**1.24**
	SD[b]	0.14	0.12				0.10	0.11				0.11	0.11	0.11	0.07	0.15	0.09	0.17	0.06	0.09	0.06
	Min.	0.91	1.07				1.02	1.08				0.93	1.02	0.90	1.10	0.94	1.06	0.82	1.10	1.02	1.17
	Max.	1.52	1.58				1.46	1.66				1.46	1.56	1.40	1.34	1.42	1.40	1.44	1.32	1.43	1.43
Cobalt	*n<DL*[a]	*22*	*22*				*29*	*29*				*24*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
	Mean	**1.19**	**1.26**				**1.28**	**1.25**				**1.25**	**1.20**	**1.16**	**1.22**	**1.20**	**1.21**	**1.15**	**1.21**	**1.20**	**1.24**
	SD[b]	0.14	0.12				0.10	0.11				0.26	0.11	0.11	0.07	0.15	0.09	0.17	0.06	0.09	0.06
	Min.	0.91	1.07				1.02	1.08				0.93	1.02	0.90	1.10	0.94	1.06	0.82	1.10	1.02	1.17
	Max.	1.52	1.58				1.46	1.66				2.39	1.56	1.40	1.34	1.42	1.40	1.44	1.32	1.43	1.43
Copper	*n<DL*[a]	*0*	*22*	*0*	*0*	*0*	*0*	*29*	*0*	*0*	*0*	*1*	*25*	*0*	*26*	*0*	*25*	*0*	*21*	*0*	*22*
	Mean	**63.0**	**1.3**	**6.9**	**28.2**	**1.1**	**20.6**	**1.3**	**12.2**	**56.3**	**1.4**	**59.7**	**1.2**	**21.0**	**1.2**	**104.5**	**1.2**	**53.6**	**1.2**	**23.0**	**1.2**
	SD[b]	30.3	0.1	3.1	6.2	0.3	9.8	0.1	8.6	46.9	0.3	34.5	0.1	11.8	0.1	51.5	0.1	32.0	0.1	6.9	0.1
	Min.	17.7	1.1	3.8	21.7	0.8	7.1	1.1	5.1	9.8	1.1	1.5	1.0	11.0	1.1	18.9	1.1	4.4	1.1	6.3	1.2
	Max.	144.3	1.6	10.0	34.1	1.4	41.1	1.7	25.2	128.9	1.7	156.9	1.6	68.9	1.3	266.8	1.4	119.8	1.3	33.5	1.4
Iron	*n<DL*[a]	*0*	*0*				*0*	*0*				*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	**1057**	**12**				**620**	**13**				**1659**	**13**	**605**	**12**	**1775**	**18**	**1246**	**12**	**815**	**12**
	SD[b]	722	4				286	5				1428	5	283	3	1305	8	782	4	427	4
	Min.	191	5				256	9				218	8	287	9	503	9	278	5	343	5
	Max.	3109	21				1191	26				6335	24	1325	20	4489	45	3110	19	1799	23

Appendix D12. Metal concentrations (µg/g dry weight) and moisture content (%) in fish tissues from Doris Hinge lakes, 1995-1998.

Parameter		Doris Lake							Tail Lake			Patch Lake				Windy Lake		Pelvic Lake			
		Lake Trout		Lake Whitefish			Lake Whitefish		Lake Trout			Lake Trout		Lake Whitefish		Lake Trout		Lake Trout		Lake Whitefish	
		Liver	Muscle	Kidney	Liver	Muscle	Liver	Muscle	Kidney	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle	Liver	Muscle
		1997	1997	1995	1995	1995	1997	1997	1995	1995	1995	1997	1997	1997	1997	1997	1997	1998	1998	1998	1998
Number sampled		*22*	*22*	*3*	*3*	*3*	*29*	*29*	*5*	*5*	*5*	*25*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
Lead	*n<DL*[a]	*22*	*22*	*0*	*0*	*0*	*29*	*29*	*0*	*0*	*0*	*25*	*25*	*26*	*26*	*24*	*25*	*21*	*21*	*22*	*22*
	Mean	**0.12**	**0.13**	**0.15**	**0.08**	**0.05**	**0.13**	**0.13**	**0.12**	**0.13**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.13**	**0.12**	**0.11**	**0.12**	**0.13**	**0.12**
	SD[b]	0.01	0.01	0.10	0.02	0.01	0.01	0.01	0.06	0.06	0.06	0.01	0.01	0.01	0.01	0.04	0.01	0.02	0.01	0.04	0.01
	Min.	0.09	0.11	0.06	0.06	0.04	0.10	0.11	0.06	0.07	0.06	0.09	0.10	0.09	0.11	0.09	0.11	0.08	0.11	0.10	0.12
	Max.	0.15	0.16	0.26	0.10	0.06	0.15	0.17	0.21	0.20	0.18	0.15	0.16	0.14	0.13	0.32	0.14	0.14	0.13	0.33	0.14
Magnesium	*n<DL*[a]	*0*	*0*				*0*	*0*				*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	**621**	**1186**				**724**	**1204**				**572**	**1206**	**692**	**1285**	**676**	**1292**	**583**	**1234**	**708**	**1254**
	SD[b]	91	98				65	59				131	60	85	47	69	58	153	83	49	56
	Min.	467	833				556	1009				88	1105	506	1186	566	1085	330	1068	622	1094
	Max.	911	1369				851	1297				812	1310	823	1387	945	1385	871	1414	802	1327
Manganese	*n<DL*[a]	*0*	*21*				*0*	*19*				*1*	*25*	*0*	*26*	*0*	*25*	*0*	*21*	*0*	*17*
	Mean	**5.83**	**0.53**				**9.35**	**0.68**				**5.78**	**0.48**	**7.87**	**0.49**	**5.10**	**0.48**	**5.36**	**0.48**	**8.27**	**0.67**
	SD[b]	1.30	0.12				1.94	0.26				1.75	0.04	1.65	0.03	1.01	0.04	1.55	0.02	1.90	0.35
	Min.	3.99	0.43				6.43	0.46				0.58	0.41	5.32	0.44	3.64	0.42	2.87	0.44	6.12	0.47
	Max.	8.85	1.01				14.86	1.44				9.09	0.63	11.48	0.54	8.46	0.56	7.72	0.53	14.11	1.51
Mercury	*n<DL*[a]	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	**2.44**	**1.45**	**0.61**	**0.64**	**0.30**	**0.86**	**0.36**	**1.50**	**0.68**	**0.69**	**3.31**	**1.91**	**1.82**	**0.59**	**0.27**	**0.18**	**1.64**	**1.48**	**1.19**	**0.42**
	SD[b]	1.49	0.77	0.50	0.43	0.27	0.45	0.19	0.74	0.32	0.23	1.77	0.90	0.92	0.30	0.15	0.08	0.49	0.35	0.60	0.28
	Min.	0.43	0.36	0.17	0.26	0.07	0.19	0.07	0.65	0.35	0.36	0.99	0.51	0.66	0.20	0.11	0.08	0.58	0.73	0.27	0.15
	Max.	6.23	3.37	1.15	1.11	0.59	1.87	0.85	2.32	1.02	0.94	6.59	4.19	3.80	1.13	0.73	0.36	2.29	1.96	2.66	1.10
Molybdenum	*n<DL*[a]	*22*	*22*				*29*	*29*				*25*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
	Mean	**2.38**	**2.53**				**2.57**	**2.51**				**2.41**	**2.41**	**2.32**	**2.45**	**2.40**	**2.42**	**2.29**	**2.42**	**2.40**	**2.49**
	SD[b]	0.27	0.25				0.21	0.22				0.22	0.22	0.22	0.14	0.29	0.18	0.35	0.12	0.19	0.12
	Min.	1.81	2.14				2.03	2.16				1.85	2.05	1.81	2.20	1.89	2.12	1.63	2.20	2.04	2.34
	Max.	3.03	3.16				2.92	3.31				2.92	3.13	2.81	2.69	2.84	2.81	2.87	2.63	2.86	2.86
Nickel	*n<DL*[a]	*22*	*22*	*0*	*0*	*1*	*29*	*29*	*0*	*0*	*2*	*25*	*25*	*26*	*26*	*25*	*25*	*21*	*21*	*22*	*22*
	Mean	**2.38**	**2.53**	**0.83**	**0.25**	**0.03**	**2.57**	**2.51**	**1.55**	**0.16**	**0.08**	**2.41**	**2.41**	**2.32**	**2.45**	**2.40**	**2.42**	**2.29**	**2.42**	**2.40**	**2.49**
	SD[b]	0.27	0.25	0.25	0.11	0.03	0.21	0.22	1.06	0.11	0.12	0.22	0.22	0.22	0.14	0.29	0.18	0.35	0.12	0.19	0.12
	Min.	1.81	2.14	0.60	0.15	0.00	2.03	2.16	0.48	0.03	0.004	1.85	2.05	1.81	2.20	1.89	2.12	1.63	2.20	2.04	2.34
	Max.	3.03	3.16	1.10	0.37	0.05	2.92	3.31	3.08	0.34	0.28	2.92	3.13	2.81	2.69	2.84	2.81	2.87	2.63	2.86	2.86
Selenium	*n<DL*[a]	*0*	*0*				*0*	*0*				*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	**5.23**	**0.98**				**5.10**	**0.98**				**7.75**	**1.06**	**7.52**	**1.05**	**9.25**	**2.36**	**4.81**	**0.97**	**5.92**	**1.31**
	SD[b]	1.38	0.11				1.17	0.13				2.82	0.21	1.56	0.18	2.54	0.22	1.43	0.05	1.46	0.26
	Min.	3.64	0.63				2.78	0.60				0.29	0.82	4.74	0.88	3.98	1.86	2.94	0.88	3.43	0.93
	Max.	7.88	1.26				7.39	1.42				12.92	1.53	11.00	1.52	15.44	2.84	7.34	1.05	9.09	1.91
Silver	*n<DL*[a]	*10*	*22*				*29*	*29*				*21*	*25*	*24*	*26*	*20*	*25*	*9*	*21*	*22*	*22*
	Mean	**0.47**	**0.25**				**0.26**	**0.25**				**0.28**	**0.24**	**0.27**	**0.24**	**0.34**	**0.24**	**0.59**	**0.24**	**0.24**	**0.25**
	SD[b]	0.27	0.02				0.02	0.02				0.09	0.02	0.15	0.01	0.22	0.02	0.35	0.01	0.02	0.01
	Min.	0.21	0.21				0.20	0.22				0.19	0.20	0.18	0.22	0.19	0.21	0.20	0.22	0.20	0.23
	Max.	0.98	0.32				0.29	0.33				0.49	0.31	0.96	0.27	1.09	0.28	1.24	0.26	0.29	0.29
Zinc	*n<DL*[a]	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Mean	**138.6**	**14.5**	**96.4**	**132.6**	**13.8**	**105.7**	**13.1**	**148.8**	**204.7**	**13.4**	**135.1**	**12.6**	**125.0**	**12.2**	**161.4**	**12.8**	**123.0**	**12.7**	**114.7**	**12.5**
	SD[b]	23.2	1.4	24.7	6.9	1.4	10.7	1.2	21.6	46.0	3.0	34.6	1.2	16.0	0.7	21.0	1.0	27.1	0.9	13.9	0.9
	Min.	90.0	12.4	80.0	124.6	12.4	86.1	10.3	122.6	144.0	10.4	12.9	10.1	101.8	11.1	97.5	10.8	87.6	10.7	84.4	11.3
	Max.	187.6	17.7	124.7	136.7	15.0	123.2	16.1	182.5	257.5	18.2	209.6	15.6	176.6	13.7	204.9	15.6	173.0	14.0	135.9	14.4
Moisture (%)	*n*	*21*	*22*	*3*	*3*	*3*	*25*	*29*	*5*	*5*	*5*	*20*	*25*	*10*	*26*	*24*	*25*	*20*	*21*	*10*	*21*
	Mean	**78.7**	**80.0**	**80.4**	**78.9**	**77.3**	**80.6**	**79.9**	**78.6**	**79.8**	**78.3**	**79.0**	**79.1**	**76.9**	**79.5**	**78.8**	**79.3**	**77.6**	**79.3**	**79.1**	**79.9**
	SD[b]	2.6	1.8	3.0	1.5	1.6	1.7	1.5	1.7	3.0	2.8	2.2	1.8	3.4	1.2	2.8	1.5	3.5	1.0	2.5	0.9
	Min.	72.4	76.6	77.0	77.4	75.5	75.4	76.8	76.1	75.5	75.0	73.0	75.6	72.3	77.3	73.5	76.4	69.4	77.3	75.5	78.6
	Max.	83.5	84.2	82.2	80.3	78.3	82.9	84.9	80.7	83.4	81.4	82.9	84.0	82.2	81.4	82.4	82.2	82.6	81.0	82.5	82.5

[a] number of samples below detection limit [b] standard deviation

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
31	Doris	1995	LKTR	K	I	469	1224		*75.7*		0.02			0.30				1.5		0.01			0.427		0.170				20.6
31	Doris	1995	LKTR	L	I	469	1224		*77.9*		<0.01			0.15				37.6		0.01			0.349		0.018				45.0
31	Doris	1995	LKTR	M	I	469	1224		*79.7*		<0.01			<0.002				0.31		0.01			0.236		0.010				3.1
	Doris	1996	LKTR	M	C				*77.7*		0.06			<0.02				0.12		<0.05	278	0.20	0.044		<0.2	0.2	<0.01	<0.2	2.9
#169	Doris	1997	LKTR	L	I	439	790	8	*73.5*	<5	0.08	<0.5	<0.2	0.02	51	<0.5	<0.5	11.7	186	<0.05	166	1.4	0.184	<1	<1	1.1	0.2		35.0
#182	Doris	1997	LKTR	L	I	684	3225	49	*81.6*	10	0.05	<0.5	<0.2	0.04	52	<0.5	<0.5	10.1	310	<0.05	119	1.1	0.433	<1	<1	0.9	<0.1		25.0
#194	Doris	1997	LKTR	L	I	700	3300	23	*80.0*	<5	<0.05	<0.5	<0.2	<0.02	65	<0.5	<0.5	8.7	118	<0.05	122	1.1	0.248	<1	<1	0.9	<0.1		28.8
#195	Doris	1997	LKTR	L	I	663	2925	25	*79.0*	<5	<0.05	<0.5	<0.2	0.03	63	<0.5	<0.5	17.1	215	<0.05	130	1.3	0.427	<1	<1	1.4	0.1		34.1
#255	Doris	1997	LKTR	L	I	605	2025	26	*79.6*	<5	<0.05	<0.5	<0.2	0.04	48	<0.5	<0.5	12.3	285	<0.05	114	0.9	0.301	<1	<1	1.1	0.2		25.8
#256	Doris	1997	LKTR	L	I	702	2325	49	*83.5*	<5	<0.05	<0.5	<0.2	0.03	67	<0.5	<0.5	19.0	513	<0.05	98	0.8	0.755	<1	<1	1.3	<0.1		25.9
#272	Doris	1997	LKTR	L	I	655	2625	40	*77.6*	<5	<0.05	<0.5	<0.2	0.03	62	<0.5	<0.5	12.9	636	<0.05	133	1.2	0.604	<1	<1	1.1	<0.1		29.3
#289	Doris	1997	LKTR	L	I	353	406	8		<5	<0.05	<0.5	<0.2	<0.02	110	<0.5	<0.5	7.1	84	<0.05	165	1.7	0.104	<1	<1	1.0	<0.1		38.0
#303	Doris	1997	LKTR	L	I	672	2600	25	*78.0*	7	<0.05	<0.5	<0.2	0.02	71	<0.5	<0.5	18.6	90	<0.05	117	1.0	0.678	<1	<1	0.8	0.2		29.8
#304	Doris	1997	LKTR	L	I	403	756	25	*80.6*	12	0.08	<0.5	<0.2	<0.02	68	<0.5	<0.5	28.0	104	<0.05	135	1.4	0.128	<1	<1	1.0	0.1		36.4
#323	Doris	1997	LKTR	L	I	680	3050	22	*78.0*	<5	0.05	<0.5	<0.2	<0.02	51	<0.5	<0.5	10.3	161	<0.05	133	1.3	0.365	<1	<1	1.3	0.1		30.4
#324	Doris	1997	LKTR	L	I	560	1940	28	*80.8*	<5	<0.05	<0.5	<0.2	0.03	82	<0.5	<0.5	3.4	250	<0.05	175	1.7	0.425	<1	<1	0.7	<0.1		24.9
#342	Doris	1997	LKTR	L	I	653	2700	25	*78.3*	<5	<0.05	<0.5	<0.2	0.03	58	<0.5	<0.5	8.2	189	<0.05	119	1.0	0.251	<1	<1	0.8	<0.1		27.2
#343	Doris	1997	LKTR	L	I	714	3275	27	*79.4*	<5	<0.05	<0.5	<0.2	<0.02	64	<0.5	<0.5	15.0	139	<0.05	125	1.4	0.488	<1	<1	1.6	0.1		35.0
#344	Doris	1997	LKTR	L	I	707	3175	45	*72.4*	<5	0.05	<0.5	<0.2	<0.02	60	<0.5	<0.5	16.8	192	<0.05	129	1.1	0.729	<1	<1	1.3	0.1		26.6
#362	Doris	1997	LKTR	L	I	397	582	9	*76.0*	<5	0.09	<0.5	<0.2	<0.02	69	<0.5	<0.5	9.0	198	<0.05	157	1.6	0.102	<1	<1	1.6	<0.1		32.2
#365	Doris	1997	LKTR	L	I	932	9900	48	*77.0*	<5	<0.05	<0.5	<0.2	<0.02	56	<0.5	<0.5	5.1	44	<0.05	125	1.4	0.969	<1	<1	1.0	<0.1		20.7
#476	Doris	1997	LKTR	L	I	621	2350	23	*79.3*	<5	<0.05	<0.5	<0.2	0.03	53	<0.5	<0.5	8.6	289	<0.05	122	1.0	0.696	<1	<1	1.6	0.1		26.9
#477	Doris	1997	LKTR	L	I	660	2020	33	*82.2*	<5	0.08	<0.5	<0.2	<0.02	54	<0.5	<0.5	13.1	165	<0.05	121	1.4	0.799	<1	<1	0.7	<0.1		22.6
#521	Doris	1997	LKTR	L	I	668	2950	27	*78.5*	<5	<0.05	<0.5	<0.2	<0.02	65	<0.5	<0.5	17.7	152	<0.05	130	1.1	0.649	<1	<1	1.0	0.2		29.7
#530	Doris	1997	LKTR	L	I	770	3844	42	*78.8*	<5	<0.05	<0.5	<0.2	0.02	70	<0.5	<0.5	18.8	262	<0.05	125	1.1	0.529	<1	<1	0.8	0.2		31.4
#531	Doris	1997	LKTR	L	I	773	4221	42	*79.3*	<5	<0.05	<0.5	<0.2	<0.02	52	<0.5	<0.5	17.6	208	<0.05	122	1.0	1.290	<1	<1	1.3	0.1		26.5
#169	Doris	1997	LKTR	M	I	439	790	8	*77.4*	<5	<0.05	<0.5	<0.2	<0.02	147	<0.5	<0.5	<0.5	3	<0.05	273	<0.2	0.126	<1	<1	0.2	<0.1		3.2
#182	Doris	1997	LKTR	M	I	684	3225	49	*80.4*	<5	0.10	<0.5	<0.2	<0.02	97	<0.5	<0.5	<0.5	3	<0.05	229	<0.2	0.300	<1	<1	0.2	<0.1		2.9
#194	Doris	1997	LKTR	M	I	700	3300	23	*80.3*	<5	0.05	<0.5	<0.2	<0.02	73	<0.5	<0.5	<0.5	1	<0.05	233	<0.2	0.198	<1	<1	0.2	<0.1		3.0
#195	Doris	1997	LKTR	M	I	663	2925	25	*80.5*	<5	0.07	<0.5	<0.2	<0.02	141	<0.5	<0.5	<0.5	2	<0.05	233	<0.2	0.224	<1	<1	0.2	<0.1		2.8
#255	Doris	1997	LKTR	M	I	605	2025	26	*79.2*	<5	<0.05	<0.5	<0.2	<0.02	95	<0.5	<0.5	<0.5	3	<0.05	241	<0.2	0.252	<1	<1	0.2	<0.1		3.1
#256	Doris	1997	LKTR	M	I	702	2325	49	*84.2*	<5	0.07	<0.5	<0.2	<0.02	141	<0.5	<0.5	<0.5	3	<0.05	192	<0.2	0.394	<1	<1	0.1	<0.1		2.8
#272	Doris	1997	LKTR	M	I	655	2625	40	*81.4*	<5	0.06	<0.5	<0.2	<0.02	120	<0.5	<0.5	<0.5	2	<0.05	225	<0.2	0.251	<1	<1	0.2	<0.1		2.8
#289	Doris	1997	LKTR	M	I	353	406	8	*80.2*	<5	<0.05	<0.5	<0.2	<0.02	345	<0.5	<0.5	<0.5	2	<0.05	271	0.2	0.071	<1	<1	0.2	<0.1		3.4
#303	Doris	1997	LKTR	M	I	672	2600	25	*79.0*	<5	0.05	<0.5	<0.2	<0.02	67	<0.5	<0.5	<0.5	2	<0.05	246	<0.2	0.214	<1	<1	0.2	<0.1		2.7
#304	Doris	1997	LKTR	M	I	403	756	25	*81.0*	<5	<0.05	<0.5	<0.2	<0.02	82	<0.5	<0.5	<0.5	4	<0.05	250	<0.2	0.143	<1	<1	0.2	<0.1		2.6
#323	Doris	1997	LKTR	M	I	680	3050	22	*79.6*	<5	0.08	<0.5	<0.2	<0.02	134	<0.5	<0.5	<0.5	2	<0.05	237	<0.2	0.203	<1	<1	0.2	<0.1		2.9
#324	Doris	1997	LKTR	M	I	560	1940	28	*79.6*	<5	<0.05	<0.5	<0.2	<0.02	146	<0.5	<0.5	<0.5	3	<0.05	245	<0.2	0.324	<1	<1	0.2	<0.1		2.7
#342	Doris	1997	LKTR	M	I	653	2700	25	*79.1*	<5	0.06	<0.5	<0.2	<0.02	65	<0.5	<0.5	<0.5	2	<0.05	241	<0.2	0.157	<1	<1	0.2	<0.1		2.8
#343	Doris	1997	LKTR	M	I	714	3275	27	*79.0*	<5	0.08	<0.5	<0.2	<0.02	117	<0.5	<0.5	<0.5	3	<0.05	249	<0.2	0.326	<1	<1	0.2	<0.1		2.9
#344	Doris	1997	LKTR	M	I	707	3175	45	*81.2*	<5	0.08	<0.5	<0.2	<0.02	130	<0.5	<0.5	<0.5	2	<0.05	209	<0.2	0.363	<1	<1	0.2	<0.1		2.5
#362	Doris	1997	LKTR	M	I	397	582	9	*78.9*	<5	<0.05	<0.5	<0.2	<0.02	105	<0.5	<0.5	<0.5	2	<0.05	262	<0.2	0.095	<1	<1	0.2	<0.1		3.1
#365	Doris	1997	LKTR	M	I	932	9900	48	*76.6*	<5	<0.05	<0.5	<0.2	<0.02	69	<0.5	<0.5	<0.5	2	<0.05	195	<0.2	0.435	<1	<1	0.2	<0.1		3.1
#476	Doris	1997	LKTR	M	I	621	2350	23	*78.3*	<5	<0.05	<0.5	<0.2	<0.02	64	<0.5	<0.5	<0.5	2	<0.05	238	<0.2	0.286	<1	<1	0.2	<0.1		2.7
#477	Doris	1997	LKTR	M	I	660	2020	33	*84.1*	<5	0.06	<0.5	<0.2	<0.02	198	<0.5	<0.5	<0.5	2	<0.05	198	<0.2	0.470	<1	<1	0.2	<0.1		2.7
#521	Doris	1997	LKTR	M	I	668	2950	27	*79.1*	<5	0.11	<0.5	<0.2	<0.02	72	<0.5	<0.5	<0.5	2	<0.05	253	<0.2	0.368	<1	<1	0.2	<0.1		2.8
#530	Doris	1997	LKTR	M	I	770	3844	42	*80.7*	<5	0.09	<0.5	<0.2	<0.02	283	<0.5	<0.5	<0.5	2	<0.05	234	<0.2	0.375	<1	<1	0.2	<0.1		3.0
#531	Doris	1997	LKTR	M	I	773	4221	42	*81.0*	<5	0.09	<0.5	<0.2	<0.02	109	<0.5	<0.5	<0.5	2	<0.05	235	<0.2	0.641	<1	<1	0.2	<0.1		2.8

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
28	Doris	1995	LKWH	K	I	462	1290	13	*82.1*		<0.01			0.22				1.2		0.05			0.090		0.108				15.1
29	Doris	1995	LKWH	K	I	386	856	11	*77.0*		<0.01			0.15				0.88		0.01			0.040		0.180				18.4
30	Doris	1995	LKWH	K	I	469	1760	16	*82.2*		<0.01			0.63				1.8		0.02			0.205		0.195				22.2
28	Doris	1995	LKWH	L	I	462	1290	13	*78.9*		<0.01			0.06				6.1		0.02			0.119		0.031				26.3
29	Doris	1995	LKWH	L	I	386	856	11	*77.4*		<0.01			0.10				4.9		0.01			0.058		0.052				30.9
30	Doris	1995	LKWH	L	I	469	1760	16	*80.3*		<0.01			0.04				6.7		0.02			0.218		0.072				26.9
28	Doris	1995	LKWH	M	I	462	1290	13	*78.3*		<0.01			<0.002				0.31		0.01			0.052		0.011				2.7
29	Doris	1995	LKWH	M	I	386	856	11	*75.5*		<0.01			<0.002				0.26		0.01			0.016		0.012				3.7
30	Doris	1995	LKWH	M	I	469	1760	16	*78.1*		<0.01			<0.002				0.18		0.01			0.130		<0.002				3.1
	Doris	1996	LKWH	L	C				*76.7*		0.15			0.05				5.1		<0.05	179	2.80	0.145		<0.2	1.1	0.05	<0.2	26.3
	Doris	1996	LKWH	M	C				*78.2*		<0.05			<0.02				0.13		<0.05	287	0.30	0.046		<0.2	0.2	<0.01	<0.2	3.0
#28	Doris	1997	LKWH	L	I	417	870	15	*81.3*	<5	<0.05	<0.5	<0.2	0.03	42	<0.5	<0.5	1.7	67	<0.05	150	1.5	0.094	<1	<1	0.8	<0.1		20.4
#40	Doris	1997	LKWH	L	I	472	1556	31	*82.2*	7	0.09	<0.5	<0.2	0.02	46	<0.5	<0.5	5.7	90	<0.05	139	2.0	0.235	<1	<1	1.1	<0.1		21.0
#72	Doris	1997	LKWH	L	I	455	1110	25	*82.2*	<5	0.05	<0.5	<0.2	<0.02	56	<0.5	<0.5	4.5	53	<0.05	124	1.5	0.172	<1	<1	0.8	<0.1		18.3
#170	Doris	1997	LKWH	L	I	418	996	25	*81.0*	<5	0.13	<0.5	<0.2	0.07	61	<0.5	<0.5	7.5	156	<0.05	138	2.1	0.142	<1	<1	1.1	<0.1		20.9
#183	Doris	1997	LKWH	L	I	446	1320	31	*80.1*	8	0.10	<0.5	<0.2	<0.02	51	<0.5	<0.5	5.0	67	<0.05	139	1.9	0.168	<1	<1	0.9	<0.1		22.6
#184	Doris	1997	LKWH	L	I	525	1925	54	*82.9*	13	0.14	<0.5	<0.2	0.03	41	<0.5	<0.5	1.9	109	<0.05	131	1.1	0.225	<1	<1	0.8	<0.1		19.7
#185	Doris	1997	LKWH	L	I	450	1268	31	*82.6*	<5	0.06	<0.5	<0.2	0.05	49	<0.5	<0.5	3.6	163	<0.05	123	1.5	0.091	<1	<1	0.8	<0.1		16.2
#186	Doris	1997	LKWH	L	I	504	1775	65	*80.3*	16	0.11	<0.5	<0.2	0.07	46	<0.5	<0.5	1.5	220	<0.05	154	1.4	0.369	<1	<1	1.3	<0.1		17.3
#187	Doris	1997	LKWH	L	I	462	1666	34	*81.1*	6	0.06	<0.5	<0.2	<0.02	56	<0.5	<0.5	4.3	60	<0.05	157	2.4	0.174	<1	<1	0.7	<0.1		21.1
#188	Doris	1997	LKWH	L	I	479	1674	40	*82.0*	<5	<0.05	<0.5	<0.2	<0.02	96	<0.5	<0.5	7.4	46	<0.05	100	1.2	0.113	<1	<1	0.5	<0.1		15.5
#204	Doris	1997	LKWH	L	I	508	1975	60	*79.6*	7	0.12	<0.5	<0.2	0.05	43	<0.5	<0.5	4.0	210	<0.05	137	1.8	0.320	<1	<1	1.2	<0.1		20.1
#205	Doris	1997	LKWH	L	I	466	1346	52	*81.4*	7	0.08	<0.5	<0.2	0.03	66	<0.5	<0.5	5.4	210	<0.05	126	1.6	0.275	<1	<1	1.3	<0.1		18.6
#206	Doris	1997	LKWH	L	I	395	724	10	*75.4*	<5	0.05	<0.5	<0.2	0.04	55	<0.5	<0.5	2.5	117	<0.05	164	2.1	0.063	<1	<1	1.1	<0.1		26.0
#207	Doris	1997	LKWH	L	I	358	534	9		5	<0.05	<0.5	<0.2	0.04	40	<0.5	<0.5	2.3	76	<0.05	167	2.1	0.040	<1	<1	0.9	<0.1		24.6
#254	Doris	1997	LKWH	L	I	414	888	14	*82.5*	6	0.08	<0.5	<0.2	0.04	62	<0.5	<0.5	3.5	88	<0.05	149	2.6	0.126	<1	<1	0.7	<0.1		18.7
#270	Doris	1997	LKWH	L	I	472	1486	35	*82.0*	<5	0.07	<0.5	<0.2	0.04	46	<0.5	<0.5	3.5	101	<0.05	131	1.8	0.160	<1	<1	1.0	<0.1		19.2
#271	Doris	1997	LKWH	L	I	465	1244	34		6	0.08	<0.5	<0.2	0.04	137	<0.5	<0.5	3.6	94	<0.05	153	2.7	0.125	<1	<1	0.8	<0.1		19.4
#273	Doris	1997	LKWH	L	I	443	1090	27		<5	0.06	<0.5	<0.2	0.07	61	<0.5	<0.5	6.0	249	<0.05	135	1.6	0.229	<1	<1	1.2	<0.1		25.3
#274	Doris	1997	LKWH	L	I	463	1248	31	*79.3*	<5	0.07	<0.5	<0.2	0.05	76	<0.5	<0.5	3.1	144	<0.05	147	1.7	0.249	<1	<1	1.1	<0.1		19.6
#275	Doris	1997	LKWH	L	I	413	916	15	*80.8*	<5	<0.05	<0.5	<0.2	0.02	70	<0.5	<0.5	2.1	82	<0.05	136	1.4	0.060	<1	<1	0.9	<0.1		18.7
#290	Doris	1997	LKWH	L	I	459	1216	29	*79.7*	<5	0.19	<0.5	<0.2	0.04	213	<0.5	<0.5	4.4	218	<0.05	136	1.8	0.269	<1	<1	1.5	<0.1		25.0
#291	Doris	1997	LKWH	L	I	439	1190	24	*81.1*	<5	0.06	<0.5	<0.2	<0.02	65	<0.5	<0.5	2.7	74	<0.05	143	1.5	0.152	<1	<1	1.0	<0.1		21.8
#305	Doris	1997	LKWH	L	I	430	1084	22	*79.4*	<5	0.08	<0.5	<0.2	0.03	58	<0.5	<0.5	5.9	112	<0.05	145	1.8	0.125	<1	<1	1.1	<0.1		22.3
#306	Doris	1997	LKWH	L	I	465	1250	31	*78.7*	<5	0.19	<0.5	<0.2	0.10	312	<0.5	<0.5	5.8	159	<0.05	143	2.0	0.185	<1	<1	1.4	<0.1		26.0
#307	Doris	1997	LKWH	L	I	475	1382	24	*81.3*	<5	0.09	<0.5	<0.2	0.04	49	<0.5	<0.5	3.7	160	<0.05	128	1.8	0.179	<1	<1	1.1	<0.1		19.8
#308	Doris	1997	LKWH	L	I	463	1336	27	*80.2*	<5	0.10	<0.5	<0.2	0.03	66	<0.5	<0.5	7.8	125	<0.05	139	2.0	0.291	<1	<1	1.4	<0.1		22.4
#309	Doris	1997	LKWH	L	I	420	896	14	*80.0*	<5	0.09	<0.5	<0.2	<0.02	55	<0.5	<0.5	3.0	122	<0.05	147	2.3	0.062	<1	<1	0.9	<0.1		20.9
#310	Doris	1997	LKWH	L	I	373	638	12		<5	0.05	<0.5	<0.2	0.02	655	<0.5	<0.5	1.6	85	<0.05	146	1.7	0.046	<1	<1	0.7	<0.1		19.6
#311	Doris	1997	LKWH	L	I	447	1360	22	*77.4*	<5	<0.05	<0.5	<0.2	0.04	45	<0.5	<0.5	1.6	68	<0.05	192	2.3	0.074	<1	<1	0.9	<0.1		20.2
#28	Doris	1997	LKWH	M	I	417	870	15	*79.4*	<5	<0.05	<0.5	<0.2	<0.02	227	<0.5	<0.5	<0.5	2	<0.05	261	<0.2	0.043	<1	<1	0.2	<0.1		2.9
#40	Doris	1997	LKWH	M	I	472	1556	31	*79.3*	<5	<0.05	<0.5	<0.2	<0.02	158	<0.5	<0.5	<0.5	2	<0.05	249	0.2	0.116	<1	<1	0.2	<0.1		2.5
#72	Doris	1997	LKWH	M	I	455	1110	25	*79.1*	<5	<0.05	<0.5	<0.2	<0.02	198	<0.5	<0.5	<0.5	2	<0.05	253	0.2	0.100	<1	<1	0.2	<0.1		2.6
#170	Doris	1997	LKWH	M	I	418	996	25	*80.8*	<5	<0.05	<0.5	<0.2	<0.02	157	<0.5	<0.5	<0.5	3	<0.05	249	0.2	0.043	<1	<1	0.2	<0.1		2.4
#183	Doris	1997	LKWH	M	I	446	1320	31	*79.5*	<5	<0.05	<0.5	<0.2	<0.02	116	<0.5	<0.5	<0.5	2	<0.05	235	<0.2	0.095	<1	<1	0.2	<0.1		2.7
#184	Doris	1997	LKWH	M	I	525	1925	54	*80.8*	<5	<0.05	<0.5	<0.2	<0.02	155	<0.5	<0.5	<0.5	4	<0.05	216	<0.2	0.126	<1	<1	0.2	<0.1		3.1
#185	Doris	1997	LKWH	M	I	450	1268	31	*80.3*	<5	<0.05	<0.5	<0.2	<0.02	146	<0.5	<0.5	<0.5	2	<0.05	236	<0.2	0.041	<1	<1	0.2	<0.1		2.5
#186	Doris	1997	LKWH	M	I	504	1775	65	*84.9*	<5	<0.05	<0.5	<0.2	<0.02	215	<0.5	<0.5	<0.5	4	<0.05	186	<0.2	0.128	<1	<1	0.1	<0.1		2.3
#187	Doris	1997	LKWH	M	I	462	1666	34	*80.0*	<5	<0.05	<0.5	<0.2	<0.02	156	<0.5	<0.5	<0.5	2	<0.05	238	<0.2	0.099	<1	<1	0.2	<0.1		2.9

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
#188	Doris	1997	LKWH	M	I	479	1674	40	*78.8*	<5	<0.05	<0.5	<0.2	<0.02	89	<0.5	<0.5	<0.5	3	<0.05	240	<0.2	0.086	<1	<1	0.2	<0.1		2.7
#204	Doris	1997	LKWH	M	I	508	1975	60	*80.5*	<5	<0.05	<0.5	<0.2	<0.02	81	<0.5	<0.5	<0.5	4	<0.05	225	<0.2	0.079	<1	<1	0.2	<0.1		2.6
#205	Doris	1997	LKWH	M	I	466	1346	52	*83.2*	<5	<0.05	<0.5	<0.2	<0.02	226	<0.5	<0.5	<0.5	4	<0.05	213	<0.2	0.115	<1	<1	0.1	<0.1		2.4
#206	Doris	1997	LKWH	M	I	395	724	10	*78.9*	<5	<0.05	<0.5	<0.2	<0.02	121	<0.5	<0.5	<0.5	2	<0.05	262	<0.2	0.018	<1	<1	0.3	<0.1		3.1
#207	Doris	1997	LKWH	M	I	358	534	9	*78.3*	<5	<0.05	<0.5	<0.2	<0.02	139	<0.5	<0.5	<0.5	2	<0.05	273	<0.2	0.015	<1	<1	0.2	<0.1		2.9
#254	Doris	1997	LKWH	M	I	414	888	14	*79.3*	<5	<0.05	<0.5	<0.2	<0.02	184	<0.5	<0.5	<0.5	2	<0.05	253	0.2	0.037	<1	<1	0.2	<0.1		2.8
#270	Doris	1997	LKWH	M	I	472	1486	35	*79.1*	<5	<0.05	<0.5	<0.2	<0.02	252	<0.5	<0.5	<0.5	2	<0.05	264	0.3	0.088	<1	<1	0.2	<0.1		2.8
#271	Doris	1997	LKWH	M	I	465	1244	34	*80.4*	<5	<0.05	<0.5	<0.2	<0.02	152	<0.5	<0.5	<0.5	2	<0.05	229	<0.2	0.085	<1	<1	0.2	<0.1		2.5
#273	Doris	1997	LKWH	M	I	443	1090	27	*80.1*	<5	<0.05	<0.5	<0.2	<0.02	90	<0.5	<0.5	<0.5	3	<0.05	252	<0.2	0.054	<1	<1	0.2	<0.1		2.4
#274	Doris	1997	LKWH	M	I	463	1248	31	*80.2*	<5	<0.05	<0.5	<0.2	<0.02	106	<0.5	<0.5	<0.5	3	<0.05	243	<0.2	0.071	<1	<1	0.2	<0.1		2.5
#275	Doris	1997	LKWH	M	I	413	916	15	*80.1*	<5	<0.05	<0.5	<0.2	<0.02	172	<0.5	<0.5	<0.5	3	<0.05	250	0.2	0.033	<1	<1	0.2	<0.1		2.5
#290	Doris	1997	LKWH	M	I	459	1216	29	*79.2*	<5	<0.05	<0.5	<0.2	<0.02	173	<0.5	<0.5	<0.5	3	<0.05	249	<0.2	0.083	<1	<1	0.2	<0.1		2.6
#291	Doris	1997	LKWH	M	I	439	1190	24	*76.8*	<5	<0.05	<0.5	<0.2	<0.02	211	<0.5	<0.5	<0.5	3	<0.05	234	0.2	0.071	<1	<1	0.2	<0.1		2.4
#305	Doris	1997	LKWH	M	I	430	1084	22	*79.8*	<5	<0.05	<0.5	<0.2	<0.02	207	<0.5	<0.5	<0.5	3	<0.05	239	0.2	0.052	<1	<1	0.2	<0.1		2.5
#306	Doris	1997	LKWH	M	I	465	1250	31	*80.1*	<5	<0.05	<0.5	<0.2	<0.02	119	<0.5	<0.5	<0.5	2	<0.05	245	0.2	0.052	<1	<1	0.2	<0.1		2.4
#307	Doris	1997	LKWH	M	I	475	1382	24	*80.9*	<5	<0.05	<0.5	<0.2	<0.02	98	<0.5	<0.5	<0.5	2	<0.05	240	<0.2	0.090	<1	<1	0.2	<0.1		2.2
#308	Doris	1997	LKWH	M	I	463	1336	27	*81.7*	<5	<0.05	<0.5	<0.2	<0.02	115	<0.5	<0.5	<0.5	3	<0.05	218	<0.2	0.098	<1	<1	0.2	<0.1		2.1
#309	Doris	1997	LKWH	M	I	420	896	14	*78.5*	<5	<0.05	<0.5	<0.2	<0.02	92	<0.5	<0.5	<0.5	2	<0.05	246	<0.2	0.036	<1	<1	0.2	<0.1		2.7
#310	Doris	1997	LKWH	M	I	373	638	12	*79.5*	<5	<0.05	<0.5	<0.2	<0.02	160	<0.5	<0.5	<0.5	2	<0.05	244	<0.2	0.029	<1	<1	0.2	<0.1		2.7
#311	Doris	1997	LKWH	M	I	447	1360	22	*78.4*	<5	<0.05	<0.5	<0.2	<0.02	272	<0.5	<0.5	<0.5	3	<0.05	256	0.2	0.042	<1	<1	0.2	<0.1		3.1
	Doris	1996	CISC	M	I				*77.2*		0.17			<0.02				0.21		<0.05	297	0.20	0.040		<0.2	<0.2	<0.01	<0.2	4.3
9	Tail	1995	LKTR	K	I	561	1722	13	*78.3*		<0.01			0.54				1.8		0.05			0.400		0.362				39.6
10	Tail	1995	LKTR	K	I	560	1865	13	*78.4*		<0.01			0.12				1.1		0.02			0.140		0.103				31.1
11	Tail	1995	LKTR	K	I	577	2256	13	*79.4*		0.22			0.77				3.5		0.02			0.477		0.389				31.0
12	Tail	1995	LKTR	K	I	601	2830	16	*76.1*		0.07			0.22				1.4		0.01			0.184		0.149				29.3
13	Tail	1995	LKTR	K	I	585	1824	15	*80.7*		0.48			1.09				4.9		0.03			0.370		0.594				27.9
9	Tail	1995	LKTR	L	I	561	1722	13	*83.4*		<0.01			0.07				21.4		0.03			0.166		0.023				40.4
10	Tail	1995	LKTR	L	I	560	1865	13	*75.5*		<0.01			0.02				2.4		0.03			0.092		0.008				45.7
11	Tail	1995	LKTR	L	I	577	2256	13	*78.4*		<0.01			0.07				4.4		0.02			0.137		0.026				31.1
12	Tail	1995	LKTR	L	I	601	2830	16	*80.7*		<0.01			0.05				12.0		0.01			0.068		0.036				49.7
13	Tail	1995	LKTR	L	I	585	1824	15	*81.0*		<0.01			0.11				11.5		0.04			0.193		0.064				36.5
9	Tail	1995	LKTR	M	I	561	1722	13	*79.1*		<0.01			<0.002				0.35		0.04			0.196		0.009				2.9
10	Tail	1995	LKTR	M	I	560	1865	13	*75.9*		0.01			<0.002				0.31		0.02			0.139		0.013				2.5
11	Tail	1995	LKTR	M	I	577	2256	13	*80.2*		0.02			<0.002				0.29		0.02			0.158		<0.002				2.4
12	Tail	1995	LKTR	M	I	601	2830	16	*75.0*		<0.01			<0.002				0.27		0.01			0.090		<0.002				3.0
13	Tail	1995	LKTR	M	I	585	1824	15	*81.4*		<0.01			<0.002				0.31		0.03			0.149		0.052				3.4
	Tail	1996	LKTR	L	C				*78.1*		<0.05			0.21				20.8		<0.05	131	1.40	0.181		<0.2	1.4	0.06	<0.2	34.2
	Tail	1996	LKTR	M	C				*78.7*		<0.05			<0.02				0.23		<0.05	257	0.20	0.097		<0.2	<0.2	<0.01	<0.2	3.5
25	Ogama	1996	LKTR	L	I	475	1100	10	*74.8*		<0.05			<0.02				9.7		0.07	141	1.80	0.097		<0.2	0.9	0.09	<0.2	26.9
25	Ogama	1996	LKTR	M	I	475	1100	10	*77.7*		<0.05			<0.02				0.20		<0.05	256	0.20	0.140		<0.2	<0.2	<0.01	<0.2	3.1
54	Patch	1995	LKTR	K	I	564	2425	13	*80.0*		0.25			0.28				0.92		0.01			0.605		0.098				20.9
54	Patch	1995	LKTR	L	I	564	2425	13	*77.6*		0.04			0.12				19.0		0.06			0.646		0.018				33.5
54	Patch	1995	LKTR	M	I	564	2425	13	*75.6*		<0.01			<0.002				0.34		0.01			0.360		0.010				3.1
	Patch	1996	LKTR	L	C				*80.0*		0.18			0.04				8.5		<0.05	155	2.00	0.257		<0.2	1.3	0.03	<0.2	22.1
	Patch	1996	LKTR	M	C				*79.8*		0.08			<0.02				0.17		<0.05	278	0.10	0.159		<0.2	0.3	<0.01	<0.2	2.8
#28	Patch	1997	LKTR	L	I	357	418	8		9	0.15	<0.5	<0.2	<0.02	79	<0.5	<0.5	5.2	76	<0.05	166	1.9	0.206	<1	<1	1.4	<0.1		30.1
#60	Patch	1997	LKTR	L	I	683	2608	28	*79.7*	<5	0.05	<0.5	<0.2	0.04	62	<0.5	<0.5	14.4	517	<0.05	119	1.2	1.070	<1	<1	1.6	<0.1		30.8
#61	Patch	1997	LKTR	L	I	715	3198	27	*79.5*	<5	0.06	<0.5	<0.2	0.02	67	<0.5	<0.5	12.2	415	<0.05	115	1.0	1.140	<1	<1	1.9	<0.1		27.5
#74	Patch	1997	LKTR	L	I	594	1740	25	*78.4*	<5	<0.05	<0.5	<0.2	0.04	80	<0.5	<0.5	9.4	500	<0.05	116	1.1	0.621	<1	<1	1.2	<0.1		26.9

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
#75	Patch	1997	LKTR	L	I	690	3242	26	*81.9*	10	<0.05	<0.5	<0.2	0.05	72	<0.5	<0.5	2.3	233	<0.05	147	1.1	0.392	<1	<1	0.6	<0.1		22.9
#78	Patch	1997	LKTR	L	I	695	2230	22		5	0.09	<0.5	<0.2	0.03	80	<0.5	0.5	17.8	244	<0.05	113	1.1	1.140	<1	<1	2.2	<0.1		27.6
#79	Patch	1997	LKTR	L	I	679	2833	18	*76.9*	<5	0.07	<0.5	<0.2	<0.02	66	<0.5	<0.5	11.0	300	<0.05	117	1.2	0.673	<1	<1	2.3	<0.1		31.3
#89	Patch	1997	LKTR	L	I	721	3516	24	*79.1*	<5	0.08	<0.5	<0.2	<0.02	58	<0.5	<0.5	9.2	163	<0.05	119	1.1	1.040	<1	<1	1.3	<0.1		24.2
#90	Patch	1997	LKTR	L	I	608	2032	19	*81.6*	<5	0.07	<0.5	<0.2	0.03	60	<0.5	<0.5	12.8	283	<0.05	106	1.3	0.526	<1	<1	1.4	<0.1		26.4
#91	Patch	1997	LKTR	L	I	397	606	15		35	0.41	<0.5	<0.2	0.05	98	<0.5	<0.5	32.8	864	<0.05	130	1.9	0.287	<1	<1	2.3	<0.1		43.8
#92	Patch	1997	LKTR	L	I	897	7294	40	*78.9*	<5	<0.05	<0.5	<0.2	<0.02	73	<0.5	<0.5	2.6	46	<0.05	132	0.9	1.390	<1	<1	0.9	<0.1		20.2
#100	Patch	1997	LKTR	L	I	635	2476	25	*82.9*	<5	<0.05	<0.5	<0.2	<0.02	<10	<0.5	<0.5	<0.5	119	<0.05	15	<0.2	0.221	<1	<1	<0.1	<0.1		2.2
#101	Patch	1997	LKTR	L	I	697	2900	26	*78.7*	8	0.09	<0.5	<0.2	0.03	49	<0.5	<0.5	23.3	214	<0.05	124	1.5	0.911	<1	<1	2.6	0.1		37.9
#105	Patch	1997	LKTR	L	I	636	2362	18	*73.0*	<5	0.06	<0.5	<0.2	<0.02	52	<0.5	<0.5	12.8	135	<0.05	118	1.1	0.581	<1	<1	1.8	<0.1		29.9
#107	Patch	1997	LKTR	L	I	589	1700	18	*79.6*	6	0.05	<0.5	<0.2	0.03	59	<0.5	<0.5	18.2	137	<0.05	130	1.4	0.568	<1	<1	1.3	0.1		35.1
#108	Patch	1997	LKTR	L	I	627	2388	35	*82.0*	<5	<0.05	<0.5	<0.2	0.02	68	<0.5	<0.5	9.5	310	<0.05	110	0.9	0.869	<1	<1	1.4	<0.1		26.5
#116	Patch	1997	LKTR	L	I	767	4860	31	*79.0*	<5	0.06	<0.5	<0.2	<0.02	44	<0.5	<0.5	11.6	119	<0.05	125	1.3	0.797	<1	<1	1.7	<0.1		26.1
#117	Patch	1997	LKTR	L	I	663	2800	19	*75.9*	<5	0.09	<0.5	<0.2	<0.02	80	<0.5	<0.5	10.6	217	<0.05	118	1.0	0.644	<1	<1	1.8	<0.1		29.9
#118	Patch	1997	LKTR	L	I	669	2503	-	*78.9*	5	0.07	<0.5	<0.2	0.03	55	<0.5	<0.5	15.7	651	<0.05	124	1.0	1.350	<1	<1	2.0	<0.1		32.0
#119	Patch	1997	LKTR	L	I	693	2918	-	*77.8*	<5	0.08	<0.5	<0.2	0.03	63	<0.5	<0.5	14.8	459	<0.05	121	1.2	1.160	<1	<1	2.1	0.1		30.1
#120	Patch	1997	LKTR	L	I	680	3362	23	*78.6*	<5	0.10	<0.5	<0.2	<0.02	54	<0.5	<0.5	9.0	80	<0.05	126	1.3	0.474	<1	<1	2.3	<0.1		25.5
#124	Patch	1997	LKTR	L	I	645	2640	24	*80.2*	7	<0.05	<0.5	<0.2	0.02	62	<0.5	<0.5	6.5	142	<0.05	113	1.1	0.361	<1	<1	1.3	<0.1		26.0
#125	Patch	1997	LKTR	L	I	380	614	11		8	0.12	<0.5	<0.2	0.03	75	<0.5	<0.5	10.5	300	<0.05	151	1.7	0.216	<1	<1	1.2	<0.1		31.5
#129	Patch	1997	LKTR	L	I	440	948	22		39	0.21	<0.5	<0.2	0.10	88	<0.5	<0.5	19.2	779	<0.05	110	1.5	0.334	<1	<1	2.7	<0.1		32.2
#136	Patch	1997	LKTR	L	I	464	902	26	*77.9*	34	0.21	<0.5	<0.2	0.10	73	<0.5	<0.5	23.8	1400	<0.05	131	1.4	0.335	<1	<1	1.7	0.1		34.0
#28	Patch	1997	LKTR	M	I	357	418	8	*77.2*	<5	<0.05	<0.5	<0.2	<0.02	114	<0.5	<0.5	<0.5	3	<0.05	280	<0.2	0.172	<1	<1	0.2	<0.1		3.2
#60	Patch	1997	LKTR	M	I	683	2608	28	*80.2*	<5	0.11	<0.5	<0.2	<0.02	152	<0.5	<0.5	<0.5	3	<0.05	254	<0.2	0.465	<1	<1	0.2	<0.1		2.3
#61	Patch	1997	LKTR	M	I	715	3198	27	*80.4*	<5	0.12	<0.5	<0.2	<0.02	172	<0.5	<0.5	<0.5	2	<0.05	251	<0.2	0.660	<1	<1	0.2	<0.1		2.4
#74	Patch	1997	LKTR	M	I	594	1740	25	*78.4*	<5	<0.05	<0.5	<0.2	<0.02	220	<0.5	<0.5	<0.5	3	<0.05	254	<0.2	0.402	<1	<1	0.2	<0.1		2.6
#75	Patch	1997	LKTR	M	I	690	3242	26	*79.3*	<5	<0.05	<0.5	<0.2	<0.02	99	<0.5	<0.5	<0.5	2	<0.05	244	<0.2	0.314	<1	<1	0.2	<0.1		2.2
#78	Patch	1997	LKTR	M	I	695	2230	22	*84.0*	<5	0.12	<0.5	<0.2	<0.02	83	<0.5	<0.5	<0.5	3	<0.05	208	<0.2	0.671	<1	<1	0.2	<0.1		2.5
#79	Patch	1997	LKTR	M	I	679	2833	18	*77.3*	<5	0.08	<0.5	<0.2	<0.02	120	<0.5	<0.5	<0.5	2	<0.05	275	<0.2	0.483	<1	<1	0.2	<0.1		2.8
#89	Patch	1997	LKTR	M	I	721	3516	24	*79.3*	<5	0.16	<0.5	<0.2	<0.02	93	<0.5	<0.5	<0.5	4	<0.05	234	<0.2	0.160	<1	<1	0.3	<0.1		3.0
#90	Patch	1997	LKTR	M	I	608	2032	19	*79.4*	<5	0.06	<0.5	<0.2	<0.02	62	<0.5	<0.5	<0.5	2	<0.05	239	<0.2	0.433	<1	<1	0.2	<0.1		2.6
#91	Patch	1997	LKTR	M	I	397	606	15	*79.7*	<5	0.09	<0.5	<0.2	<0.02	323	<0.5	<0.5	<0.5	3	<0.05	265	<0.2	0.170	<1	<1	0.3	<0.1		2.6
#92	Patch	1997	LKTR	M	I	897	7294	40	*76.2*	<5	0.07	<0.5	<0.2	<0.02	90	<0.5	<0.5	<0.5	2	<0.05	267	<0.2	0.534	<1	<1	0.3	<0.1		2.4
#100	Patch	1997	LKTR	M	I	635	2476	25	*79.3*	<5	<0.05	<0.5	<0.2	<0.02	118	<0.5	<0.5	<0.5	2	<0.05	238	<0.2	0.209	<1	<1	0.2	<0.1		2.2
#101	Patch	1997	LKTR	M	I	697	2900	26	*79.4*	<5	0.15	<0.5	<0.2	<0.02	79	<0.5	<0.5	<0.5	3	<0.05	232	<0.2	0.481	<1	<1	0.2	<0.1		2.6
#105	Patch	1997	LKTR	M	I	636	2362	18	*75.6*	<5	0.08	<0.5	<0.2	<0.02	207	<0.5	<0.5	<0.5	2	<0.05	286	<0.2	0.424	<1	<1	0.2	<0.1		3.0
#107	Patch	1997	LKTR	M	I	589	1700	18	*78.6*	<5	<0.05	<0.5	<0.2	<0.02	107	<0.5	<0.5	<0.5	2	<0.05	268	<0.2	0.322	<1	<1	0.2	<0.1		2.8
#108	Patch	1997	LKTR	M	I	627	2388	35	*77.1*	<5	0.07	<0.5	<0.2	<0.02	225	<0.5	<0.5	<0.5	2	<0.05	253	<0.2	0.406	<1	<1	0.2	<0.1		2.7
#116	Patch	1997	LKTR	M	I	767	4860	31	*79.1*	<5	0.10	<0.5	<0.2	<0.02	142	<0.5	<0.5	<0.5	2	<0.05	254	<0.2	0.525	<1	<1	0.2	<0.1		2.6
#117	Patch	1997	LKTR	M	I	663	2800	19	*77.8*	<5	0.10	<0.5	<0.2	<0.02	114	<0.5	<0.5	<0.5	2	<0.05	256	<0.2	0.361	<1	<1	0.2	<0.1		2.7
#118	Patch	1997	LKTR	M	I	669	2503	-	*79.6*	<5	0.13	<0.5	<0.2	<0.02	211	<0.5	<0.5	<0.5	3	<0.05	241	<0.2	0.682	<1	<1	0.2	<0.1		2.5
#119	Patch	1997	LKTR	M	I	693	2918	-	*80.4*	<5	0.11	<0.5	<0.2	<0.02	193	<0.5	<0.5	<0.5	3	<0.05	235	<0.2	0.603	<1	<1	0.3	<0.1		2.6
#120	Patch	1997	LKTR	M	I	680	3362	23	*79.3*	<5	0.10	<0.5	<0.2	<0.02	129	<0.5	<0.5	<0.5	2	<0.05	253	<0.2	0.381	<1	<1	0.2	<0.1		2.8
#124	Patch	1997	LKTR	M	I	645	2640	24	*78.5*	<5	0.07	<0.5	<0.2	<0.02	211	<0.5	<0.5	<0.5	2	<0.05	268	<0.2	0.284	<1	<1	0.2	<0.1		2.8
#125	Patch	1997	LKTR	M	I	380	614	11	*78.4*	<5	<0.05	<0.5	<0.2	<0.02	96	<0.5	<0.5	<0.5	2	<0.05	283	<0.2	0.110	<1	<1	0.2	<0.1		2.5
#129	Patch	1997	LKTR	M	I	440	948	22	*79.4*	<5	0.07	<0.5	<0.2	<0.02	263	<0.5	<0.5	<0.5	5	<0.05	250	<0.2	0.281	<1	<1	0.3	<0.1		2.6
#136	Patch	1997	LKTR	M	I	464	902	26	*82.6*	<5	0.05	<0.5	<0.2	<0.02	226	<0.5	<0.5	<0.5	4	<0.05	212	<0.2	0.273	<1	<1	0.2	<0.1		2.5
	Patch	1996	LKWH	L	C				*79.9*		0.09			0.05				3.3		<0.05	144	1.70	0.468		<0.2	1.4	0.03	<0.2	23.8
	Patch	1996	LKWH	M	C				*80.1*		<0.05			<0.02				0.11		<0.05	257	0.2	0.174		<0.2	0.2	<0.01	<0.2	2.7

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
#3	Patch	1997	LKWH	L	I	406	966	22		6	0.11	<0.5	<0.2	0.05	230	<0.5	<0.5	3.3	83	<0.05	172	1.9	0.328	<1	<1	1.6	<0.1		26.1
#9	Patch	1997	LKWH	L	I	393	910	18		<5	0.14	<0.5	<0.2	0.05	69	<0.5	<0.5	4.4	92	<0.05	169	1.8	0.218	<1	<1	1.6	<0.1		28.4
#10	Patch	1997	LKWH	L	I	484	1674	25		8	0.39	<0.5	<0.2	0.03	164	<0.5	<0.5	4.4	63	<0.05	158	2.3	0.538	<1	<1	1.7	<0.1		26.5
#21	Patch	1997	LKWH	L	I	388	812	14		6	0.48	<0.5	<0.2	0.04	58	<0.5	<0.5	4.8	107	<0.05	165	2.2	0.195	<1	<1	1.6	<0.1		32.2
#22	Patch	1997	LKWH	L	I	430	1034	17	*78.9*	<5	0.07	<0.5	<0.2	<0.02	51	<0.5	<0.5	7.4	138	<0.05	137	1.3	0.188	<1	<1	1.0	<0.1		25.3
#23	Patch	1997	LKWH	L	I	449	1060	23	*73.7*	<5	0.41	<0.5	<0.2	0.05	73	<0.5	<0.5	9.2	99	<0.05	147	1.6	0.362	<1	<1	1.5	0.1		34.6
#41	Patch	1997	LKWH	L	I	380	712	13		<5	0.40	<0.5	<0.2	0.03	72	<0.5	<0.5	4.0	101	<0.05	169	2.1	0.141	<1	<1	1.6	<0.1		28.9
#51	Patch	1997	LKWH	L	I	432	890	25		6	0.23	<0.5	<0.2	0.06	60	<0.5	<0.5	2.8	188	<0.05	129	1.5	0.761	<1	<1	2.0	<0.1		25.9
#54	Patch	1997	LKWH	L	I	408	902	17		<5	0.06	<0.5	<0.2	0.05	80	<0.5	<0.5	3.6	125	<0.05	156	1.5	0.190	<1	<1	1.4	<0.1		29.0
#55	Patch	1997	LKWH	L	I	426	1000	23		9	0.31	<0.5	<0.2	0.08	49	<0.5	<0.5	5.2	114	<0.05	139	1.5	0.329	<1	<1	1.4	<0.1		24.5
#56	Patch	1997	LKWH	L	I	449	1112	24	*73.7*	6	0.22	<0.5	<0.2	0.07	74	<0.5	<0.5	7.7	347	<0.05	152	1.4	0.610	<1	<1	2.0	<0.1		33.9
#57	Patch	1997	LKWH	L	I	432	956	27		9	0.50	<0.5	<0.2	0.11	104	<0.5	<0.5	4.4	232	<0.05	154	2.4	0.541	<1	<1	2.3	<0.1		28.1
#58	Patch	1997	LKWH	L	I	427	1155	29	*79.3*	8	0.18	<0.5	<0.2	0.04	64	<0.5	<0.5	3.2	86	<0.05	138	1.4	0.456	<1	<1	1.5	<0.1		23.3
#59	Patch	1997	LKWH	L	I	431	1078	30		5	0.23	<0.5	<0.2	0.10	62	<0.5	<0.5	2.7	126	<0.05	157	2.0	0.795	<1	<1	2.2	<0.1		24.6
#69	Patch	1997	LKWH	L	I	414	942	32		14	0.13	<0.5	<0.2	0.18	415	<0.5	<0.5	2.6	66	<0.05	148	2.0	0.349	<1	<1	1.3	<0.1		25.0
#70	Patch	1997	LKWH	L	I	453	1226	24	*75.2*	10	0.23	<0.5	<0.2	0.04	55	<0.5	<0.5	3.6	81	<0.05	151	1.6	0.563	<1	<1	1.9	<0.1		28.0
#71	Patch	1997	LKWH	L	I	427	860	26		8	0.47	<0.5	<0.2	0.06	59	<0.5	<0.5	14.4	102	<0.05	150	1.4	0.615	<1	<1	1.6	0.2		36.9
#76	Patch	1997	LKWH	L	I	429	1064	21	*76.6*	<5	0.16	<0.5	<0.2	0.04	72	<0.5	<0.5	6.1	142	<0.05	168	1.9	0.237	<1	<1	1.5	<0.1		29.8
#77	Patch	1997	LKWH	L	I	473	1216	37		9	0.58	<0.5	<0.2	0.1	54	<0.5	<0.5	3.4	277	<0.05	143	1.6	0.661	<1	<1	2.3	<0.1		24.0
#80	Patch	1997	LKWH	L	I	474	1538	35	*82.2*	16	0.11	<0.5	<0.2	0.04	46	<0.5	<0.5	2.4	51	<0.05	128	1.3	0.399	<1	<1	1.2	<0.1		20.1
#81	Patch	1997	LKWH	L	I	424	1088	27	*72.3*	8	0.21	<0.5	<0.2	0.06	64	<0.5	<0.5	5.6	201	<0.05	149	1.9	0.441	<1	<1	1.8	<0.1		28.2
#82	Patch	1997	LKWH	L	I	435	1162	43	*81.3*	6	0.13	<0.5	<0.2	0.03	54	<0.5	<0.5	2.9	93	<0.05	121	1.3	0.428	<1	<1	1.5	<0.1		19.7
#83	Patch	1997	LKWH	L	I	423	938	23	*75.9*	9	0.14	<0.5	<0.2	0.06	58	<0.5	<0.5	2.7	149	<0.05	122	1.4	0.274	<1	<1	1.4	<0.1		24.7
#84	Patch	1997	LKWH	L	I	390	734	14		9	0.34	<0.5	<0.2	0.04	64	<0.5	<0.5	3.6	103	<0.05	154	1.6	0.138	<1	<1	1.4	<0.1		26.7
#85	Patch	1997	LKWH	L	I	368	592	16		9	0.16	<0.5	<0.2	0.10	238	<0.5	<0.5	2.3	126	<0.05	155	1.6	0.165	<1	<1	1.3	<0.1		26.5
#86	Patch	1997	LKWH	L	I	393	698	23		10	0.31	<0.5	<0.2	0.15	69	<0.5	<0.5	2.9	167	<0.05	147	1.6	0.291	<1	<1	1.7	<0.1		24.5
#3	Patch	1997	LKWH	M	I	406	966	22	*77.9*	<5	<0.05	<0.5	<0.2	<0.02	136	<0.5	<0.5	<0.5	2	<0.05	266	<0.2	0.114	<1	<1	0.2	<0.1		2.6
#9	Patch	1997	LKWH	M	I	393	910	18	*77.4*	<5	<0.05	<0.5	<0.2	<0.02	120	<0.5	<0.5	<0.5	2	<0.05	268	<0.2	0.079	<1	<1	0.2	<0.1		2.6
#10	Patch	1997	LKWH	M	I	484	1674	25	*80.0*	<5	0.08	<0.5	<0.2	<0.02	135	<0.5	<0.5	<0.5	2	<0.05	259	<0.2	0.150	<1	<1	0.2	<0.1		2.4
#21	Patch	1997	LKWH	M	I	388	812	14	*77.3*	<5	0.08	<0.5	<0.2	<0.02	100	<0.5	<0.5	<0.5	2	<0.05	282	<0.2	0.045	<1	<1	0.2	<0.1		2.8
#22	Patch	1997	LKWH	M	I	430	1034	17	*77.3*	<5	0.05	<0.5	<0.2	<0.02	162	<0.5	<0.5	<0.5	2	<0.05	301	<0.2	0.076	<1	<1	0.2	<0.1		2.7
#23	Patch	1997	LKWH	M	I	449	1060	23	*79.5*	<5	0.13	<0.5	<0.2	<0.02	100	<0.5	<0.5	<0.5	3	<0.05	259	<0.2	0.102	<1	<1	0.3	<0.1		2.6
#41	Patch	1997	LKWH	M	I	380	712	13	*77.7*	<5	0.08	<0.5	<0.2	<0.02	139	<0.5	<0.5	<0.5	2	<0.05	283	<0.2	0.044	<1	<1	0.3	<0.1		2.8
#51	Patch	1997	LKWH	M	I	432	890	25	*80.3*	<5	0.07	<0.5	<0.2	<0.02	219	<0.5	<0.5	<0.5	3	<0.05	257	<0.2	0.195	<1	<1	0.3	<0.1		2.5
#54	Patch	1997	LKWH	M	I	408	902	17	*79.0*	<5	<0.05	<0.5	<0.2	<0.02	158	<0.5	<0.5	<0.5	2	<0.05	269	<0.2	0.074	<1	<1	0.2	<0.1		2.7
#55	Patch	1997	LKWH	M	I	426	1000	23	*80.4*	<5	0.11	<0.5	<0.2	<0.02	193	<0.5	<0.5	<0.5	3	<0.05	259	<0.2	0.106	<1	<1	0.2	<0.1		2.4
#56	Patch	1997	LKWH	M	I	449	1112	24	*80.1*	<5	0.08	<0.5	<0.2	<0.02	286	<0.5	<0.5	<0.5	3	<0.05	252	<0.2	0.152	<1	<1	0.2	<0.1		2.7
#57	Patch	1997	LKWH	M	I	432	956	27	*80.3*	<5	0.12	<0.5	<0.2	<0.02	193	<0.5	<0.5	<0.5	4	<0.05	255	<0.2	0.093	<1	<1	0.2	<0.1		2.2
#58	Patch	1997	LKWH	M	I	427	1155	29	*81.0*	<5	0.09	<0.5	<0.2	<0.02	140	<0.5	<0.5	<0.5	2	<0.05	255	<0.2	0.170	<1	<1	0.2	<0.1		2.6
#59	Patch	1997	LKWH	M	I	431	1078	30	*80.4*	<5	0.08	<0.5	<0.2	<0.02	214	<0.5	<0.5	<0.5	3	<0.05	253	<0.2	0.207	<1	<1	0.2	<0.1		2.2
#69	Patch	1997	LKWH	M	I	414	942	32	*80.8*	<5	<0.05	<0.5	<0.2	<0.02	203	<0.5	<0.5	<0.5	2	<0.05	240	<0.2	0.114	<1	<1	0.2	<0.1		2.3
#70	Patch	1997	LKWH	M	I	453	1226	24	*80.2*	<5	0.10	<0.5	<0.2	<0.02	228	<0.5	<0.5	<0.5	2	<0.05	263	<0.2	0.205	<1	<1	0.2	<0.1		2.4
#71	Patch	1997	LKWH	M	I	427	860	26	*79.8*	<5	0.08	<0.5	<0.2	<0.02	262	<0.5	<0.5	<0.5	3	<0.05	260	<0.2	0.196	<1	<1	0.2	<0.1		2.3
#76	Patch	1997	LKWH	M	I	429	1064	21	*79.7*	<5	0.07	<0.5	<0.2	<0.02	136	<0.5	<0.5	<0.5	3	<0.05	256	<0.2	0.063	<1	<1	0.2	<0.1		2.3
#77	Patch	1997	LKWH	M	I	473	1216	37	*80.4*	<5	0.09	<0.5	<0.2	<0.02	261	<0.5	<0.5	<0.5	4	<0.05	256	<0.2	0.142	<1	<1	0.2	<0.1		2.4
#80	Patch	1997	LKWH	M	I	474	1538	35	*81.4*	<5	<0.05	<0.5	<0.2	<0.02	168	<0.5	<0.5	<0.5	2	<0.05	242	<0.2	0.211	<1	<1	0.2	<0.1		2.1
#81	Patch	1997	LKWH	M	I	424	1088	27	*80.1*	<5	0.07	<0.5	<0.2	<0.02	299	<0.5	<0.5	<0.5	2	<0.05	276	<0.2	0.111	<1	<1	0.2	<0.1		2.2
#82	Patch	1997	LKWH	M	I	435	1162	43	*79.5*	<5	0.05	<0.5	<0.2	<0.02	192	<0.5	<0.5	<0.5	2	<0.05	252	<0.2	0.202	<1	<1	0.2	<0.1		2.5
#83	Patch	1997	LKWH	M	I	423	938	23	*78.8*	<5	<0.05	<0.5	<0.2	<0.02	101	<0.5	<0.5	<0.5	3	<0.05	257	<0.2	0.088	<1	<1	0.2	<0.1		2.6

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
#84	Patch	1997	LKWH	M	I	390	734	14	*78.5*	<5	0.08	<0.5	<0.2	<0.02	169	<0.5	<0.5	<0.5	2	<0.05	280	<0.2	0.045	<1	<1	0.2	<0.1		2.7
#85	Patch	1997	LKWH	M	I	368	592	16	*79.0*	<5	0.06	<0.5	<0.2	<0.02	249	<0.5	<0.5	<0.5	3	<0.05	283	<0.2	0.063	<1	<1	0.3	<0.1		2.8
#86	Patch	1997	LKWH	M	I	393	698	23	*80.5*	<5	0.06	<0.5	<0.2	<0.02	152	<0.5	<0.5	<0.5	3	<0.05	257	<0.2	0.062	<1	<1	0.2	<0.1		2.4
	Windy	1996	LKTR	L	C				*76.9*		0.43			<0.02				20.6		0.08	155	1.50	0.025		<0.2	1.8	0.04	<0.2	36.0
#35	Windy	1997	LKTR	L	I	466	884	21	*73.5*	19	0.65	<0.5	<0.2	0.05	52	<0.5	<0.5	50.1	591	<0.05	166	1.3	0.036	<1	<1	2.4	0.2		46.4
#36	Windy	1997	LKTR	L	I	447	870	36	*80.4*	13	0.15	<0.5	<0.2	0.03	44	<0.5	<0.5	10.4	101	<0.05	128	1.0	0.046	<1	<1	2.3	<0.1		29.2
#37	Windy	1997	LKTR	L	I	434	822	16	*78.0*	15	0.35	<0.5	<0.2	0.02	47	<0.5	<0.5	27.9	121	<0.05	157	0.8	0.046	<1	<1	1.3	<0.1		38.7
#38	Windy	1997	LKTR	L	I	447	852	21	*74.9*	25	0.60	<0.5	<0.2	0.05	53	<0.5	<0.5	23.8	782	0.08	166	1.5	0.104	<1	<1	2.4	0.1		37.2
#39	Windy	1997	LKTR	L	I	455	858	19	*74.1*	38	0.62	<0.5	<0.2	0.07	53	<0.5	<0.5	37.8	776	<0.05	167	1.6	0.080	<1	<1	4.0	0.2		44.6
#40	Windy	1997	LKTR	L	I	463	966	24	*79.8*	35	0.73	<0.5	<0.2	0.05	48	<0.5	<0.5	24.8	806	<0.05	134	1.2	0.105	<1	<1	2.8	<0.1		31.6
#41	Windy	1997	LKTR	L	I	436	816	15	*78.7*	9	0.32	<0.5	<0.2	0.02	46	<0.5	<0.5	26.6	146	<0.05	155	0.9	0.026	<1	<1	1.8	<0.1		37.6
#42	Windy	1997	LKTR	L	I	422	768	15	*79.9*	5	0.17	<0.5	<0.2	<0.02	64	<0.5	<0.5	3.8	159	<0.05	190	1.7	0.058	<1	<1	0.8	<0.1		19.6
#43	Windy	1997	LKTR	L	I	402	656	12	*75.3*	7	0.67	<0.5	<0.2	0.03	55	<0.5	<0.5	23.1	162	<0.05	156	1.5	0.028	<1	<1	2.5	<0.1		39.8
#44	Windy	1997	LKTR	L	I	400	630	14	*74.3*	6	0.51	<0.5	<0.2	0.03	50	<0.5	<0.5	33.8	191	<0.05	189	1.4	0.038	<1	<1	1.9	<0.1		46.2
#49	Windy	1997	LKTR	L	I	446	972	19	*77.4*	17	0.77	<0.5	<0.2	0.03	70	<0.5	<0.5	25.7	302	<0.05	145	1.2	0.056	<1	<1	2.5	<0.1		40.1
#50	Windy	1997	LKTR	L	I	456	998	27	*82.3*	38	0.33	<0.5	<0.2	0.06	54	<0.5	<0.5	21.7	766	<0.05	114	0.7	0.084	<1	<1	2.4	<0.1		26.8
#51	Windy	1997	LKTR	L	I	470	1106	20	*81.6*	20	0.37	<0.5	<0.2	0.03	53	<0.5	<0.5	49.1	280	<0.05	131	0.8	0.054	<1	<1	1.7	0.2		37.7
#52	Windy	1997	LKTR	L	I	419	772	13	*74.9*	13	0.59	<0.5	<0.2	0.02	69	<0.5	<0.5	8.6	319	<0.05	142	1.3	0.064	<1	<1	1.9	<0.1		34.3
#53	Windy	1997	LKTR	L	I	431	930	23	*80.0*	17	0.35	<0.5	<0.2	0.06	60	<0.5	<0.5	18.8	460	<0.05	124	1.2	0.071	<1	<1	1.8	<0.1		34.5
#54	Windy	1997	LKTR	L	I	453	966	18	*81.9*	10	0.44	<0.5	<0.2	0.02	60	<0.5	<0.5	19.0	554	<0.05	118	0.7	0.047	<1	<1	2.0	<0.1		29.7
#55	Windy	1997	LKTR	L	I	442	902	15	*81.0*	6	0.37	<0.5	<0.2	0.02	52	<0.5	<0.5	13.1	189	<0.05	126	0.8	0.024	<1	<1	1.5	<0.1		27.1
#56	Windy	1997	LKTR	L	I	437	864	14	*79.2*	7	0.30	<0.5	<0.2	<0.02	54	<0.5	<0.5	20.5	255	<0.05	144	1.0	0.027	<1	<1	1.7	<0.1		35.4
#57	Windy	1997	LKTR	L	I	423	898	12	*79.7*	<5	0.28	<0.5	<0.2	<0.02	68	<0.5	<0.5	8.5	112	<0.05	126	1.1	0.029	<1	<1	1.4	<0.1		27.9
#58	Windy	1997	LKTR	L	I	422	798	15	*81.1*	7	0.38	<0.5	<0.2	0.02	59	<0.5	<0.5	21.4	219	<0.05	133	0.9	0.026	<1	<1	1.5	<0.1		33.6
#59	Windy	1997	LKTR	L	I	418	776	14	*80.0*	6	0.22	<0.5	<0.2	<0.02	63	<0.5	<0.5	14.2	205	<0.05	144	1.0	0.045	<1	<1	1.6	<0.1		32.8
#60	Windy	1997	LKTR	L	I	401	664	12	*80.9*	7	0.28	<0.5	<0.2	<0.02	63	<0.5	<0.5	14.8	167	<0.05	121	0.8	0.039	<1	<1	1.5	<0.1		26.3
#61	Windy	1997	LKTR	L	I	399	620	16		7	0.45	<0.5	<0.2	0.05	85	<0.5	<0.5	14.0	722	<0.05	138	1.1	0.153	<1	<1	2.0	<0.1		35.6
#62	Windy	1997	LKTR	L	I	406	802	14	*80.7*	7	0.29	<0.5	<0.2	<0.02	72	<0.5	<0.5	17.0	97	<0.05	131	0.9	0.033	<1	<1	1.5	<0.1		31.6
#63	Windy	1997	LKTR	L	I	458	932	26	*82.4*	40	0.31	<0.5	<0.2	0.05	58	<0.5	<0.5	26.0	790	<0.05	122	0.8	0.069	<1	<1	1.8	0.1		30.2
#35	Windy	1997	LKTR	M	I	466	884	21	*80.8*	<5	0.10	<0.5	<0.2	<0.02	122	<0.5	<0.5	<0.5	6	<0.05	256	<0.2	0.036	<1	<1	0.5	<0.1		3.0
#36	Windy	1997	LKTR	M	I	447	870	36	*78.5*	<5	0.08	<0.5	<0.2	<0.02	167	<0.5	<0.5	<0.5	3	<0.05	271	<0.2	0.029	<1	<1	0.5	<0.1		2.7
#37	Windy	1997	LKTR	M	I	434	822	16	*76.4*	<5	0.11	<0.5	<0.2	<0.02	124	<0.5	<0.5	<0.5	4	<0.05	256	<0.2	0.021	<1	<1	0.5	<0.1		2.8
#38	Windy	1997	LKTR	M	I	447	852	21	*80.3*	<5	0.07	<0.5	<0.2	<0.02	90	<0.5	<0.5	<0.5	5	<0.05	255	<0.2	0.057	<1	<1	0.5	<0.1		2.7
#39	Windy	1997	LKTR	M	I	455	858	19	*81.4*	<5	0.06	<0.5	<0.2	<0.02	119	<0.5	<0.5	<0.5	4	<0.05	237	<0.2	0.041	<1	<1	0.5	<0.1		2.4
#40	Windy	1997	LKTR	M	I	463	966	24	*80.2*	<5	0.11	<0.5	<0.2	<0.02	185	<0.5	<0.5	<0.5	6	<0.05	255	<0.2	0.045	<1	<1	0.5	<0.1		2.6
#41	Windy	1997	LKTR	M	I	436	816	15	*77.9*	<5	0.09	<0.5	<0.2	<0.02	182	<0.5	<0.5	<0.5	3	<0.05	279	<0.2	0.026	<1	<1	0.5	<0.1		2.7
#42	Windy	1997	LKTR	M	I	422	768	15	*78.7*	<5	0.07	<0.5	<0.2	<0.02	115	<0.5	<0.5	<0.5	4	<0.05	280	<0.2	0.066	<1	<1	0.5	<0.1		2.3
#43	Windy	1997	LKTR	M	I	402	656	12	*76.7*	<5	0.10	<0.5	<0.2	<0.02	75	<0.5	<0.5	<0.5	3	<0.05	300	<0.2	0.018	<1	<1	0.5	<0.1		2.9
#44	Windy	1997	LKTR	M	I	400	630	14	*77.7*	<5	0.06	<0.5	<0.2	<0.02	113	<0.5	<0.5	<0.5	5	<0.05	294	<0.2	0.029	<1	<1	0.5	<0.1		2.7
#49	Windy	1997	LKTR	M	I	446	972	19	*80.6*	<5	0.08	<0.5	<0.2	<0.02	81	<0.5	<0.5	<0.5	4	<0.05	261	<0.2	0.029	<1	<1	0.5	<0.1		2.6
#50	Windy	1997	LKTR	M	I	456	998	27	*82.2*	<5	0.06	<0.5	<0.2	<0.02	139	<0.5	<0.5	<0.5	8	<0.05	235	<0.2	0.041	<1	<1	0.4	<0.1		2.7
#51	Windy	1997	LKTR	M	I	470	1106	20	*78.9*	<5	0.07	<0.5	<0.2	<0.02	121	<0.5	<0.5	<0.5	3	<0.05	273	<0.2	0.033	<1	<1	0.6	<0.1		2.7
#52	Windy	1997	LKTR	M	I	419	772	13	*79.0*	<5	0.06	<0.5	<0.2	<0.02	118	<0.5	<0.5	<0.5	5	<0.05	278	<0.2	0.030	<1	<1	0.5	<0.1		2.7
#53	Windy	1997	LKTR	M	I	431	930	23	*79.5*	<5	0.08	<0.5	<0.2	<0.02	174	<0.5	<0.5	<0.5	4	<0.05	255	<0.2	0.067	<1	<1	0.5	<0.1		2.6
#54	Windy	1997	LKTR	M	I	453	966	18	*80.2*	<5	0.07	<0.5	<0.2	<0.02	91	<0.5	<0.5	<0.5	3	<0.05	252	<0.2	0.031	<1	<1	0.5	<0.1		2.4
#55	Windy	1997	LKTR	M	I	442	902	15	*79.0*	<5	0.09	<0.5	<0.2	<0.02	103	<0.5	<0.5	<0.5	3	<0.05	271	<0.2	0.030	<1	<1	0.5	<0.1		2.8
#56	Windy	1997	LKTR	M	I	437	864	14	*77.7*	<5	0.10	<0.5	<0.2	<0.02	66	<0.5	<0.5	<0.5	3	<0.05	268	<0.2	0.020	<1	<1	0.5	<0.1		2.6
#57	Windy	1997	LKTR	M	I	423	898	12	*78.1*	<5	0.09	<0.5	<0.2	<0.02	78	<0.5	<0.5	<0.5	3	<0.05	286	<0.2	0.024	<1	<1	0.5	<0.1		2.7
#58	Windy	1997	LKTR	M	I	422	798	15	*79.2*	<5	0.12	<0.5	<0.2	<0.02	72	<0.5	<0.5	<0.5	2	<0.05	264	<0.2	0.021	<1	<1	0.5	<0.1		2.6

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
#59	Windy	1997	LKTR	M	I	418	776	14	*78.8*	<5	0.10	<0.5	<0.2	<0.02	101	<0.5	<0.5	<0.5	2	<0.05	282	<0.2	0.031	<1	<1	0.5	<0.1		2.7
#60	Windy	1997	LKTR	M	I	401	664	12	*79.5*	<5	0.06	<0.5	<0.2	<0.02	94	<0.5	<0.5	<0.5	2	<0.05	278	<0.2	0.032	<1	<1	0.5	<0.1		2.6
#61	Windy	1997	LKTR	M	I	399	620	16	*80.0*	<5	0.06	<0.5	<0.2	<0.02	112	<0.5	<0.5	<0.5	3	<0.05	277	<0.2	0.060	<1	<1	0.4	<0.1		2.5
#62	Windy	1997	LKTR	M	I	406	802	14	*78.5*	<5	0.08	<0.5	<0.2	<0.02	265	<0.5	<0.5	<0.5	3	<0.05	278	<0.2	0.022	<1	<1	0.4	<0.1		2.8
#63	Windy	1997	LKTR	M	I	458	932	26	*82.0*	<5	<0.05	<0.5	<0.2	<0.02	93	<0.5	<0.5	<0.5	3	<0.05	243	<0.2	0.064	<1	<1	0.4	<0.1		2.5
	Windy	1996	LKWH	L	C				*78.2*		0.62			<0.02				5.5		0.15	189	2.30	0.068		<0.2	1.4	0.03	<0.2	39.1
	Windy	1996	LKWH	M	C				*76.0*		0.13			<0.02				0.25		<0.05	264	0.10	0.016		<0.2	0.5	<0.01	<0.2	3.2
#69	Pelvic	1998	LKTR	L	I	458	1010	26	*82.2*	13	<0.05	<0.5	<0.2	0.04	103	<0.5	<0.5	3.5	370	<0.05	145	1.2	0.327	<1	<1	0.7	<0.1		21.3
#70	Pelvic	1998	LKTR	L	I	430	1102	17	*79.8*	8	0.08	<0.5	<0.2	0.05	62	<0.5	<0.5	24.2	134	<0.05	124	1.4	0.250	<1	<1	1.2	0.2		33.0
#71	Pelvic	1998	LKTR	L	I	457	982	20	*82.6*	<5	0.06	<0.5	<0.2	0.05	63	<0.5	<0.5	14.8	106	<0.05	112	1.2	0.359	<1	<1	1.2	0.2		28.8
#72	Pelvic	1998	LKTR	L	I	753	4250	24	*76.6*	<5	<0.05	<0.5	<0.2	0.02	60	<0.5	<0.5	12.8	390	<0.05	95	0.8	0.449	<1	<1	0.8	0.2		26.4
#114	Pelvic	1998	LKTR	L	I	623	2550	23	*75.5*	<5	<0.05	<0.5	<0.2	<0.02	97	<0.5	<0.5	6.2	336	<0.05	102	1.0	0.383	<1	<1	0.8	<0.1		23.7
#144	Pelvic	1998	LKTR	L	I	667	2800	25	*74.6*	<5	0.05	<0.5	<0.2	<0.02	72	<0.5	<0.5	12.7	230	<0.05	122	1.0	0.503	<1	<1	0.9	0.2		26.5
#145	Pelvic	1998	LKTR	L	I	650	3000	24	*79.6*	<5	<0.05	<0.5	<0.2	<0.02	88	<0.5	<0.5	0.90	92	<0.05	170	1.4	0.382	<1	<1	0.6	<0.1		18.2
#184	Pelvic	1998	LKTR	L	I	435	952	24	*81.8*	13	0.05	<0.5	<0.2	0.04	66	<0.5	<0.5	10.0	566	<0.05	120	1.1	0.417	<1	<1	1.1	<0.1		27.6
#185	Pelvic	1998	LKTR	L	I	435	856	8		5	0.06	<0.5	<0.2	<0.02	80	<0.5	<0.5	5.6	86	<0.05	109	0.6	0.169	<1	<1	1.4	<0.1		21.8
#204	Pelvic	1998	LKTR	L	I	442	964	8	*80.2*	<5	<0.05	<0.5	<0.2	<0.02	52	<0.5	<0.5	7.8	55	<0.05	131	1.2	0.114	<1	<1	1.2	<0.1		24.2
#205	Pelvic	1998	LKTR	L	I	456	1062	11	*69.4*	5	0.06	<0.5	<0.2	<0.02	69	<0.5	<0.5	15.8	98	<0.05	101	0.9	0.216	<1	<1	1.0	0.3		26.8
#240	Pelvic	1998	LKTR	L	I	646	2850	28	*76.7*	<5	<0.05	<0.5	<0.2	0.02	63	<0.5	<0.5	17.2	247	<0.05	99	0.9	0.396	<1	<1	0.9	0.2		27.1
#241	Pelvic	1998	LKTR	L	I	520	1788	22	*77.5*	<5	0.05	<0.5	<0.2	0.03	75	<0.5	<0.5	11.6	283	<0.05	125	1.3	0.433	<1	<1	1.0	0.1		27.8
#242	Pelvic	1998	LKTR	L	I	628	2425	18	*74.9*	<5	<0.05	<0.5	<0.2	<0.02	57	<0.5	<0.5	10.3	86	<0.05	110	1.0	0.280	<1	<1	0.9	0.2		23.8
#243	Pelvic	1998	LKTR	L	I	694	3225	24	*76.2*	6	0.06	<0.5	<0.2	<0.02	74	<0.5	<0.5	10.9	277	<0.05	122	1.1	0.403	<1	<1	1.6	<0.1		26.1
#244	Pelvic	1998	LKTR	L	I	446	1028	25	*82.0*	10	0.06	<0.5	<0.2	0.03	78	<0.5	<0.5	2.5	283	<0.05	142	1	0.274	<1	<1	0.8	<0.1		19.3
#336	Pelvic	1998	LKTR	L	I	406	892	21	*80.6*	7	<0.05	<0.5	<0.2	0.03	80	<0.5	<0.5	2.5	177	<0.05	169	1.4	0.357	<1	<1	0.6	<0.1		19.4
#337	Pelvic	1998	LKTR	L	I	431	880	25	*73.2*	19	0.09	<0.5	<0.2	0.08	65	<0.5	<0.5	26.8	434	<0.05	161	1.9	0.418	<1	<1	1.4	0.2		44.1
#338	Pelvic	1998	LKTR	L	I	438	958	23	*79.0*	18	<0.05	<0.5	<0.2	0.08	64	<0.5	<0.5	16.6	430	<0.05	132	1.2	0.443	<1	<1	1.1	0.1		30.1
#339	Pelvic	1998	LKTR	L	I	670	2990	32	*75.8*	5	<0.05	<0.5	<0.2	0.04	53	<0.5	<0.5	25.9	422	<0.05	109	1.0	0.543	<1	<1	1.2	0.3		32.3
#340	Pelvic	1998	LKTR	L	I	430	1014	24	*74.1*	25	0.12	<0.5	<0.2	0.06	75	<0.5	<0.5	17.9	668	<0.05	152	2.0	0.513	<1	<1	1.9	0.2		44.8
#69	Pelvic	1998	LKTR	M	I	458	1010	26	*81.0*	<5	<0.05	<0.5	<0.2	<0.02	92	<0.5	<0.5	<0.5	3	<0.05	246	<0.2	0.275	<1	<1	0.2	<0.1		2.5
#70	Pelvic	1998	LKTR	M	I	430	1102	17	*80.2*	<5	<0.05	<0.5	<0.2	<0.02	88	<0.5	<0.5	<0.5	2	<0.05	249	<0.2	0.383	<1	<1	0.2	<0.1		2.6
#71	Pelvic	1998	LKTR	M	I	457	982	20	*78.5*	<5	<0.05	<0.5	<0.2	<0.02	81	<0.5	<0.5	<0.5	4	<0.05	256	<0.2	0.224	<1	<1	0.2	<0.1		2.8
#72	Pelvic	1998	LKTR	M	I	753	4250	24	*77.9*	<5	0.06	<0.5	<0.2	<0.02	68	<0.5	<0.5	<0.5	3	<0.05	236	<0.2	0.378	<1	<1	0.2	<0.1		3.1
#114	Pelvic	1998	LKTR	M	I	623	2550	23	*77.3*	<5	<0.05	<0.5	<0.2	<0.02	115	<0.5	<0.5	<0.5	2	<0.05	253	<0.2	0.296	<1	<1	0.2	<0.1		2.8
#144	Pelvic	1998	LKTR	M	I	667	2800	25	*78.7*	<5	<0.05	<0.5	<0.2	<0.02	60	<0.5	<0.5	<0.5	2	<0.05	260	<0.2	0.359	<1	<1	0.2	<0.1		2.6
#145	Pelvic	1998	LKTR	M	I	650	3000	24	*79.0*	<5	0.05	<0.5	<0.2	<0.02	127	<0.5	<0.5	<0.5	4	<0.05	255	<0.2	0.315	<1	<1	0.2	<0.1		2.4
#184	Pelvic	1998	LKTR	M	I	435	952	24	*80.2*	<5	<0.05	<0.5	<0.2	<0.02	133	<0.5	<0.5	<0.5	3	<0.05	280	<0.2	0.342	<1	<1	0.2	<0.1		2.5
#185	Pelvic	1998	LKTR	M	I	435	856	8	*78.8*	<5	<0.05	<0.5	<0.2	<0.02	86	<0.5	<0.5	<0.5	2	<0.05	278	<0.2	0.168	<1	<1	0.2	<0.1		2.9
#204	Pelvic	1998	LKTR	M	I	442	964	8	*79.6*	<5	<0.05	<0.5	<0.2	<0.02	74	<0.5	<0.5	<0.5	1	<0.05	265	<0.2	0.148	<1	<1	0.2	<0.1		2.6
#205	Pelvic	1998	LKTR	M	I	456	1062	11	*78.1*	<5	<0.05	<0.5	<0.2	<0.02	106	<0.5	<0.5	<0.5	2	<0.05	276	<0.2	0.216	<1	<1	0.2	<0.1		2.8
#240	Pelvic	1998	LKTR	M	I	646	2850	28	*79.4*	<5	0.06	<0.5	<0.2	<0.02	54	<0.5	<0.5	<0.5	1	<0.05	243	<0.2	0.404	<1	<1	0.2	<0.1		2.3
#241	Pelvic	1998	LKTR	M	I	520	1788	22	*80.0*	<5	<0.05	<0.5	<0.2	<0.02	70	<0.5	<0.5	<0.5	3	<0.05	240	<0.2	0.326	<1	<1	0.2	<0.1		2.6
#242	Pelvic	1998	LKTR	M	I	628	2425	18	*79.4*	<5	<0.05	<0.5	<0.2	<0.02	104	<0.5	<0.5	<0.5	3	<0.05	251	<0.2	0.350	<1	<1	0.2	<0.1		2.7
#243	Pelvic	1998	LKTR	M	I	694	3225	24	*77.8*	<5	0.05	<0.5	<0.2	<0.02	125	<0.5	<0.5	<0.5	3	<0.05	252	<0.2	0.348	<1	<1	0.2	<0.1		3.0
#244	Pelvic	1998	LKTR	M	I	446	1028	25	*79.4*	<5	<0.05	<0.5	<0.2	<0.02	114	<0.5	<0.5	<0.5	3	<0.05	261	<0.2	0.296	<1	<1	0.2	<0.1		2.2
#336	Pelvic	1998	LKTR	M	I	406	892	21	*80.3*	<5	<0.05	<0.5	<0.2	<0.02	163	<0.5	<0.5	<0.5	2	<0.05	249	<0.2	0.320	<1	<1	0.2	<0.1		2.3
#337	Pelvic	1998	LKTR	M	I	431	880	25	*80.6*	<5	<0.05	<0.5	<0.2	<0.02	194	<0.5	<0.5	<0.5	2	<0.05	246	<0.2	0.284	<1	<1	0.2	<0.1		2.4
#338	Pelvic	1998	LKTR	M	I	438	958	23	*80.0*	<5	<0.05	<0.5	<0.2	<0.02	81	<0.5	<0.5	<0.5	3	<0.05	272	<0.2	0.328	<1	<1	0.2	<0.1		2.6
#339	Pelvic	1998	LKTR	M	I	670	2990	32	*78.3*	<5	<0.05	<0.5	<0.2	<0.02	65	<0.5	<0.5	<0.5	2	<0.05	244	<0.2	0.409	<1	<1	0.2	<0.1		3.0
#340	Pelvic	1998	LKTR	M	I	430	1014	24	*79.8*	<5	<0.05	<0.5	<0.2	<0.02	92	<0.5	<0.5	<0.5	3	<0.05	252	<0.2	0.279	<1	<1	0.2	<0.1		2.5

Appendix D13. Metal concentrations (µg/g wet weight) in fish tissues from the Doris Hinge lakes, 1995-1998.

Fish	Lake	Year	Species	Tissue	Comp. / Ind.	Length (mm)	Weight (g)	Age (yr)	*Moisture (%)*	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tellurium	Zinc
#28	Pelvic	1998	LKWH	L	I	381	676	17		<5	0.06	<0.5	<0.2	0.07	69	<0.5	<0.5	7.0	107	<0.05	144	1.3	0.234	<1	<1	1.2	<0.1		27.8
#29	Pelvic	1998	LKWH	L	I	341	512	14		<5	0.06	<0.5	<0.2	0.04	118	<0.5	<0.5	5.0	107	<0.05	161	1.9	0.285	<1	<1	1.4	<0.1		28.1
#30	Pelvic	1998	LKWH	L	I	370	650	15	*75.9*	<5	0.05	<0.5	<0.2	0.04	110	<0.5	<0.5	6.2	132	<0.05	187	3.4	0.065	<1	<1	1.1	<0.1		25.6
#31	Pelvic	1998	LKWH	L	I	411	954	24	*82.5*	<5	<0.05	<0.5	<0.2	0.02	69	<0.5	<0.5	5.3	60	<0.05	133	1.4	0.258	<1	<1	0.6	<0.1		19.6
#32	Pelvic	1998	LKWH	L	I	410	876	24	*80.4*	7	<0.05	<0.5	<0.2	0.08	55	<0.5	<0.5	6.2	159	<0.05	131	1.6	0.290	<1	<1	1.2	<0.1		21.9
#33	Pelvic	1998	LKWH	L	I	379	714	16		<5	<0.05	<0.5	<0.2	0.06	64	<0.5	<0.5	6.7	138	<0.05	145	1.6	0.151	<1	<1	1.4	<0.1		26.3
#63	Pelvic	1998	LKWH	L	I	399	698	30		11	0.06	<0.5	<0.2	0.09	56	<0.5	<0.5	4.4	159	<0.05	146	1.9	0.556	<1	<1	1.4	<0.1		22.9
#64	Pelvic	1998	LKWH	L	I	377	732	22		<5	0.06	<0.5	<0.2	0.21	75	<0.5	<0.5	6.2	357	<0.05	142	2.3	0.304	<1	<1	1.9	<0.1		24.9
#65	Pelvic	1998	LKWH	L	I	395	816	21	*81.1*	<5	<0.05	<0.5	<0.2	0.09	61	<0.5	<0.5	4.2	175	<0.05	124	1.5	0.103	<1	<1	0.9	<0.1		19.7
#66	Pelvic	1998	LKWH	L	I	365	612	14		<5	0.08	<0.5	<0.2	0.05	94	<0.5	<0.5	4.0	114	<0.05	152	1.7	0.135	<1	<1	1.3	<0.1		28.4
#67	Pelvic	1998	LKWH	L	I	381	734	14	*80.8*	<5	<0.05	<0.5	<0.2	0.02	49	<0.5	<0.5	3.1	97	<0.05	154	1.6	0.074	<1	<1	0.8	<0.1		18.8
#68	Pelvic	1998	LKWH	L	I	316	412	10		<5	0.05	<0.5	<0.2	0.08	74	<0.5	<0.5	4.9	95	<0.05	151	1.7	0.112	<1	<1	1.2	<0.1		25.7
#110	Pelvic	1998	LKWH	L	I	409	910	24	*77.5*	5	<0.05	<0.5	<0.2	0.05	58	<0.5	<0.5	3.5	105	<0.05	148	1.6	0.396	<1	<1	1.2	<0.1		24.7
#111	Pelvic	1998	LKWH	L	I	400	878	29	*81.5*	<5	<0.05	<0.5	<0.2	0.13	45	<0.5	<0.5	2.8	193	<0.05	127	1.7	0.285	<1	<1	1.0	<0.1		19.7
#112	Pelvic	1998	LKWH	L	I	382	676	23		5	0.05	<0.5	<0.2	0.17	123	<0.5	<0.5	5.1	376	<0.05	162	1.4	0.268	<1	<1	1.9	<0.1		24.6
#113	Pelvic	1998	LKWH	L	I	407	824	34	*75.5*	15	0.09	<0.5	<0.2	0.07	54	<0.5	<0.5	5.2	178	0.08	153	1.5	0.514	<1	<1	1.4	<0.1		24.0
#140	Pelvic	1998	LKWH	L	I	370	722	20	*77.6*	<5	<0.05	<0.5	<0.2	0.07	63	<0.5	<0.5	1.4	113	<0.05	162	1.7	0.073	<1	<1	0.8	<0.1		18.9
#141	Pelvic	1998	LKWH	L	I	383	698	22		10	0.07	<0.5	<0.2	0.17	161	<0.5	<0.5	4.1	127	<0.05	144	1.3	0.250	<1	<1	1.2	<0.1		24.2
#142	Pelvic	1998	LKWH	L	I	382	748	21		<5	0.06	<0.5	<0.2	0.10	73	<0.5	<0.5	5.8	193	<0.05	157	1.6	0.233	<1	<1	1.4	<0.1		28.3
#143	Pelvic	1998	LKWH	L	I	381	754	22		9	0.06	<0.5	<0.2	0.17	58	<0.5	<0.5	6.6	345	<0.05	147	2.4	0.289	<1	<1	1.6	<0.1		27.0
#182	Pelvic	1998	LKWH	L	I	406	806	32	*77.8*	14	0.06	<0.5	<0.2	0.07	52	<0.5	<0.5	3.6	148	<0.05	138	1.6	0.315	<1	<1	1.2	<0.1		22.0
#183	Pelvic	1998	LKWH	L	I	386	722	25		10	0.07	<0.5	<0.2	0.08	53	<0.5	<0.5	4.1	262	<0.05	145	1.4	0.315	<1	<1	1.2	<0.1		24.0
#28	Pelvic	1998	LKWH	M	I	381	676	17		<5	<0.05	<0.5	<0.2	<0.02	261	<0.5	<0.5	<0.5	2	<0.05	249	0.3	0.082	<1	<1	0.3	<0.1		2.8
#29	Pelvic	1998	LKWH	M	I	341	512	14	*80.2*	<5	<0.05	<0.5	<0.2	<0.02	143	<0.5	<0.5	<0.5	2	<0.05	262	<0.2	0.102	<1	<1	0.2	<0.1		2.6
#30	Pelvic	1998	LKWH	M	I	370	650	15	*79.1*	<5	<0.05	<0.5	<0.2	<0.02	114	<0.5	<0.5	<0.5	2	<0.05	259	<0.2	0.042	<1	<1	0.3	<0.1		2.5
#31	Pelvic	1998	LKWH	M	I	411	954	24	*79.8*	<5	<0.05	<0.5	<0.2	<0.02	136	<0.5	<0.5	<0.5	1	<0.05	259	<0.2	0.222	<1	<1	0.2	<0.1		2.3
#32	Pelvic	1998	LKWH	M	I	410	876	24	*79.6*	<5	<0.05	<0.5	<0.2	<0.02	142	<0.5	<0.5	<0.5	3	<0.05	255	<0.2	0.117	<1	<1	0.3	<0.1		2.4
#33	Pelvic	1998	LKWH	M	I	379	714	16	*79.5*	<5	<0.05	<0.5	<0.2	<0.02	158	<0.5	<0.5	<0.5	2	<0.05	263	<0.2	0.047	<1	<1	0.3	<0.1		2.7
#63	Pelvic	1998	LKWH	M	I	399	698	30	*82.5*	<5	<0.05	<0.5	<0.2	<0.02	216	<0.5	<0.5	<0.5	4	<0.05	219	<0.2	0.184	<1	<1	0.2	<0.1		2.4
#64	Pelvic	1998	LKWH	M	I	377	732	22	*79.1*	<5	<0.05	<0.5	<0.2	<0.02	172	<0.5	<0.5	<0.5	3	<0.05	264	0.2	0.035	<1	<1	0.4	<0.1		2.6
#65	Pelvic	1998	LKWH	M	I	395	816	21	*80.3*	<5	<0.05	<0.5	<0.2	<0.02	160	<0.5	<0.5	<0.5	2	<0.05	248	<0.2	0.037	<1	<1	0.2	<0.1		2.7
#66	Pelvic	1998	LKWH	M	I	365	612	14	*80.1*	<5	0.06	<0.5	<0.2	<0.02	252	<0.5	<0.5	<0.5	2	<0.05	264	0.3	0.065	<1	<1	0.3	<0.1		2.7
#67	Pelvic	1998	LKWH	M	I	381	734	14	*78.8*	<5	<0.05	<0.5	<0.2	<0.02	284	<0.5	<0.5	<0.5	3	<0.05	267	0.3	0.053	<1	<1	0.3	<0.1		2.6
#68	Pelvic	1998	LKWH	M	I	316	412	10	*79.9*	<5	<0.05	<0.5	<0.2	<0.02	232	<0.5	<0.5	<0.5	3	<0.05	254	0.2	0.031	<1	<1	0.3	<0.1		2.9
#110	Pelvic	1998	LKWH	M	I	409	910	24	*78.8*	<5	<0.05	<0.5	<0.2	<0.02	141	<0.5	<0.5	<0.5	2	<0.05	232	<0.2	0.144	<1	<1	0.2	<0.1		2.4
#111	Pelvic	1998	LKWH	M	I	400	878	29	*78.6*	<5	<0.05	<0.5	<0.2	<0.02	187	<0.5	<0.5	<0.5	4	<0.05	252	<0.2	0.082	<1	<1	0.2	<0.1		2.5
#112	Pelvic	1998	LKWH	M	I	382	676	23	*80.0*	<5	<0.05	<0.5	<0.2	<0.02	171	<0.5	<0.5	<0.5	3	<0.05	243	<0.2	0.044	<1	<1	0.3	<0.1		2.4
#113	Pelvic	1998	LKWH	M	I	407	824	34	*81.2*	<5	<0.05	<0.5	<0.2	<0.02	231	<0.5	<0.5	<0.5	3	<0.05	223	<0.2	0.139	<1	<1	0.2	<0.1		2.3
#140	Pelvic	1998	LKWH	M	I	370	722	20	*79.1*	<5	<0.05	<0.5	<0.2	<0.02	146	<0.5	<0.5	<0.5	2	<0.05	254	<0.2	0.037	<1	<1	0.3	<0.1		2.6
#141	Pelvic	1998	LKWH	M	I	383	698	22	*80.5*	<5	<0.05	<0.5	<0.2	<0.02	170	<0.5	<0.5	<0.5	2	<0.05	252	<0.2	0.050	<1	<1	0.2	<0.1		2.5
#142	Pelvic	1998	LKWH	M	I	382	748	21	*79.8*	<5	<0.05	<0.5	<0.2	<0.02	145	<0.5	<0.5	<0.5	2	<0.05	262	<0.2	0.044	<1	<1	0.3	<0.1		2.6
#143	Pelvic	1998	LKWH	M	I	381	754	22	*79.8*	<5	<0.05	<0.5	<0.2	<0.02	151	<0.5	<0.5	<0.5	3	<0.05	264	<0.2	0.056	<1	<1	0.3	<0.1		2.4
#182	Pelvic	1998	LKWH	M	I	406	806	32	*81.3*	<5	<0.05	<0.5	<0.2	<0.02	100	<0.5	<0.5	<0.5	3	<0.05	247	<0.2	0.121	<1	<1	0.2	<0.1		2.2
#183	Pelvic	1998	LKWH	M	I	386	722	25	*80.0*	<5	<0.05	<0.5	<0.2	<0.02	144	<0.5	<0.5	<0.5	2	<0.05	257	<0.2	0.104	<1	<1	0.3	<0.1		2.4

NOTE: LKTR = lake trout; LKWH = lake whitefish; CISC = lake cisco; K = kidney; L = liver; M = muscle; C = composite sample; I = individual fish sample; all metal concentrations are total metals

Appendix E1. Habitat Classification System for Arctic Streams

(from Rescan 1998, 2001)

Boulder Garden (BG) Large boulders, usually only partially submerged, distributed through the stream channel and providing high quality cover for juvenile and small fish. Often associated or in combination with R3 habitat type.

Cascade (Ca) A series of small steps where stream falls over channel obstructions such as boulders and organic debris. Often in series with Run and/or Pool habitat types.

Chute (Ch) A steep section of the stream channel.

Falls (Fa) Water flows over a channel obstruction and into a downstream plunge pool. Obstruction height greater than 0.75 m and forms an obvious barrier to fish passage.

Shelf (Sh) Very shallow stream flow over a bedrock outcrop. When combined with a steep gradient, forms a fish passage barrier. Poor quality habitat.

Flat (F) Areas of still, often stagnant water. Substrate usually covered in silt or organic matter. Though fish habitat quality is usually poor, deep flats can provide cover for holding fish.

- **F1** – best quality flat habitat; depth greater than 0.75 m.
- **F2** – intermediate quality flat habitat; depth 0.3 to 0.75 m.
- **F3** – poorest quality flat habitat; depth less than 0.3 m.

Pools (P) Portions of the stream with reduced current velocity at low flow and deeper water than surrounding areas. Often associated with Run habitat types.

- **P1** – best quality pool habitat; depth greater than 0.75 m.
- **P2** – intermediate quality pool habitat; depth 0.3 to 0.75 m.
- **P3** – poorest quality pool habitat; depth less than 0.3 m.

Rapids (Ra) Water flows swiftly over completely or partially submerged materials to produce intense surface agitation. Usually greater than 0.2 m in depth, with a gradient of greater than 4%.

Riffle (Rf) Shallow rapids where the water flows swiftly over completely or partially submerged materials to produce surface agitation. Usually less than 0.2 m in depth, with a gradient of less than 4%.

Run (R) Areas of swiftly flowing water, without surface waves, which approximates uniform flow and in which the slope of water surface is roughly parallel to the overall gradient of the stream reach.

- **R1** – best quality run habitat; depth greater than 0.75 m.
- **R2** – intermediate quality run habitat; depth 0.3 to 0.75 m.
- **R3** – poorest quality run habitat; depth less than 0.3 m.

Appendix E1. Habitat Classification System (continued).

STREAM MORPHOLOGY CLASSIFICATION

Channel Type (C)

C1 – single stream channel (no bars, islands, or side channels) throughout the survey section.

C2 – occasional bars, creating areas within the survey section with more than one channel. No more than 50 % of the survey section has multiple channels.

C3 – stream channel is heavily braided. More than 50 % of the survey section consists of multiple channels.

Channel Boundary Type (D)

D1 – stream is confined to a well defined channel with a distinct boundary at the waters edge.

D2 – up to 50 % of the stream survey section possesses no distinct channel.

D3 – there is no distinct channel. Stream is often dispersed through grasses and other vegetation.

STREAM HABITAT SUITABILITY CLASSIFICATION

The suitability of a stream's habitat with respect to spawning, rearing, adult feeding, overwintering, and migration is expressed using a qualitative numerical scale from 0 to 4. Under this scheme:

0 = no habitat present,
1 = poor,
2 = fair,
3 = good, and
4 = excellent habitat.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter		Watercourse	DORIS OUTFLOW				
		Site No.[a]	# 25 u/s of waterfall				
		Date	4-Jul-96			14-Aug-97	25-Aug-00
		Location (m)	0-100	100-200	200-300		
		Distance (m)	100	100	100	175	150
		Latitude	N68°08.550'	N68°08.779'	N68°09.055'		
		Longitude	W106°35.145'	W106°34.857'	W106°34.811'		
Stage						Moderate	Moderate
Water Temperature (°C)							9
Water Colour							clear
Channel / Boundary Type [b]						C1, D1	
Gradient (%)							1
Wetted	Mean		7.8	6.3	10.5	3.0	2.5
Width (m)	Min		4.2	4.4	7.1		
	Max		18.9	9.9	18.6		
Depth (m)	Mean					0.45	0.35
	Mean Maximum Pool Depth					1.10	1.20
	Mean Maximum Riffle Depth					0.25	0.15
Mean Velocity (m/s)			1.04	0.78	0.76		
Instream	Pool - Class P1		40	20	20	20	
Habitat[b] **(%)**	Pool - Class P2						5
	Pool - Class P3						5
	Riffle					30	10
	Rapid		50			30	
	Run - Class 1		10	80	80		
	Run - Class 2					10	60
	Run - Class 3						20
	Flat - Class 1						
	Chute						
	Cascade						
	Shelf					10	
Substrate	Organic matter						5
(%)	Silt						5
	Sand					2.5	50
	Small Gravel						25
	Large Gravel					2.5	7.5
	Cobble					10	2.5
	Boulder					25	5
	Bedrock					60	
	Dominant Particle Size						
	Co-dominant Particle Size						
	Compaction (%)						
	Embeddedness (%)						
Instream	Pool					20	5
Cover (%)	Boulder					65	5
	Cutbank					5	5
	Instream Vegetation					5	
	Overhanging Vegetation					5	
	Macrophytes/Vegetation						85
Habitat	Spawning					3	2
Suitability[b]	Rearing					3	2
	Adult Feeding					3	1
	Overwintering					2	0
	Migration					0	0 (waterfall)
Bank	Dominant Particle Size		Mud/clay	Sand	Silt/mud		
Material	Co-dominant Particle Size		Cobble	Cobble	Gravel		
	Right d/s Bank	Height (m)					
		Stability (%)					
		Dominant Part. Size					
		Co-dominant Part. Size					
		Cover (%)					
	Left d/s Bank	Height (m)					
		Stability (%)					
		Dominant Part. Size					
		Co-dominant Part. Size					
		Cover (%)					
Bank	none						
Vegetation	willow		80	50	80		
(%)	grass		20	50	20		

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter		Watercourse	DORIS OUTFLOW				DORIS INFLOW
		Site No.[a]	# 25 d/s of waterfall				# 04
		Date	5-Jul-96			14-Aug-97	21-Jun-97
		Location (m)	0-100	100-200	200-300		
		Distance (m)	100	100	100	200	310
		Latitude	N68°10.386'	N68°10.499'	N68°10.698'		
		Longitude	W106°34.842'	W106°35.269'	W106°35.718'		
Stage						Moderate	Flood
Water Temperature (°C)							
Water Colour							
Channel / Boundary Type [b]						C2, D1	C3, D3
Gradient (%)							
Wetted Width (m)	Mean		18.5	14.7	14.8	4.5	4.1
	Min		14.5	6.2	7.8		
	Max		27.6	26.6	23.5		
Depth (m)	Mean					0.45	0.30
	Mean Maximum Pool Depth					0.75	0.85
	Mean Maximum Riffle Depth					0.20	0.30
Mean Velocity (m/s)			0.77	1.72	1.25		
Instream Habitat[b] **(%)**	Pool - Class P1		30	40	20	10	1
	Pool - Class P2					5	
	Pool - Class P3						9
	Riffle					35	70
	Rapid			40	30	40	
	Run - Class 1		70	20	50		
	Run - Class 2						
	Run - Class 3					10	20
	Flat - Class 1						
	Chute						
	Cascade						
	Shelf						
Substrate (%)	Organic matter						98
	Silt						
	Sand					7.5	
	Small Gravel					10	
	Large Gravel					10	
	Cobble					20	
	Boulder					60	2
	Bedrock					2.5	
	Dominant Particle Size						
	Co-dominant Particle Size						
	Compaction (%)						
	Embeddedness (%)						
Instream Cover (%)	Pool					10	5
	Boulder					65	
	Cutbank					5	15
	Instream Vegetation						80
	Overhanging Vegetation					20	
	Macrophytes/Vegetation						
Habitat Suitability[b]	Spawning					2	0
	Rearing					3	2
	Adult Feeding					2	0
	Overwintering					1	0
	Migration					0	0
Bank Material	Dominant Particle Size		Silt/Mud	Silt/Mud	Silt/Mud		
	Co-dominant Particle Size		Cobble	Boulder	Boulder		
	Right d/s Bank	Height (m)					
		Stability (%)					
		Dominant Part. Size					
		Co-dominant Part. Size					
		Cover (%)					
	Left d/s Bank	Height (m)					
		Stability (%)					
		Dominant Part. Size					
		Co-dominant Part. Size					
		Cover (%)					
Bank Vegetation (%)	none			50	30		
	willow		30	25	20		
	grass		70	25	50		

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter			Watercourse	TAIL OUTFLOW		OGAMA OUTFLOW			
			Site No.[a]	# 03		# 22			
			Date	20-Jun-97	25-Jun-00	5-Jul-96			15-Aug-97
			Location (m)			0-100	100-200	200-300	
			Distance (m)	270	100	100	100	100	200
			Latitude			N68°06.165'	N68°06.320'	N68°06.562'	
			Longitude			W106°33.028'	W106°33.439'	W106°33.763'	
Stage				High	Moderate				Moderate
Water Temperature (°C)					7				
Water Colour									
Channel / Boundary Type [b]				C3, D3					C1, D1
Gradient (%)					<1				
Wetted	Mean			7.3	0.5	7.3	9.4		1.9
Width (m)	Min					3.1	3.6		
	Max					9.4	24.2		
Depth (m)	Mean			0.25	0.25				0.45
	Mean Maximum Pool Depth			0.95	0.90				1.20
	Mean Maximum Riffle Depth			0.25	0.35				0.30
Mean Velocity (m/s)						1.14	0.61		
Instream	Pool - Class P1							30	20
Habitat[b] (%)	Pool - Class P2								10
	Pool - Class P3			5	5				
	Riffle			85	75				25
	Rapid					30			
	Run - Class 1					70		70	35
	Run - Class 2								
	Run - Class 3			10	20				10
	Flat - Class 1								
	Chute								
	Cascade								
	Shelf								
Substrate	Organic matter			95	90				5
(%)	Silt								5
	Sand				5				5
	Small Gravel								20
	Large Gravel								
	Cobble			5	5				30
	Boulder								35
	Bedrock								
	Dominant Particle Size								
	Co-dominant Particle Size								
	Compaction (%)								
	Embeddedness (%)								
Instream	Pool			5					25
Cover (%)	Boulder								45
	Cutbank			5					15
	Instream Vegetation			90					10
	Overhanging Vegetation				5				5
	Macrophytes/Vegetation				95				
Habitat	Spawning			0	0				2
Suitability[b]	Rearing			1	1				2
	Adult Feeding			0	0				2
	Overwintering			0	0				1
	Migration			0	1				
Bank	Dominant Particle Size					Silt/Mud	Silt/Mud	Silt/Mud	
Material	Co-dominant Particle Size					Boulder	Boulder	—	
	Right	Height (m)			0.5				
	d/s Bank	Stability (%)			100				
		Dominant Part. Size			Sa				
		Co-dominant Part. Size			OM				
		Cover (%)			100				
	Left	Height (m)			0.5				
	d/s Bank	Stability (%)			100				
		Dominant Part. Size			Sa				
		Co-dominant Part. Size			OM				
		Cover (%)			100				
Bank	none								
Vegetation	willow					30	30	30	
(%)	grass					70	70	70	

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter		Watercourse	OGAMA INFLOWS			
		Site No.[a]	# 20			
		Date	6-Jul-96	6-Jul-96	6-Jul-96	14-Aug-97
		Location (m)	0-100	100-200	200-300	
		Distance (m)	100	100	100	100
		Latitude	N68°04.137'	N68°04.005'	N68°03.830'	
		Longitude	W106°31.333'	W106°31.217'	W106°31.238'	
Stage						Moderate
Water Temperature (°C)						
Water Colour						
Channel / Boundary Type [b]						C1, D1
Gradient (%)						
Wetted Width (m)	Mean		8.2	4.7	4.1	2.1
	Min		3.5	2.0	2.5	
	Max		14.6	7.4	6.3	
Depth (m)	Mean					0.50
	Mean Maximum Pool Depth					1.30
	Mean Maximum Riffle Depth					0.30
Mean Velocity (m/s)			0.47	0.39	0.70	
Instream Habitat[b] **(%)**	Pool - Class P1		35			30
	Pool - Class P2					
	Pool - Class P3					
	Riffle					10
	Rapid		10			10
	Run - Class 1		55			
	Run - Class 2					50
	Run - Class 3					
	Flat - Class 1					
	Chute					
	Cascade					
	Shelf					
Substrate (%)	Organic matter					
	Silt					5
	Sand					45
	Small Gravel					15
	Large Gravel					15
	Cobble					10
	Boulder					10
	Bedrock					
	Dominant Particle Size		Mud/Silt	Cobble	Gravel	
	Co-dominant Particle Size		Cobble	Boulder	Cobble	
	Compaction (%)					
	Embeddedness (%)					
Instream Cover (%)	Pool					60
	Boulder					20
	Cutbank					15
	Instream Vegetation					
	Overhanging Vegetation					5
	Macrophytes/Vegetation					
Habitat Suitability[b]	Spawning					2
	Rearing					2
	Adult Feeding					3
	Overwintering					1
	Migration					3
Bank Material	Dominant Particle Size		Cobble		Mud/Silt	
	Co-dominant Particle Size		Boulder			
	Right d/s Bank	Height (m)				
		Stability (%)				
		Dominant Part. Size				
		Co-dominant Part. Size				
		Cover (%)				
	Left d/s Bank	Height (m)				
		Stability (%)				
		Dominant Part. Size				
		Co-dominant Part. Size				
		Cover (%)				
Bank Vegetation (%)	none					
	willow		60	60	80	
	grass		40	40	20	

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter		Watercourse	OGAMA INFLOWS			
		Site No.[a]	# 01	# 06	# 09	# 14
		Date	20-Jun-97	21-Jun-97	22-Jun-97	23-Jun-97
		Location (m)				
		Distance (m)	80	110	130	180
		Latitude				
		Longitude				
Stage			Flood	Flood	High	High
Water Temperature (°C)						
Water Colour						
Channel / Boundary Type [b]			C1, D2	C3, D3	C3, D3	C1, D3
Gradient (%)						
Wetted Width (m)	Mean		6.2	15.0	8.2	5.4
	Min					
	Max					
Depth (m)	Mean		0.70	0.15	0.10	0.20
	Mean Maximum Pool Depth		1.85	0.30	1.40	1.60
	Mean Maximum Riffle Depth		0.25	0.10		0.15
Mean Velocity (m/s)						
Instream Habitat[b] (%)	Pool - Class P1				10	5
	Pool - Class P2		15			10
	Pool - Class P3			5		
	Riffle		5	95	90	55
	Rapid		80			
	Run - Class 1					
	Run - Class 2					
	Run - Class 3					30
	Flat - Class 1					
	Chute					
	Cascade					
	Shelf					
Substrate (%)	Organic matter		10	100	100	90
	Silt					10
	Sand		5			
	Small Gravel					
	Large Gravel					
	Cobble		5			
	Boulder		70			
	Bedrock		10			
	Dominant Particle Size					
	Co-dominant Particle Size					
	Compaction (%)					
	Embeddedness (%)					
Instream Cover (%)	Pool		10	1	10	20
	Boulder		60			
	Cutbank					
	Instream Vegetation		30	99	90	80
	Overhanging Vegetation					
	Macrophytes/Vegetation					
Habitat Suitability[b]	Spawning		3	0	0	0
	Rearing		3	0	0	0
	Adult Feeding		4	0	0	0
	Overwintering		0	0	0	0
	Migration		1	0	0	0
Bank Material	Dominant Particle Size					
	Co-dominant Particle Size					
	Right d/s Bank	Height (m)				
		Stability (%)				
		Dominant Part. Size				
		Co-dominant Part. Size				
		Cover (%)				
	Left d/s Bank	Height (m)				
		Stability (%)				
		Dominant Part. Size				
		Co-dominant Part. Size				
		Cover (%)				
Bank Vegetation (%)	none					
	willow					
	grass					

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter		Watercourse	PATCH INFLOWS			
		Site No.[a]	# 05	# 07	# 08	# 11
		Date	21-Jun-97	21-Jun-97	21-Jun-97	22-Jun-97
		Location (m)				
		Distance (m)	180	220	160	90
		Latitude				
		Longitude				
Stage			Flood	Flood	High	High
Water Temperature (°C)						
Water Colour						
Channel / Boundary Type [b]			C2, D3	C2, D3	C3, D3	C2, D3
Gradient (%)						
Wetted Width (m)	Mean		3.1	5.3	7.2	1.5
	Min					
	Max					
Depth (m)	Mean		0.25	0.35	0.20	0.15
	Mean Maximum Pool Depth		0.70	1.65	0.80	0.50
	Mean Maximum Riffle Depth		0.20	0.15	0.20	0.15
Mean Velocity (m/s)						
Instream Habitat[b] **(%)**	Pool - Class P1			20		
	Pool - Class P2		1		5	
	Pool - Class P3		4			5
	Riffle		75	80	10	95
	Rapid					
	Run - Class 1					
	Run - Class 2					
	Run - Class 3		20		85	
	Flat - Class 1					
	Chute					
	Cascade					
	Shelf					
Substrate (%)	Organic matter		100	100	100	100
	Silt					
	Sand					
	Small Gravel					
	Large Gravel					
	Cobble					
	Boulder					
	Bedrock					
	Dominant Particle Size					
	Co-dominant Particle Size					
	Compaction (%)					
	Embeddedness (%)					
Instream Cover (%)	Pool		5	20	10	10
	Boulder					
	Cutbank		10			15
	Instream Vegetation		85	80	90	75
	Overhanging Vegetation					
	Macrophytes/Vegetation					
Habitat Suitability[b]	Spawning		0	0	0	0
	Rearing		1	1	0	1
	Adult Feeding		0	0	0	0
	Overwintering		0	0	0	0
	Migration		0	0	0	0
Bank Material	Dominant Particle Size					
	Co-dominant Particle Size					
	Right d/s Bank	Height (m)				
		Stability (%)				
		Dominant Part. Size				
		Co-dominant Part. Size				
		Cover (%)				
	Left d/s Bank	Height (m)				
		Stability (%)				
		Dominant Part. Size				
		Co-dominant Part. Size				
		Cover (%)				
Bank Vegetation (%)	none					
	willow					
	grass					

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter		Watercourse	WINDY OUTFLOW					WINDY INFLOW
		Site No.[a]	# 02				# 10	# 13
		Date	6-Jul-96	6-Jul-96	6-Jul-96	20-Jun-97	22-Jun-97	23-Jun-97
		Location (m)	0-100	100-200	200-300			
		Distance (m)	100	100	100	360	170	330
		Latitude	N68°06.216'	N68°06.468'	N68°06.765'			
		Longitude	W106°38.809'	W106°38.865'	W106°39.240'			
Stage						High	High	High
Water Temperature (°C)								
Water Colour								
Channel / Boundary Type [b]						C1, D2	C2, D3	C2, D3
Gradient (%)								
Wetted	Mean		18.2	6.7	2.0	2.9	4.5	2.9
Width (m)	Min		13.2	3.6	1.1			
	Max		21.9	11.9	3.6			
Depth (m)	Mean					0.55	0.40	0.12
	Mean Maximum Pool Depth					1.80	1.90	0.20
	Mean Maximum Riffle Depth					0.35	0.20	0.15
Mean Velocity (m/s)			0.18	0.63	0.57			
Instream	Pool - Class P1			40		5	15	
Habitat[b] (%)	Pool - Class P2					10		
	Pool - Class P3							
	Riffle					35	15	85
	Rapid			20	5			
	Run - Class 1		1	40	95			
	Run - Class 2					5	10	
	Run - Class 3					45	60	15
	Flat - Class 1							
	Chute							
	Cascade							
	Shelf							
Substrate	Organic matter					65	30	100
(%)	Silt						10	
	Sand					10	40	
	Small Gravel					5	2.5	
	Large Gravel					5	2.5	
	Cobble					10	5	
	Boulder					5	10	
	Bedrock							
	Dominant Particle Size		Mud/Silt	Cobble	Mud			
	Co-dominant Particle Size		Cobble	Gravel	Gravel			
	Compaction (%)							
	Embeddedness (%)							
Instream	Pool					15	20	
Cover (%)	Boulder						15	
	Cutbank					60	45	
	Instream Vegetation					25	20	100
	Overhanging Vegetation							
	Macrophytes/Vegetation							
Habitat	Spawning					3	3	0
Suitability[b]	Rearing					3	3	0
	Adult Feeding					3	3	0
	Overwintering					0	0	0
	Migration					2	2	0
Bank	Dominant Particle Size		Silt/Mud	Silt/Mud	Silt/Mud			
Material	Co-dominant Particle Size							
	Right d/s Bank	Height (m)						
		Stability (%)						
		Dominant Part. Size						
		Co-dominant Part. Size						
		Cover (%)						
	Left d/s Bank	Height (m)						
		Stability (%)						
		Dominant Part. Size						
		Co-dominant Part. Size						
		Cover (%)						
Bank	none							
Vegetation	willow		30	50	40			
(%)	grass		70	50	60			

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.

Appendix E2. Aquatic habitat survey results for Doris Hinge streams, 1996-2000.

Parameter		Watercourse	GLENN OUTFLOW			LITTLE ROBERTS OUTFLOW		ROBERTS OUTFLOW
		Site No.[a]	# 12	# 28		# 26		n/a
		Date	23-Jun-97	25-Jun-00	20-Aug-00	14-Aug-97	26-Jun-00	26-Jun-00
		Location (m)						
		Distance (m)	310	300	200	150	1250	600
		Latitude						
		Longitude						
Stage			High	High	Low	Moderate	High	High
Water Temperature (°C)				8				
Water Colour				grey, dirty			turbid	turbid
Channel / Boundary Type [b]			C1, D1			C1, D1		
Gradient (%)				1	<1		<1	<1%
Wetted Width (m)	Mean		3.1	3.5	3.5	5.5	18.0	13.0
	Min							
	Max							
Depth (m)	Mean		0.65	0.60	0.30	0.45		
	Mean Maximum Pool Depth		1.80	1.30	1.50	1.80		
	Mean Maximum Riffle Depth		0.35	0.35	0.20	0.40		
Mean Velocity (m/s)								
Instream Habitat[b] (%)	Pool - Class P1		15			20	15	12.5
	Pool - Class P2		10		5			
	Pool - Class P3				5			
	Riffle		10	15	30	40	2.5	
	Rapid		40	5	20	40	10	7.5
	Run - Class 1						50	50
	Run - Class 2		25	25				
	Run - Class 3			50	40			
	Flat - Class 1						20	30
	Chute						2.5	
	Cascade			5				
	Shelf							
Substrate (%)	Organic matter		2.5		5			15
	Silt		10	45	70		15	50
	Sand		12.5	25	5	5	15	10
	Small Gravel		10	10	5			
	Large Gravel		10		5	5		
	Cobble		20	10	5	10	45	10
	Boulder		35	10	5	80	22.5	15
	Bedrock						2.5	
	Dominant Particle Size							
	Co-dominant Particle Size							
	Compaction (%)			10				
	Embeddedness (%)			70				
Instream Cover (%)	Pool		25		25	25	20	80
	Boulder		65	100	55	70	80	20
	Cutbank				5	5		
	Instream Vegetation		10					
	Overhanging Vegetation							
	Macrophytes/Vegetation				15			
Habitat Suitability[b]	Spawning		3	1	1	3	3	3
	Rearing		3	4	3	3	4	3
	Adult Feeding		3	2	1	2	3	3
	Overwintering		0	0	0	2	1	1
	Migration		3	3	4	3	4	4
Bank Material	Dominant Particle Size							
	Co-dominant Particle Size							
	Right d/s Bank	Height (m)		10	10		3.5	2.0
		Stability (%)		10	10		90.0	80
		Dominant Part. Size		Si	Si		Si	Sa
		Co-dominant Part. Size		Sa	Sa		Bo	Si
		Cover (%)		20	20		95.0	90
	Left d/s Bank	Height (m)		8	8		3.5	2.5
		Stability (%)		65	65		90.0	70.0
		Dominant Part. Size		Si	Si		Si	Sa
		Co-dominant Part. Size		Sa	Sa		Bo	Si
		Cover (%)		100	100		95.0	85
Bank Vegetation (%)	none							
	willow							
	grass							

[a] All site numbers are based on Rescan (1998).

[b] See Appendix E1 for description of codes.