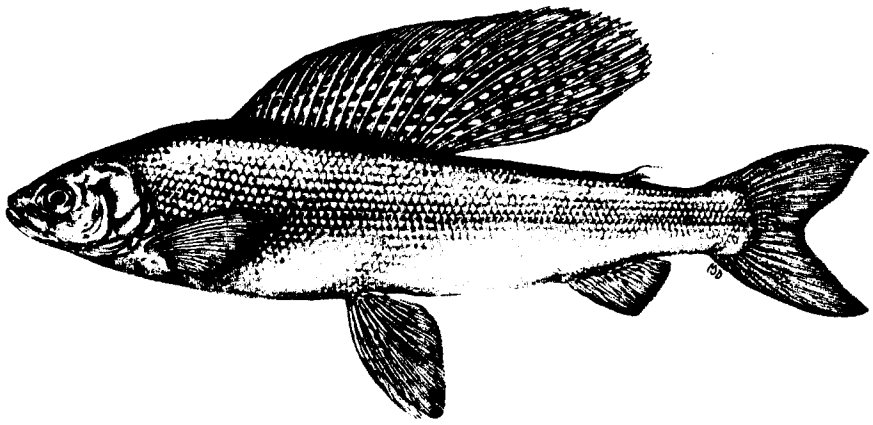
BASELINE FISH AND AQUATIC HABITAT DATA FOR FORT KNOX MINE 1992 TO 1995

By

Alvin G. Ott and Phyllis Weber Scannell

Technical Report No. 96-5



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Acknowledgments

We thank Fairbanks Gold Mining Inc. (FGMI) for their financial support which enabled us to collect baseline fish and aquatic habitat data for the Fort Knox open pit mine. Our thanks to Mr. Ken Pohle, Mr. Tom Irwin, and Mr. Bill Jeffress of FGMI for working with us in a cooperative and positive manner throughout all phases of the project. Our appreciation goes to Ms. Sheree Warner of the Alaska Department off Fish and Game (ADF&G), Habitat and Restoration Division (ADF&G, HRD) for preparation of figures. Special thanks to Mr. Alan Townsend (ADF&G, HRD) for overseeing field data collection, construction monitoring, and for his review of this report. We also thank Mr. Jack Winters (ADF&G, HRD) for report review and field assistance. Other ADF&G, HRD personnel contributing to field data collection activities were Mr. Carl Hemming, Mr. Carl Lunderstadt, and Mr. Mac McLean. Jim Vohden of the Alaska Department of Natural Resources (ADNR), Division of Mining and Water Management gathered water flow and water quality data in Fish Creek. Matt Evenson of the ADF&G, Sport Fish Division, began a three-year study on juvenile burbot.

EXECUTIVE SUMMARY

Construction activities, primarily at the freshwater dam construction site, were monitored beginning in fall 1994. Increased levels of turbidity and in some cases settleable solids occurred but remedial action was taken. Long-term environmental issues were not found.

In 1992 and 1993, Fish Creek contained high total suspended solids concentrations (up to 2320 mg/L) and high turbidity. Water quality improved in 1994 during the pre-construction phase of the Fort Knox gold mine, when no upstream placer mining occurred. In 1995, construction activities at the Fort Knox site resulted in higher total suspended sediment concentrations than in 1994 but not as high as in 1992 and 1993.

Two reaches of Last Chance Creek upstream of the projected freshwater reservoir were sampled in 1994 and 1995. In 1995, peak use by Arctic grayling (*Thymallus arcticus*) was in May. The number of Arctic grayling in reach #1 remained virtually constant during summer 1995, whereas numbers decreased in reach #2. Peak use of the creek in 1994 occurred in August. Poor recruitment of young-of-the-year Arctic grayling occurred in 1993 and 1994 and probably in 1995. Poor recruitment was attributed to flood events following spawning in May. Juvenile burbot (*Lota lota*) were found in 1994 and numbers increased slightly in 1995. Growth of Arctic grayling tagged in Upper Last Chance Creek averaged 8 mm/yr and is slow compared with other populations in Interior and Arctic Alaska.

The Last Chance Creek ponds (upper and lower) will be inundated when the freshwater reservoir fills. We estimated that 1,421 (95% CI 939 - 1,903) Arctic grayling <150 mm and 654 (95% CI 527 - 781) Arctic grayling ≥150 mm were in the upper pond in 1993. During summer 1995, the estimated population of Arctic grayling <150 mm was 576 (95% CI 482 - 670) and ≥150 mm was 893 in the upper pond. Tag recovery data shows a general movement of Arctic grayling out of the upper pond to the lower pond. Spawning occurs in the upper pond and rivulet connecting the seepage and upper pond. Good survival and recruitment in these areas maintain a viable population of Arctic grayling in the upper pond.

In 1993 we estimated there were 429 Arctic grayling in the lower pond ≥150 mm and 1376 Arctic grayling <150 mm. In the Lower Last Chance Creek Pond in 1995, our

estimated Arctic grayling population was 65 fish (95% CI 52 - 78) <150 mm and 1,326 (95% CI 1256 - 1396) fish ≥150 mm. Our population estimate of 65 fish <150 mm for the lower pond confirms the virtual absence of any recruitment of young-of-the-year fish in either 1993 or 1994. The number of Arctic grayling in the lower pond ≥150 mm was substantially higher in 1995 (1,326) than 1993 (429). It appears that survival of smaller fish in the lower pond and recruitment from the upper pond has resulted in a 3-fold increase in the Arctic grayling population ≥150 mm in the lower pond.

In 1993 we found juvenile burbot in the outlet of Polar Pond #1. Our spring 1995 burbot population estimate for Polar Pond #1 was 407 (95% CI = 258 to 556) and for Polar Pond #2 was 429 (95% CI = 303 to 555). Polar Pond #2 was sampled through the ice in November 1995. Of 23 burbot retained in November, 14 were sexually mature and would have spawned in February-March 1996. Four of 8 females and 10 of 15 males were mature. Male burbot ranged in size from 218 to 285 mm and females varied from 228 to 298 mm. The smallest mature male was 223 mm and the smallest mature female was 253 mm.

Two sample areas (Bear and Fish Creeks) were established downstream of the Fort Knox project to serve as long-term monitoring sites. Arctic grayling, round whitefish (*Prosopium cylindraceum*), slimy sculpin (*Cottus cognatus*), and burbot use Bear Creek during the ice-free season. Numbers of Arctic grayling and round whitefish tend to increase as summer progresses. The total number of Arctic grayling and round whitefish using Bear Creek appears to have increased since 1993, with the highest catches occurring in August of 1995. Although mature Arctic grayling enter Bear Creek, few, if any, young-of-the-year fry have been found. Arctic grayling, slimy sculpin, round whitefish, burbot, and longnose sucker (*Catostomus catostomus*) use Lower Fish Creek. Like Bear Creek, young-of-the-year Arctic grayling are not numerous and our highest fish catches occurred in fall 1995. We speculate that improvements in water quality related to diversion of Upper Fish Creek into the Polar Pond complex during the summers of 1994 and 1995 resulted in increased fish use. Settleable solids and turbidity should continue to decrease in Fish Creek in 1996 with construction of the freshwater dam; we believe the improved water quality will result in increased fish use of Fish Creek downstream of the dam. Moderation in peak flow events by the freshwater reservoir could result in increased spawning success for

spring spawning species (i.e., Arctic grayling, slimy sculpin, and longnose sucker) and higher population levels of fish in Lower Fish Creek.

Our fisheries study began in 1992 and continued through 1995. Principle fish species present in the area to be flooded by the freshwater reservoir included Arctic grayling and burbot. Round whitefish and slimy sculpin also were present but numbers were extremely low. We estimate that in 1995 when the freshwater dam was built, there were 1,723 Arctic grayling <150 mm and 4,358 ≥150 m in Fish Creek upstream of the freshwater dam. These fish are the base stock of fish for colonization of the freshwater reservoir. We estimated Polar Ponds #1 and #2 contained 836 burbot for colonization of the freshwater reservoir. We believe that our estimates for both burbot and Arctic grayling are conservative.

The first fish tissue samples collected in 1992 were analyzed for Al, Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Ti, V, and Zn (Appendix 10). Based upon results from this sample and characteristics of the ore deposit, we decided that long-term monitoring of fish tissues should be done for Al, As, Cd, Pb, and Hg. Arctic grayling and round whitefish (n = 24) collected in Fish Creek were compared with Arctic grayling (n = 24) captured in Last Chance Creek ponds. Fish collected in Fish Creek contained significantly higher concentrations of Al and As and significantly lower concentrations of Pb and Cd than fish collected in the Last Chance Creek ponds. Whole body concentrations of Pb were not significantly different. In October 1995, we collected and analyzed a sample of 24 Arctic grayling from the Last Chance Creek ponds for Pb. Concentrations of Pb in Arctic grayling sampled in 1995 were not higher than those measured in 1992 or 1993.

ADF&G sampled invertebrate communities in Fish Creek and Bear Creek in 1992 and 1993 (Weber Scannell and Ott 1994). Invertebrate community densities in Fish Creek were lower than is typical for streams of similar size and latitude, with few taxonomic groups represented. Invertebrate communities in Fish Creek and Bear Creek were compared to determine possible effects of water quality on proportions of Ephemeroptera, Plecoptera, and Trichoptera (EPT). The proportion of EPT was significantly lower in Fish Creek than in Bear Creek. Predicted improvements in water quality in Fish Creek following completion of the freshwater dam should have an effect on the invertebrate community.

INTRODUCTION

Fairbanks Gold Mining Inc. (FGMI) is in the construction phase of an open pit gold mine located about 25 km (15 mi) northeast of Fairbanks in the headwaters of Fish Creek in the Chena River drainage (Figure 1). The project will include an open-pit mine, mill, tailing impoundment, freshwater reservoir, and related facilities (Figure 2). A description of the mill process, water treatment, reclamation, and permitting was presented by Ott et al. (1995).

FGMI began environmental baseline work in 1989. Our fisheries study began in 1992 and focused on streams in and downstream of the project area (Weber Scannell and Ott 1993). In 1993, stream sampling continued and we began to collect fisheries data in abandoned settling ponds and mine cuts (Weber Scannell and Ott 1994). Sampling in streams to be flooded by the freshwater reservoir was decreased substantially in 1994. We added stream reaches in Last Chance Creek upstream of the reservoir and continued to sample artificially-created pond habitats and sample sites downstream of the mine (Ott et al. 1995). In 1995, we sampled stream sample reaches upstream and downstream of the freshwater reservoir and pond habitats (Upper and Lower Last Chance Creek Ponds and Polar Ponds #1 and #2) and began monitoring construction activities.

Our report is divided into two parts. In Part 1 we present a summary of construction activities associated with the freshwater dam and reservoir, and the Solo Creek temporary crossing and causeway. Results of our 1995 fisheries work, including key data collected since 1992, are presented in Part 2.

Figure 1. Fort Knox project location.

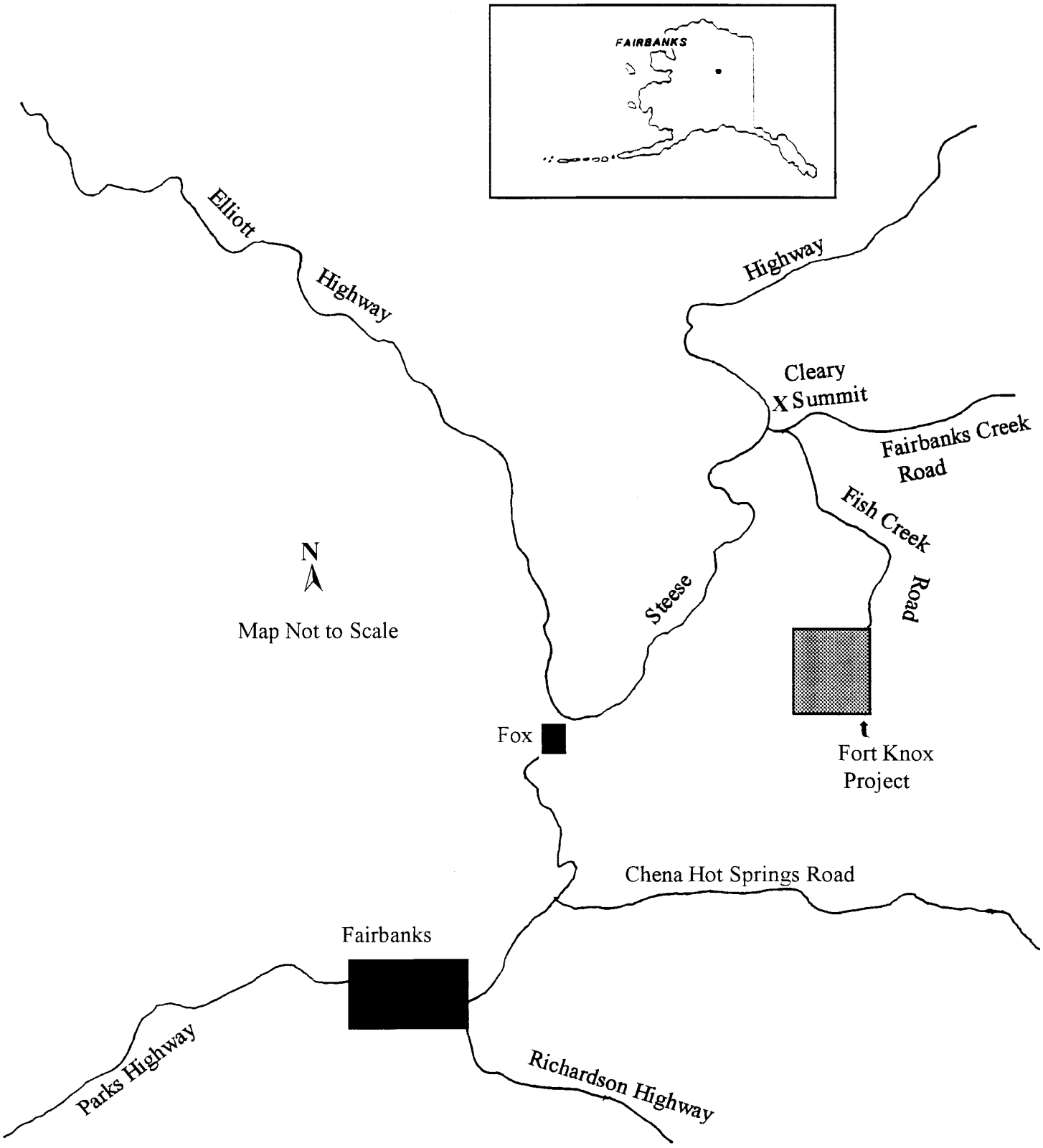
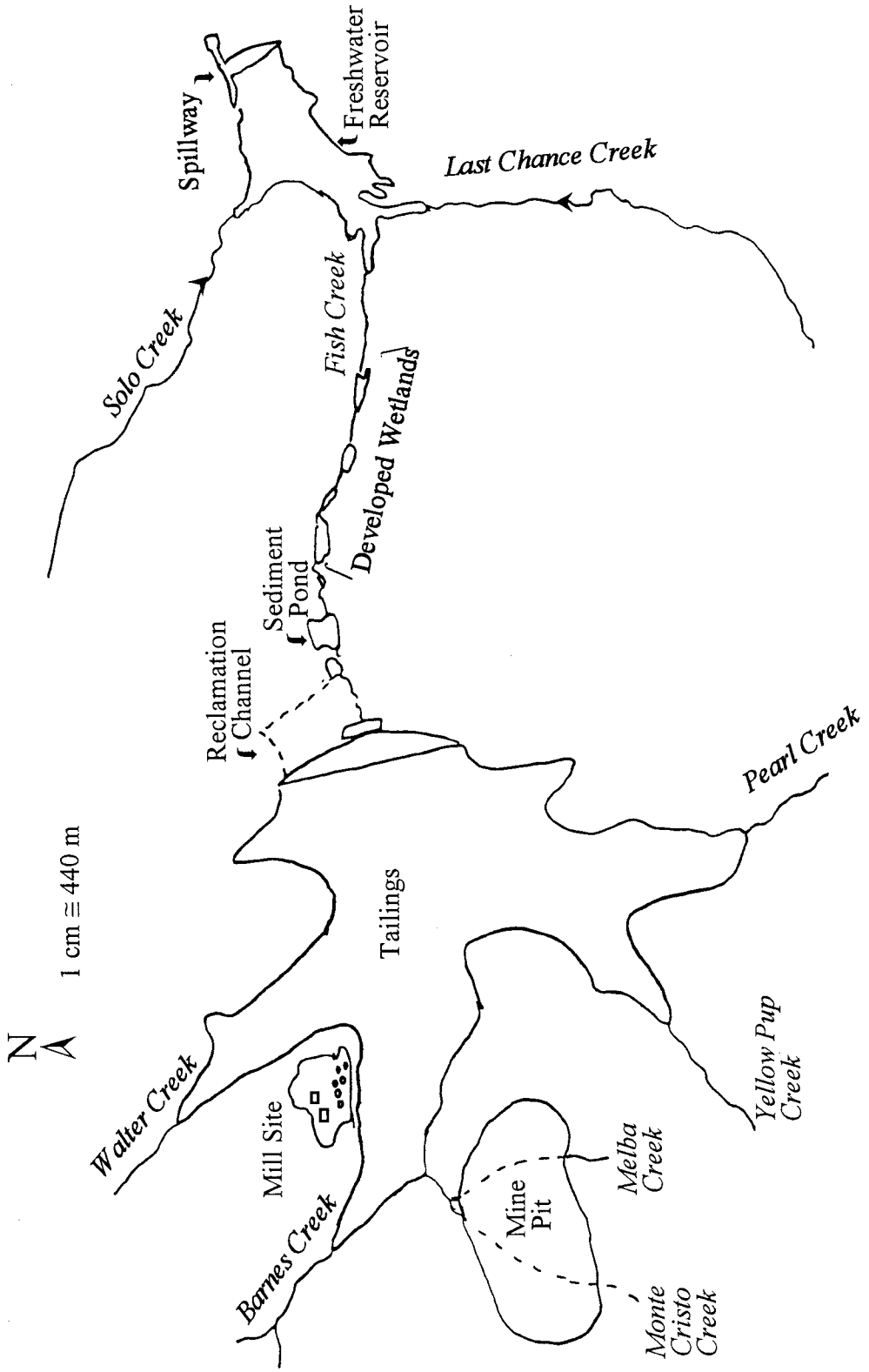


Figure 2. The open-pit mine, tailing impoundment, freshwater reservoir, and related facilities for the Fort Knox gold mine.



Part 1

Freshwater Dam Construction Activities 1994-1995

Prior to construction in July 1993, Upper Fish Creek at the tailing dam site was diverted into a series of settling ponds (Polar Ponds) located along the south side of the Fish Creek valley. Increased turbidity and settleable solids associated with a melting ice lens in 1993 and construction activities at the tailing dam site in 1994 were contained and filtered by the Polar Ponds and associated gravel berms.

Construction began in fall 1994 with stripping and stockpiling vegetation in the area to be flooded by the freshwater reservoir. In October 1994, a temporary diversion channel was constructed for Fish Creek at the freshwater dam site along the north side of the valley and a settling basin was built at the downstream end of the channel (Figure 3). The entire flow of Fish Creek was diverted into the bypass channel in mid-October (Figure 4). Turbidity temporarily increased during the diversion. On November 10, 1994, the diversion channel was working as designed with no development of overflow ice.

In early March 1995, we prepared a list of construction activities for FGMI and the ADNR that would require ADF&G review, permitting, and monitoring during construction. We also summarized fisheries information collected over the past several years and prepared a map showing sensitive fish-bearing waters. We met with FGMI, their principle contractor Morrison Knudsen (MK) and Keiwit Pacific Company (KPC) the subcontractor responsible for dam construction, to discuss the Last Chance Creek pond complex which contains over 4,000 Arctic grayling, and the Polar Pond complex which supports about 800 burbot and several thousand Arctic grayling. Our concerns were met when FGMI required KPC to field flag sensitive fish bearing waters. Under FGMI's direction, flagged areas were off limits unless specific written authorization was obtained from ADF&G.

In March 1995, in preparation for excavation at the freshwater dam site, a haul road was constructed and a temporary culvert was placed in Solo Creek (Figure 3). A field permit was issued for installation of the temporary 1.5 m (5 ft) diameter pipe 21.3 m (70 ft) long buried 0.15 m (0.5 ft) below the stream thalweg, with the requirement that the pipe be removed upon completion of use.

Figure 3. The construction zone at the freshwater reservoir site (creeks, bypasses, check dams, spillway, ponds, waste dumps, diversions).

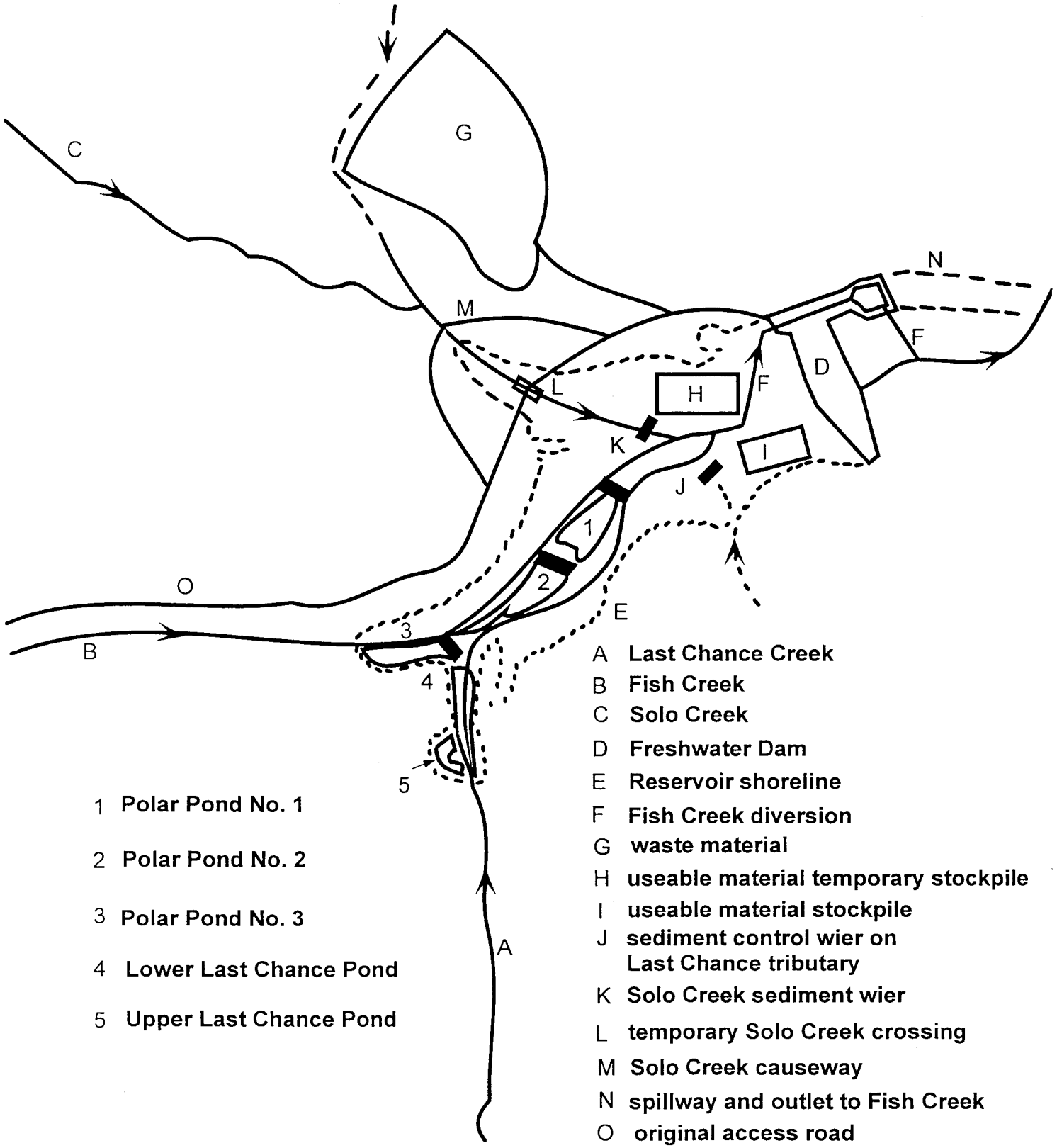
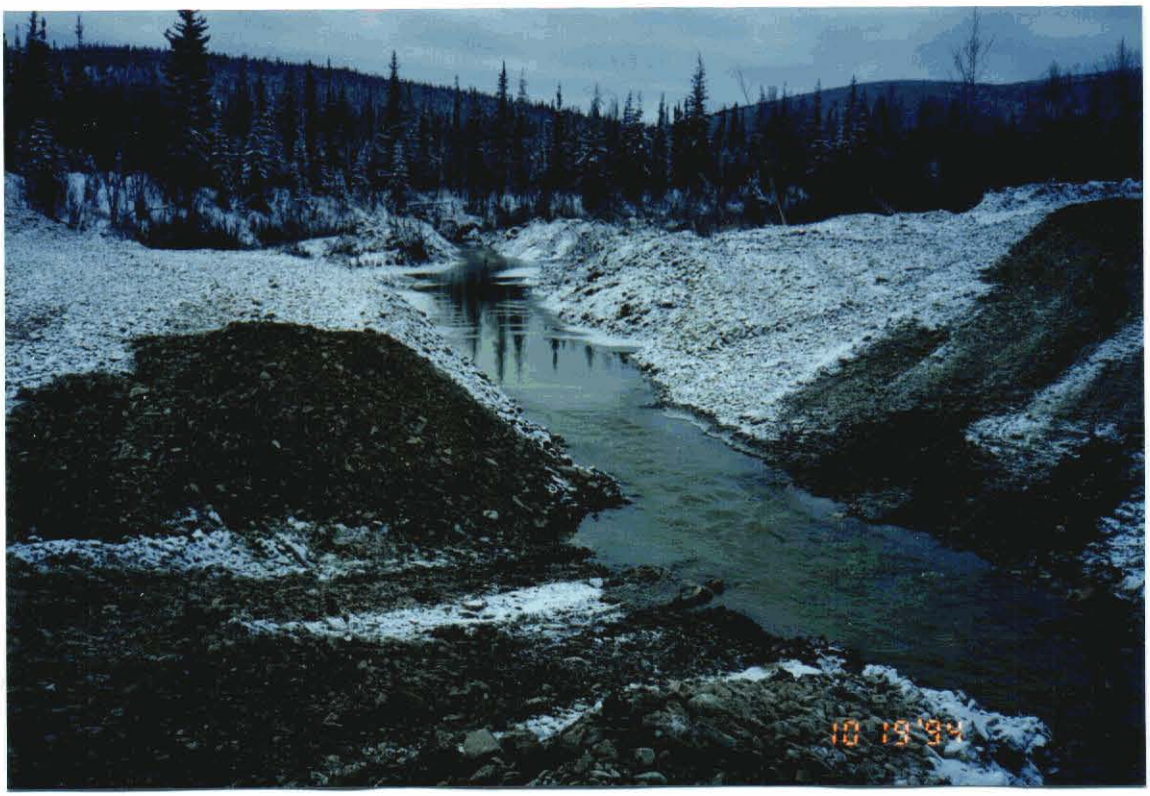


Figure 4. The diversion ditch upstream of the freshwater dam (top photo) and the diversion ditch through the construction zone (bottom photo) in October 1994.



On March 23, 1995, we issued a field permit to FGMI for installation of a 213 m (700 ft) long 1.8 m (6 ft) diameter pipe in the Fish Creek diversion channel at the freshwater dam (Figure 5). The 213 m (700 ft) long pipe would obstruct upstream movement of fish. We did not expect the stream blockage to impair Arctic grayling populations since most fish overwinter in ponds upstream of the obstruction. Use of a pipe to carry the water would eliminate a second diversion of Fish Creek during dam construction and would reduce sediment input to the creek from construction activities at the freshwater dam site. During KPC's installation of the pipe, a ditch plug was placed in the creek to control water but was not completely removed (Figure 6). A field inspection report was issued to FGMI requesting that the channel plug be removed and the diversion ditch graded to original width, depth, and side slopes. On April 3, we rechecked the Fish Creek diversion and found that the channel plug had been removed from the creek (Figure 6).

In late March, 1.6 $x10^6$ m^3 of mineral and organic ice-rich soils were excavated for the freshwater dam (Figure 5). About 60% of the freshwater dam was to be built below natural grade. Organic ice-rich material not suitable for backfill in the dam was hauled to a waste dump site upslope of the dam and adjacent to Solo Creek. The waste dump site had been cleared and vegetation windrowed along the downslope side to control runoff and sediments. Following excavation of the dam site, pumps were installed to dewater the work area and water discharged to two settling ponds. Settling ponds were small and water short-circuited through the first pond. We requested that settling ponds be enlarged and maintained to sufficiently treat discharge for the remainder of dam construction.

On April 17, the diversion channel with the 213 m (700 ft) pipe was operating as designed. Pumping from the excavation continued and the settling ponds had sufficient retention time to remove sediments. Materials suitable for backfill in the dam were stockpiled south of Last Chance Creek. The Last Chance Creek site had been cleared with bulldozers and organic materials were windrowed around the site forming a silt barrier. In addition, a silt curtain had been installed just upslope of the windrowed organic material. A second temporary disposal site was established north of Last Chance Creek.

Figure 5. A culvert was placed in the diversion ditch on the north side of the valley to move Fish Creek through the construction zone (top photo). Stripping of overburden at the freshwater dam began in late March 1995 (bottom photo).

Figure 6. A channel plug was placed in Fish Creek but not completely removed (top photo). On April 3, 1995, when the site was rechecked the channel had been cleaned and the plug removed (bottom photo).

At our request, FGMI requested MK divert Fish Creek at the tailing dam into the original channel bypassing the Polar Ponds before the 1995 breakup. The diversion directed high breakup flows out of the Polar settling ponds where gravel berms separating the ponds might fail. Polar Ponds #1 and #2 contain both Arctic grayling and burbot, and Arctic grayling spawn in the outlets and inlets. Breakup flows had the potential to impair Arctic grayling spawning success in this area. By May 1, settleable solids were elevated in Fish Creek above and below the freshwater dam zone. High settleable solids resulted from inadequate treatment of pump water, erosion of the Fish Creek diversion channel, from previously exposed ice-rich placer cuts on Barnes Creek, and from work in the tailing dam area. Since breakup flows had passed, we recommended that Fish Creek be diverted back into the Polar settling ponds; that banks of the diversion channel be graded, rock armored, and stabilized; and that settling basins be cleaned.

Fish Creek was diverted back into the Polar settling ponds by the 11th of May and only trace amounts of settleable solids were found upstream of the freshwater dam. An eroding, ice-rich diversion ditch on the west side of the gravel dump south of Last Chance Creek contained elevated sediment loads. Some aufeis was still present in Fish Creek and settleable solids below the freshwater dam were 0.2 ml/L. The Fish Creek diversion ditch downstream of the pipe was eroding and had not been stabilized. We again recommended in our trip report that the Fish Creek diversion ditch be stabilized. We recommended that the diversion ditch flowing into Last Chance Creek be monitored and if flows did not cease, corrective action should be taken to control sediments.

On May 22, we measured settleable solids in Fish Creek below the freshwater dam construction zone as trace. The settling pond in the lower end of the diversion channel had been armored with rock but channel side slopes below the settling pond had not been stabilized. Solo Creek was stained and slightly turbid. Outflow from the settling ponds upslope of the dam was gray, with organic material visible.

On May 31, settleable solids were trace in Fish Creek below construction activities. The diversion channel had been graded and stabilized with rock (Figure 7). Pumping from the freshwater dam excavation continued and settling ponds were nearly full. We

Figure 7. The diversion channel through the freshwater dam construction zone had been stabilized (top photo). Excavation for the freshwater dam and pumping of water from the excavation continued (bottom photo).

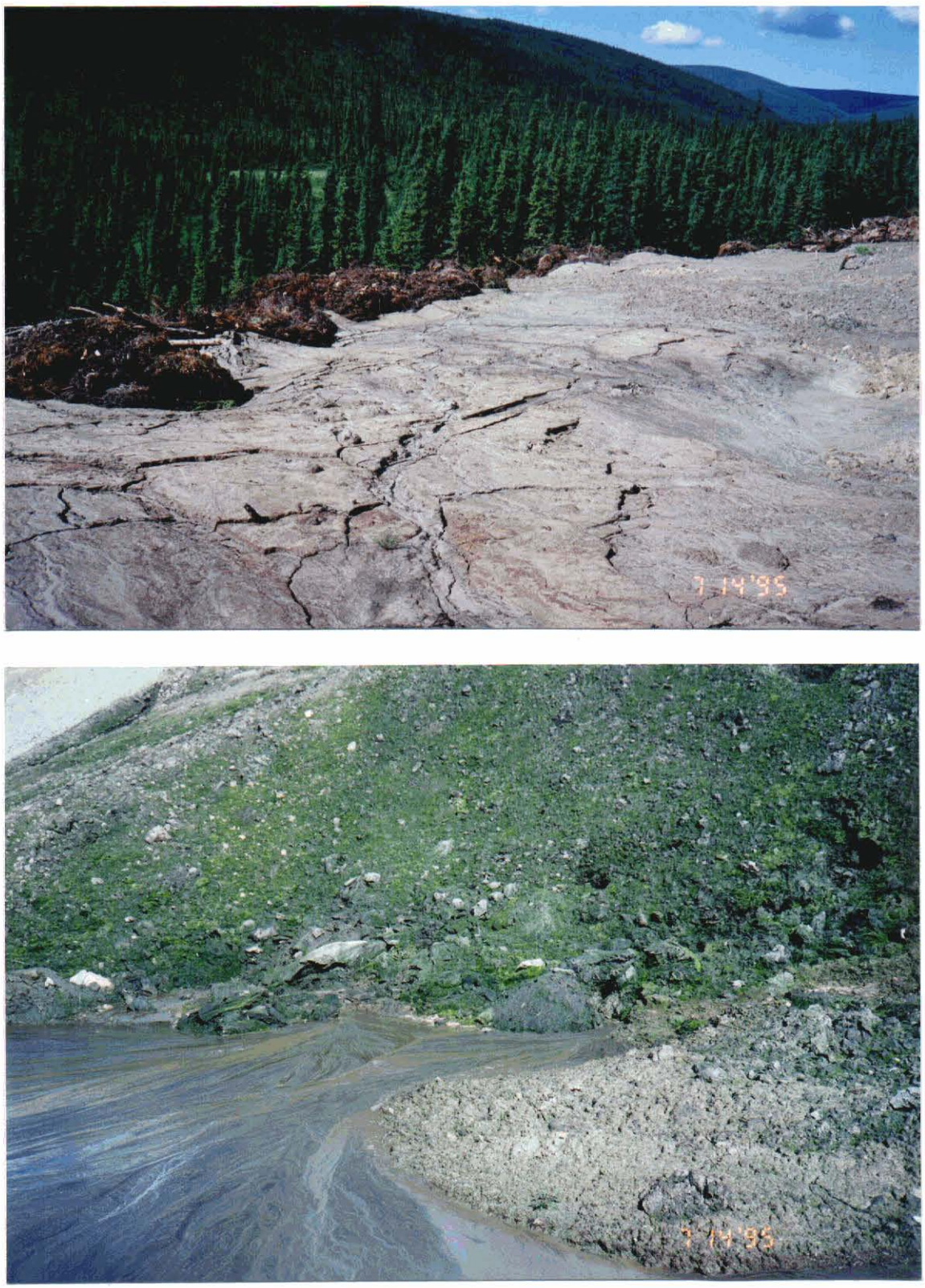
recommended that accumulated sediments be removed, the settling pond outlet be filled with rock, and an overflow pipe installed. We observed on June 13 that the settling ponds were cleaned and a gravel-rock weir was installed at the outlet. Ponds had sufficient retention to reduce sediments. Two 0.5 m (18 in) diameter plastic pipes were installed to carry Fish Creek through the construction zone and the 1.5 m (5 ft) pipe was being removed. Plastic pipe was used to allow greater flexibility in moving the flow of Fish Creek past the construction area as the excavation of the dam continued.

We conducted a field visit on June 27, following three days of rain. Several of the dikes separating the Polar Ponds had been upgraded to handle increased flows. Water was turbid in Last Chance, Solo, and Fish Creeks. The dike separating Fish Creek from the freshwater dam excavation failed around midnight on June 26 (Figure 8). Failure was attributed to water piping through alluvial and ice-rich materials. The excavation was flooded with about 22.7×10^6 L of water (6×10^6 gallons). All equipment with the exception of one pump had been removed from the excavation prior to berm failure. One pump was in place and dewatering had begun. Untreated water from the excavation was being discharged directly to Fish Creek.

On July 5 and 14, the work area was checked (Figure 8). The diversion ditch on the upslope side of the Last Chance Creek gravel stockpile was flowing at 750 L (200 gallons) per minute, with settleable solids of 15 ml/L. We found that the stream was flowing subsurface through ice-rich materials. We recommended a rock weir be installed at the outlet of the ditch to contain sediments. Solo Creek was turbid and we measured 2.7 ml/L settleable solids. We walked up Solo Creek and determined that sediments, mainly organic material and fine silt, were coming from the waste dump. Melting ice-rich materials were flowing from the waste pile into a filled catchment basin and then into Solo Creek (Figure 9). We recommended that a containment dike be constructed between the waste site and Solo Creek. Following a joint field inspection, FGMI decided to place an instream dike in Solo Creek where it could be accessed and maintained. Construction of a dike between Solo Creek and the dump would have required work in black spruce wetlands with ice-rich soils and could have led to increased erosion. Further, fish were not present in Solo Creek and the area where the instream dike would be built would be flooded by the freshwater reservoir by late 1996.

Figure 8. The freshwater dam excavation was flooded on June 29 (top photo). Most of the water had been removed by July 5 and equipment was working to clean up the excavation (bottom photo).

Figure 9. The Solo Creek waste dump catchment berm was filled with silts and organic matter (top photo). Even though waste materials had not stabilized, natural revegetation was evident (bottom photo).



On July 14, we observed that a gravel-rock plug had been placed in the diversion channel entering Last Chance Creek and sediments had been reduced to trace. A rock weir with a rock-lined overflow also had been built in Solo Creek. Settleable solids in Solo Creek upstream of the dike were 1.8 ml/L and trace in the overflow at the rock weir. Following erosion control measures, settleable solids downstream of the freshwater dam were less than 0.2 ml/L.

On August 4, the rock weirs in the Last Chance Creek diversion ditch and in Solo Creek were working effectively. The rock weir in Solo Creek had been raised. Relatively dry conditions during July resulted in less runoff from the waste dump and decreased settleable solids in the creek upstream of the weir. Dewatering of the excavation at the freshwater dam continued, settling ponds for pump water had been cleaned, and dam construction fill was being placed (Figure 10). By late August, the dam core was above the original ground level and backfilling continued (Figure 10). The fresh water dam bypass was functioning properly and settleable solids in Fish Creek below the construction zone were trace.

The ADF&G issued a field permit for removal of select material from a gravel dike located on the downslope side of the Upper Last Chance Creek Pond. The permit required that material removal not occur below 1.2 m (4 ft) above the water level in the Upper Last Chance Creek Pond. The berm maintains the water level in the upper pond and breaching of the berm would drain the pond. Over-excavation was observed, FGMI was notified, and material was graded to bring the berm back to at least 1.2 m above the pond surface. We continued to monitor water flow between the Upper and Lower Last Chance Creek Ponds. Changes in flow were not detected and we concluded the berm was maintaining the water level in the upper pond.

In November, final agreement on culvert design for the main crossing of Solo Creek was obtained and a permit modification issued to install one 4 m (12 ft) diameter pipe matching the stream slope with a burial depth of 0.5 m (1.5 ft) below the thalweg. Surveys were conducted in Solo Creek prior to culvert installation. ADF&G field inspected the culvert after it was installed, but instream disturbance for placement of a rock apron and ice accumulation prevented us from determining if the pipe was installed properly.

Figure 10. Backfilling using select and random fill material to build the freshwater dam was in progress (top photo). Freshwater dam nearly complete in early October 1995, viewed from the hills overlooking the Fish Creek valley (bottom photo).

in accordance with the Fish Habitat Permit. The culvert will be checked following spring 1996 breakup.

In early November, we met with FGMI on site to review areas within the freshwater reservoir where contouring would be done prior to flooding. Surveyors were on site to determine elevations of berms, placer tailing piles, and old access roads. Our Fish Habitat Permit issued for construction of the freshwater dam contained criteria for maximizing habitat diversity in the area to be flooded. Berms and access roads would be scarified and rounded, woody debris would be burned and buried, remains of the Last Chance Creek rock stockpile from dam excavation would be graded and left as a shallow water zone or island depending upon final material needs for the freshwater dam, large rocks would be placed along the shoreline on the northeast side of the reservoir, a material source excavation would be left as a shallow water bay, two access roads would be left as boat ramps, and the temporary Solo Creek culvert would be removed. The proposed plans for contouring and grading within the freshwater reservoir were approved pursuant to Stipulation #2 of Fish Habitat Permit FG93-III-0201. By December 13, Alaska Interstate Construction had completed rehabilitation of the area to be flooded. Grading, scarification, and contouring were complete and the objective of establishing 20% littoral habitat should be met or exceeded. A wide variety of bottom structures will be present in 75 to 80% of this water body, with 25% or less of the area being flat or at a constant slope. The various substrates that will be inundated include gravel tailing piles, vegetated slopes, old creek channels, old settling ponds, and large boulders. Diverse habitat features of irregular shoreline, shallow water littoral zones, coarse and fine substrate, and deep water should provide high quality fish habitat (Figures 11 and 12).

Water began collecting in the freshwater reservoir in late November when pipes carrying Fish Creek water to the low level drain in the dam broke. Interim approval to pond water was obtained from ADNR subject to completion of the low level outlet structure. By the 13th of December, water inundated the settling pond in Solo Creek and Horseshoe Pond. Estimated inflow to the reservoir was 0.14 $m^3 \cdot s^{-1}$ (5 cfs). Lack of snow and cold temperatures resulted in extensive aufeis in Fish Creek above the reservoir and reduced surface flows to the freshwater reservoir. The freshwater dam

Figure 11. Gravel berms and dikes were graded in the area to be flooded (top photo). View of Polar Pond #1 which will be flooded by the freshwater reservoir in December 1995 (bottom photo).

Figure 12. View of graded area to be flooded looking up Fish Creek (top photo). Water beginning to pond in the freshwater reservoir in December 1995 (bottom photo).

spillway will be completed in spring 1996. FGMI has interim approval to impound water. Polar Ponds #1 and #2 likely will be flooded after 1996 breakup.

In summer 1996, water will be pumped from the fresh water reservoir to the tailing impoundment. Pumping will continue until sufficient quantities of water are stored in the tailing impoundment for operation of the mill. Water from the freshwater reservoir will be used to supply potable and fire suppression water at the mine site and as makeup water for the milling process.

PART 2: 1995 FISHERIES STUDIES

Methods

Sampling Sites

Baseline sampling sites (water quality, fish, benthic invertebrates) were established in 1992 for areas directly impacted by the project. Sample sites were located in stream reaches to be inundated by the freshwater reservoir and in streams below the freshwater dam where flows (quality and quantity) would change. In 1993, baseline sample stations were sampled and work focused on flooded mine cuts and settling basins in Last Chance Creek where large numbers of Arctic grayling were found. Systematic sampling of stream reaches to be flooded by the reservoir ceased in 1994 and long-term sampling areas were established in Last Chance Creek upstream of the projected limits of the freshwater reservoir and sampling in Bear and Fish Creeks downstream of the freshwater dam continued (Figure 13). In 1995, we continued to sample Bear, Fish, and Last Chance Creeks and we estimated fish populations in the Upper and Lower Last Chance Creek Ponds and in Polar Ponds #1 and #2 (Figure 14). Based on survey information provided by FGMI, all these ponds will be flooded once the freshwater reservoir fills.

Fish catch data from pool-riffle sequences were combined for purposes of analyses due to significant annual changes in stream character within our sample reaches. Some effort was expended in upper Fish Creek to collect tagged fish. Sample sites in Bear, Lower Fish, and Upper Last Chance Creeks will be used for post-construction monitoring.

A sample reach in Solo Creek upstream of the freshwater reservoir was not established. We physically were unable to find a reach of Solo Creek where we could use the electrofisher.

Water Quality

Temperature was measured with an analog mercury thermometer or a digital thermometer. Settleable solids were measured with an Imhoff Cone, according to standard methods (APHA 1985). We collected water samples in clean 1000 ml plastic

Figure 13. Fish sample sites for post-construction monitoring in the Fish Creek drainage.

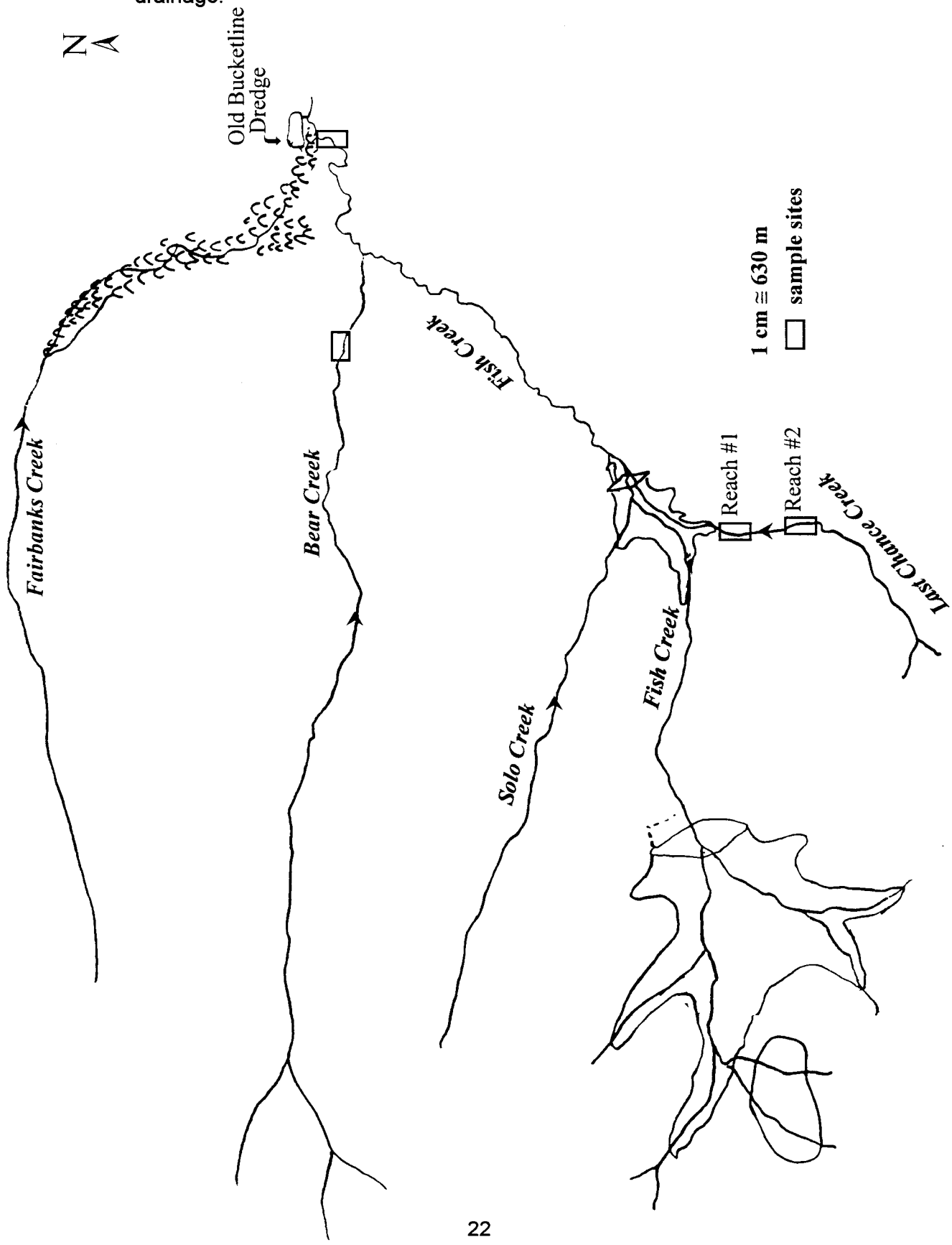
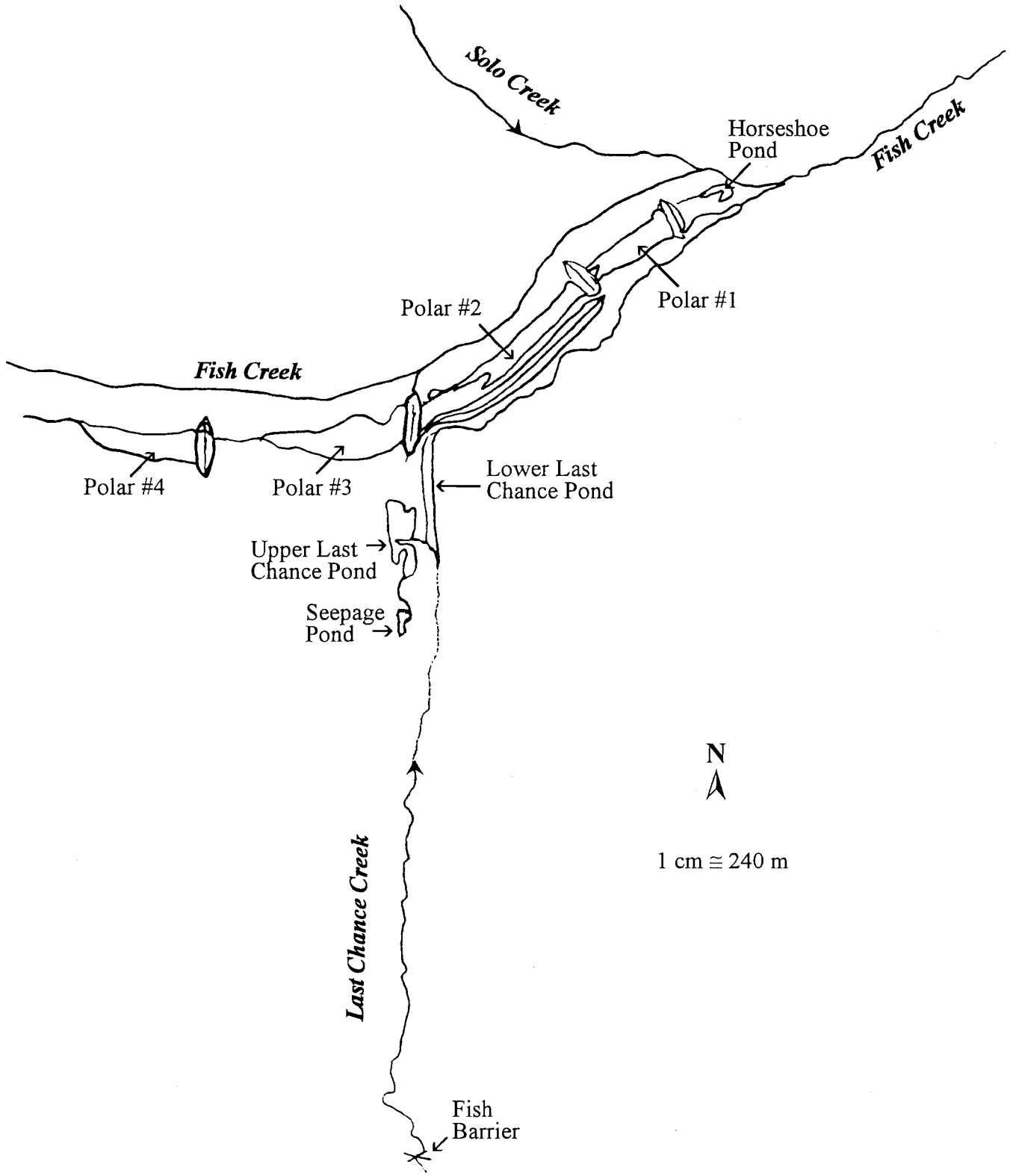


Figure 14. Pond complexes in Upper Last Chance Creek and Fish Creek that will be flooded by the freshwater reservoir.



containers and kept the samples refrigerated until they were analyzed for turbidity and total suspended solids. The ADNR, Division of Mining and Water Management, Water Quality Laboratory conducted all water quality analyses. U.S. Environmental Protection Agency (USEPA) method 180.1 was used for turbidity and USEPA method 160.2 for total suspended solids (Kopp and McKee 1983).

Temperature, flow, turbidity, and total suspended solids were measured in Fish Creek immediately upstream of Fairbanks Creek. Water level was measured with a pressure transducer and automated recorder, calibrated with stream flow measurements taken throughout the year. Water was sampled for turbidity and total suspended solids four times daily with an automated water sampler. Daily water samples were composited into one sample to give an average amount for the day.

Fish

We sampled fish by electrofishing, fyke-nets, hoop traps, minnow traps, hook and line, and small mesh dip nets. In 1995, we caught most of the fish with fyke-nets in the ponds. We captured, identified, measured (fork length for Arctic grayling, round whitefish, and longnose sucker; total length for burbot and slimy sculpin, and released fish. Visual observations were made in clear water creeks and ponds.

We collected fish with a Smith-Root model 15-A backpack electrofisher using a single pass upstream beginning at the downstream end of the sample reach. Some Arctic grayling and burbot were retained for age and sex determination, metals analyses, and stomach contents. Arctic grayling were marked with an adipose fin clip and those greater than 149 mm were tagged with numbered *Fine Fabric Floy-tags*. Round whitefish were marked with an adipose fin clip and those greater than 200 mm were tagged. Burbot were marked with a left pelvic fin clip in Polar Pond #1 and with a right pelvic fin clip in Polar Pond #2. Burbot >150 mm were tagged and some injected with oxytetracycline for age confirmation in subsequent years.

Two sizes of fyke-net were used. Net size (wings, mesh, center leads) was the same except for entrance frames. Entrance frames were either 0.9 m (3 ft) or 1.2 m (4 ft) square. Fyke-nets were 3.7 m long (12 ft), had five hoops, with a 1.8 m (6 ft) cod end, and 0.9 (3 ft) by 7.6 m (25 ft) net wings attached to the entrance frame. The center lead was 30.4 m (100 ft) and was deployed to the maximum without submerging the top

of the entrance frames. Nets were set with the center lead perpendicular to the pond bank.

We used minnow and hoop traps baited with salmon roe and fish to collect fish, primarily burbot, from ponds. Traps were fished from 24 to 48 hrs and rebaited if reset. A 0.3 m (1 ft) square frame dip net with fine mesh was used in shallow water to collect young-of-the-year Arctic grayling.

Fish population estimates in pond habitat were made using a mark-recapture technique. The population abundance estimate used was Chapman's modification of the Peterson mark-recapture technique (Chapman 1951).

Formulas used to estimate the population, the variance of the estimate, and the 95% confidence interval (CI) follow:

(1) $$N = \frac{(n_1 + 1)(n_2 + 1)}{R + 1}$$

where:

N = the estimated abundance
n_1 = the number of marked fish in the population
n_2 = the number of fish caught in the second sampling event; and
R = the number of marked fish caught in the second sampling event.

The approximate variance of the estimate is:

(2) $$V[N] = \frac{N (n_2 - R)(n_1 - R)}{(R + 1)(R + 2)}$$

The 95% confidence interval (CI) is:

$$95\%\ CI = V^{1/2} (1.96) \pm N$$

Assumptions necessary for accurate use of this technique are:

(1) the population is closed (no immigration or emigration);

(2) all fish have same probability of capture in marking sample or in recapture sample or marked and unmarked fish mix completely between marking and recapture;

(3) marking does not affect probability of capture in the recapture event;

(4) fish do not lose their mark between marking and recapture events; and

(5) all marked fish are reported when recovered in the recapture sample.

Aquatic Invertebrate Communities

We collected benthic invertebrates three times in 1992 (June, July, and August) and once in 1993 (June in Fish Creek, August in Bear Creek) at two sites: Lower Fish Creek near Fairbanks Creek; and Bear Creek about 1 km upstream of the confluence of Bear and Fish Creeks (Figure 13). Ten benthic invertebrate samples were collected with a Hess sampler from riffle sections of each stream. Pools were not sampled. Invertebrates were preserved with ethanol, sorted from organic and inorganic debris, counted, and identified to family.

Metals Contents in Fish

Three Arctic grayling (236 to 245 mm) were collected in late June 1992 to analyze their tissues for metals. All three fish were collected in Fish Creek near Fairbanks Creek. Fish were packed in clean plastic bags, transported to Fairbanks, and frozen. Dissection of fish tissues was done in the ADF&G laboratory in Fairbanks using standard procedures to minimize contamination. All dissection instruments were cleaned with concentrated ultra-pure nitric acid (Ultrex®) and rinsed with double distilled, deionized water before dissecting any of the tissues. Samples of liver, muscle, gill, and kidney were removed from each fish, packed in pre-cleaned jars (EPA protocol C, Series 300), and frozen. Tissue samples were submitted to a private analytical laboratory where they were digested and analyzed for aluminum, tin, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, silver, titanium, vanadium, and zinc (Al, Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Ti, V, and Zn) using inductively coupled

plasma emission spectroscopy (ICP-MS), flame atomic absorption spectrophotometry (Zn), and cold vapor atomic absorption spectrophotometry (Hg). Because of the small amounts of tissue, only muscle could be analyzed for Hg.

Twelve Arctic grayling and 12 round whitefish were collected from Fish Creek near Fairbanks Creek in October 1992 to analyze for whole body content of Al, As, Cd, Pb, and Hg. Three Arctic grayling were collected on October 5, placed in a clean plastic bucket with clear water and held about 3 hrs before sacrificing. The remainder of the fish were obtained on October 28, placed in clear water for about 1 hr and sacrificed. All fish were placed in precleaned jars, frozen, and shipped to a private analytical laboratory.

In 1993, we collected 24 Arctic grayling (150 to 180 mm) in August from the Last Chance Creek pond complex to analyze for whole body concentrations of Al, As, Cd, Pb, and Hg. Fish were weighed, measured, packed in pre-cleaned jars, and frozen. Fish samples were submitted to the same private laboratory for analysis using the same procedures as the 1992 fish sample.

In 1995, based on an analysis of the data base for metals, we collected an additional sample of 24 Arctic grayling from the Last Chance Creek pond complex for analysis of whole body concentrations of Pb. Fish were caught by angling through the ice in October. Fish were weighed, measured, packed in pre-cleaned jars, and frozen. Fish samples were submitted to the same private laboratory for analysis using the same procedures as were 1992 and 1993 samples.

RESULTS AND DISCUSSION

Water Quality

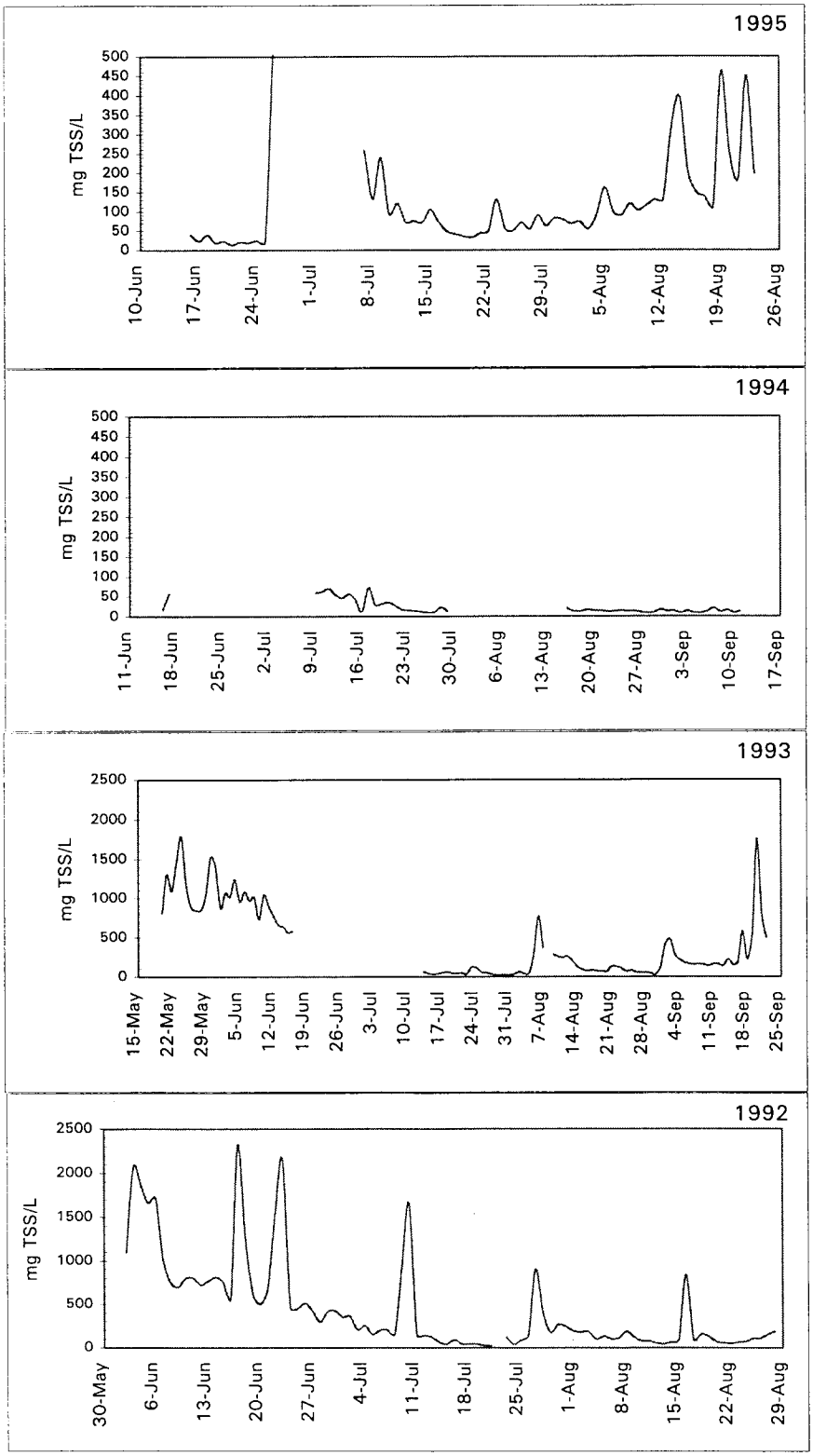
Fish Creek

The ADNR, Division of Water and Mining has operated an automated water sampler for turbidity and total suspended solids and a recording flow meter in Fish Creek since 1992. In 1992 and 1993, Fish Creek contained high total suspended solids concentrations (up to 2320 mg/L) and high turbidity (Table 1). Water quality improved in 1994 during the pre-construction phase of the Fort Knox gold mine, when no upstream placer mining occurred. In 1995, construction activities at the Fort Knox site resulted in higher total suspended sediment concentrations than in 1994 (Table 1, Appendices 1 through 4). Failure of the diversion dike separating Fish Creek from the freshwater dam excavation on June 26, 1995, resulted in immediate elevations of total suspended solids in Fish Creek downstream of the freshwater dam (Figures 8 and 15). Sediment concentrations in Fish Creek were higher for the remainder of summer 1995 than in 1994, but not as high as concentrations measured in 1992 and 1993 (Figure 15).

Table 1. Summary of water quality data for Fish Creek, 1992-1995.

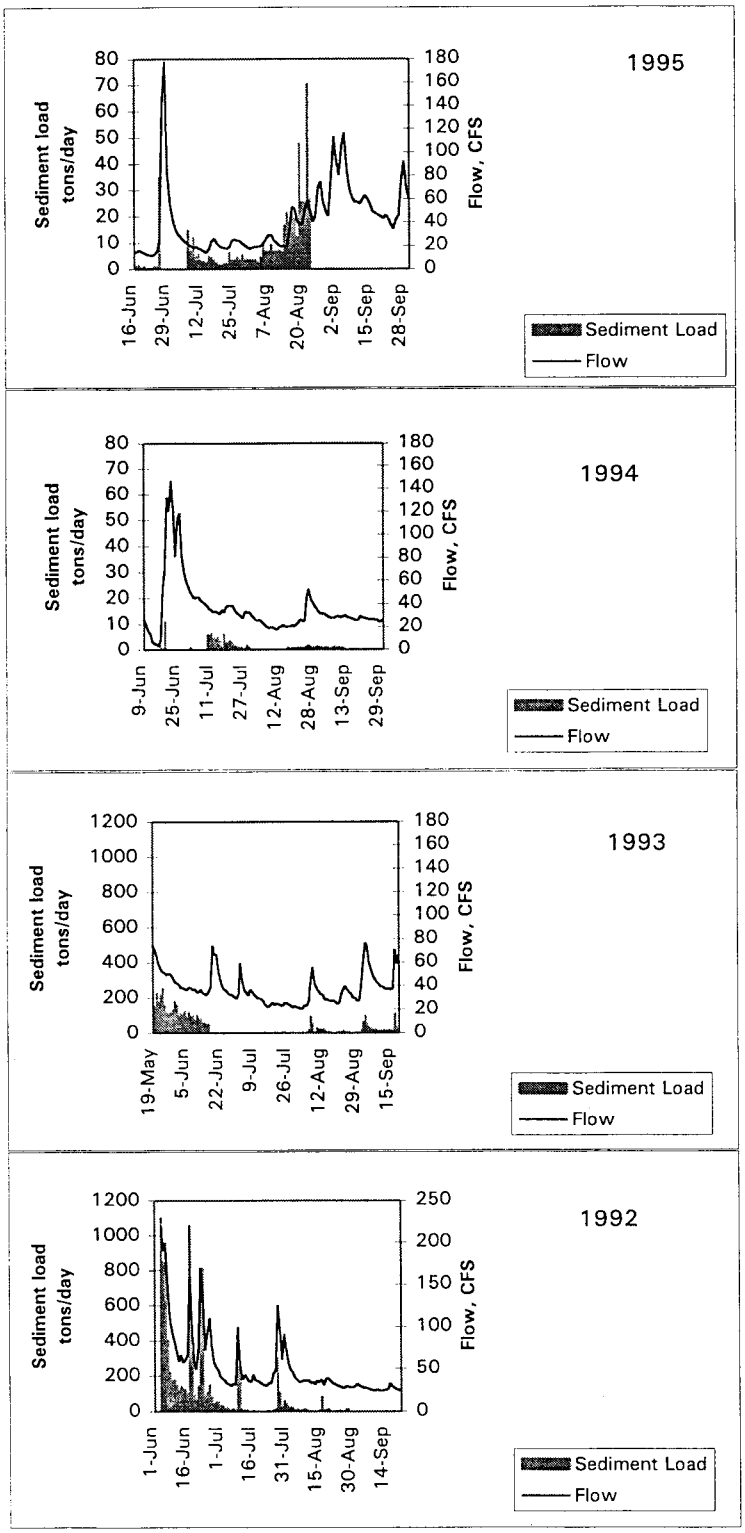
Year	Summer Flow cfs	Maximum NTU	Median NTU	Maximum mg/L	Median mg/L
1995	41.3	220	88	505	82.2
1994	41.9	26	4.9	71.7	14.5
1993	38.2	290	75	1790	173
1992	50.4	2900	180	2320	188

Figure 15. Concentration of total suspended solids in Fish Creek at Fairbanks Creek, 1992 through 1995. Data from ADNR, Division of Mining and Water Management. (Note Scale Changes 92-93)



ADNR Division of Mining and Water Management calculated sediment loading (in tons per day) and compared loading to stream flow (Figure 16). Periods of high loading usually correlated with periods of high flows, especially during 1992 and 1993. This suggests that sediment concentrations in the stream were increased by resuspension of streambed sediments. In 1994, after cessation of placer mining and before construction of the Fort Knox Mine, sediment loading was low and did not increase substantially during peak flows. Sediment loading in 1995 reflects construction activities more than stream flows.

Figure 16. Sediment loading and stream flow in Fish Creek at Fairbanks Creek, 1992-1995. Data from ADNR Division of Mining and Water Management.



Fisheries

Upper Last Chance Creek

Two reaches of Last Chance Creek, upstream of the freshwater reservoir, were sampled in 1994 and 1995 (Appendices 8 and 9) to gather baseline data on fish use prior to reservoir flooding. Sample reach #1 was 169 m long and reach #2 was 175 m long. Fluvial habitat available to Arctic grayling was estimated at 1.2 km above the Lower Last Chance Creek Pond. A 1 m (3-ft) waterfall in the creek limits or prohibits fish movement further upstream. The portion of Last Chance Creek used by fish has been highly disturbed by past placer mining activities (Ott et al. 1995). Water temperatures reached 11.2°C in mid-July 1995 and 11.5°C in early August 1994. Stream temperatures usually remain below 9°C. Arctic grayling entered Upper Last Chance Creek in early spring 1994 and 1995 to spawn, with many remaining in the creek during the open water season. In 1994 and 1995, substantial rainfall events occurred in June after spawning, followed by high stream discharges, and few young-of-the-year Arctic grayling were found during late summer sampling.

In 1995, we sampled Last Chance Creek in May, June, July, and August. Use of the creek peaked in May when we caught 212 Arctic grayling (Table 2). The number of Arctic grayling in reach #1 remained virtually constant during summer 1995, whereas numbers decreased in reach #2. Peak use of the creek in 1994 occurred in August when 197 fish were caught. A few young-of-the-year Arctic grayling were found in Upper Last Chance Creek in August 1995. In 1994, we did not find any young-of-the-year Arctic grayling until September 5 (Ott et al. 1995). Recruitment of young-of-the-year Arctic grayling in 1994 from spawners using Upper Last Chance Creek was extremely low. Recruitment from 1995 spawners also appears low but will be verified with 1996 sampling. The lack of recruitment, based on length frequency distribution for Arctic grayling collected in May 1994 and 1995, appears to include the young-of-the-year from the 1993 spawners (Figure 17). Arctic grayling smaller than 160 mm are absent from the creek.

Figure 17. Length frequency distribution of Arctic grayling collected in Upper Last Chance Creek (1994 - 1995).

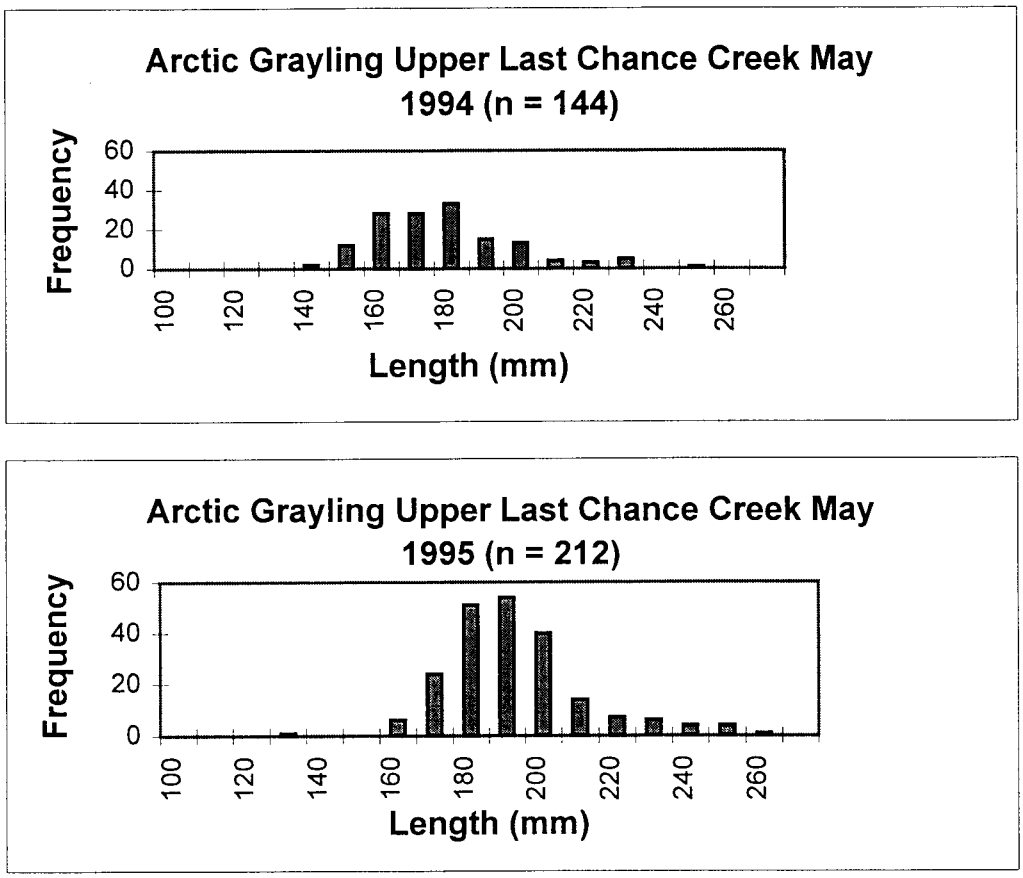


Table 2. Number of fish caught, excluding young-of-the-year Arctic grayling, in Last Chance Creek upstream of the projected freshwater reservoir using an electrofisher (1994-1995).

Date Sampled	Sample Site (Reach)	AG	BB	Total Fish
5/10/94	#1	118	0	118
7/7/94	#1	68	0	68
8/4/94	#1	130	5	135
9/5/94	#1	114	4	118
5/17/95	#1	102	1	103
6/15/95	#1	105	4	109
7/10/95	#1	99	3	102
8/7/95	#1	97	8	105
5/10/94	#2	26	0	26
5/18/94	#2	55	0	55
5/26/94	#2	32	0	32
7/7/94	#2	41	0	41
8/4/94	#2	67	0	67
9/5/94	#2	65	0	65
5/17/95	#2	110	0	110
6/15/95	#2	63	0	63
7/10/95	#2	68	1	69
8/7/95	#2	44	4	48

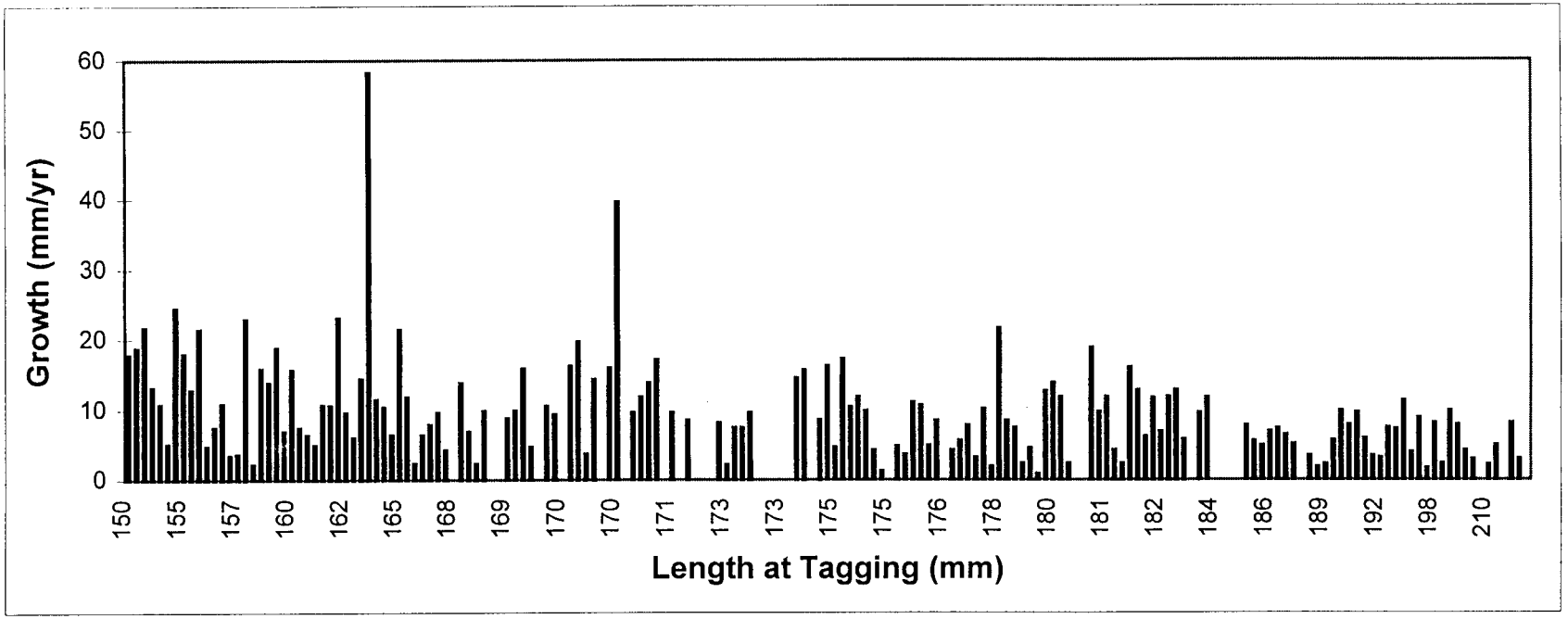
AG = Arctic grayling, BB = burbot

Burbot were caught in both reaches in 1995. The number of burbot peaked in reach #1 in August at 8 (Table 2). In 1994, burbot were not caught in reach #2. A slight increase in the number of burbot using the creek was observed in 1995 although numbers were small. Previous sampling in 1994 in the Lower Last Chance Pond did not capture juvenile burbot; therefore, it appears that juvenile burbot have recently colonized this portion of the Upper Fish Creek drainage.

Growth of Arctic grayling tagged in Last Chance Creek was monitored (Appendix 8). We tagged 662 fish ranging in size from 150 to 250 mm in 1994 and recaptured 181 of these fish in 1995. Average length at tagging was 176 mm and the average growth per year was 8 mm. Growth rates for Arctic grayling were highly variable (0 to 58 mm/year)

(Figure 18) but were decreasing with size for our marked sample. Growth rates for comparable size classes of Arctic grayling in Interior and Arctic Alaska are substantially greater than those found in Upper Last Chance Creek. In the North Fork of Red Dog Creek (northwestern Alaska), growth ranged from 37 to 66 mm/yr for Arctic grayling (n = 11) ranging from 200 to 270 mm at tagging (Ott and Weber Scannell 1996). Yearly growth rates for Arctic grayling in Fairbanks Creek (tributary to Fish Creek) ranged from 16 to 30 mm/yr for fish (n = 9) from 150 to 202 mm at tagging. The Fairbanks Creek Arctic grayling were similar in size to the Upper Last Chance Creek fish at tagging, fish were at large about 2 yr, and growth rates were twofold greater. Arctic grayling tagged in Upper Last Chance Creek during summer 1994 were recaptured in the Polar Pond complex and in both the Upper and Lower Last Chance Creek Ponds. Fifty-eight fish were found in the Lower Last Chance Creek Pond, 16 in the Upper Last Chance Creek Pond, and 6 in the Polar Pond Complex. We believe that most of the Arctic grayling using Upper Last Chance Creek overwinter in the Lower Last Chance Creek Pond.

Figure 18. Growth of Arctic grayling (n = 181) tagged in Upper Last Chance Creek in 1994 and recaptured in 1995 after about one year at large.



Upper and Lower Last Chance Creek Pond Complex

The Last Chance Creek ponds will be inundated when the freshwater reservoir fills with water. The Last Chance Creek Pond complex (Upper and Lower Ponds) consists of several ponds (mine cuts used as settling basins during placer mining) fed by groundwater and Last Chance Creek (Figure 19). The seepage pond has a surface area of 0.04 ha (0.1 ac), the upper pond is 2.4 ha (6.0 ac) with 0.1 ha (0.2 ac) of littoral habitat, and the lower pond covers about 1.4 ha (3.2 ac) with limited shallow water. Both ponds have a maximum water depth of 4 m (13 ft) and support overwintering fish.

In late May-early June 1995, we sampled the upper pond using two fyke nets to estimate the Arctic grayling population. During the mark event we tagged or fin clipped 248 fish <150 mm and 259 ≥150 mm (Figure 20). We handled 400 fish at recapture. The estimated population of Arctic grayling <150 mm was 576 (95% CI 482 - 670) and ≥150 mm was 893 (95% CI 752 - 1,034). In 1993, we also estimated the number of Arctic grayling in the upper pond. In 1993, fish were caught by angling in late May and early June and the recapture was done in August. We estimated that 1,421 (95% CI 939 - 1,903) Arctic grayling <150 mm and 654 (95% CI 527 - 781) Arctic grayling ≥150 mm were in the pond in 1993. The number of fish <150 mm was substantially higher in 1993 than 1995 in the upper pond and the number of fish ≥150 mm was higher in 1995. We know based on tag recovery data that the general movement of Arctic grayling is out of the upper pond to the lower pond and Upper Last Chance Creek with few fish returning to the upper pond. In late April 1995, we captured 158 Arctic grayling by angling through the ice in the Upper Last Chance Creek Pond. Average length for marked fish was 180 mm (maximum length 235 mm). We recaptured 47 of these fish following breakup. Only 13 of the 47 marked individuals were recaptured in the upper pond. Similar fishing effort (fyke-nets) was expended in both ponds. Most of the fish (34) moved out of the upper pond and into the lower pond and Upper Last Chance Creek to spawn. Recaptures occurred in late May and early June during active spawning.

Recaptures of Arctic grayling tagged in 1992 through 1995 in the Upper and Lower Last Chance Creek Ponds showed a net loss of 137 fish from the upper pond and a net gain

Figure 19. Pond complexes in Upper Last Chance and Fish Creeks.

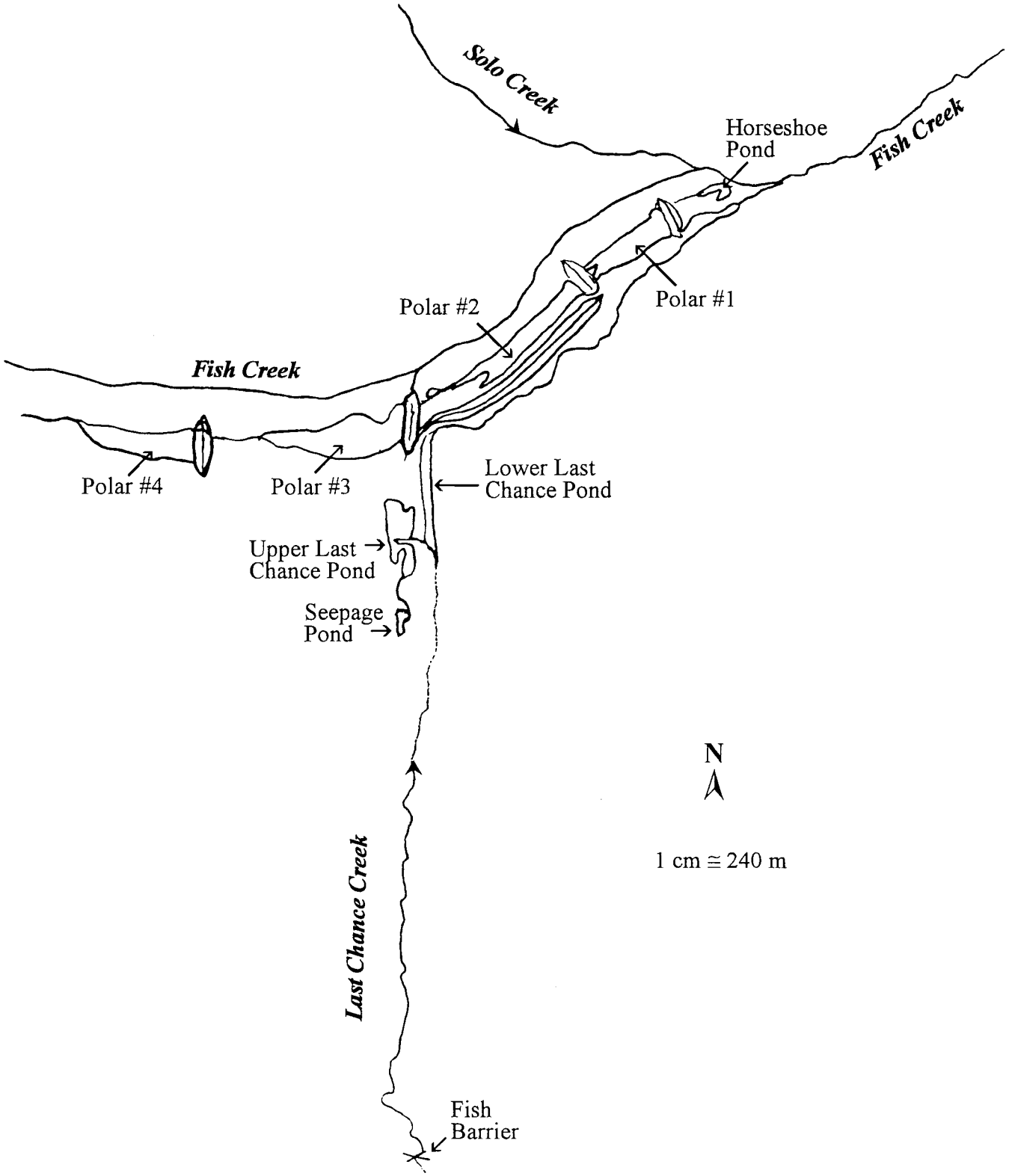
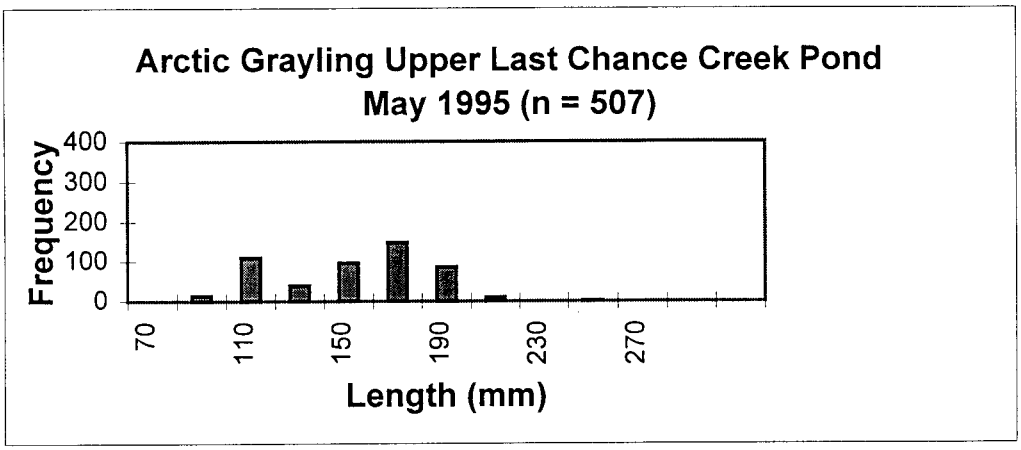
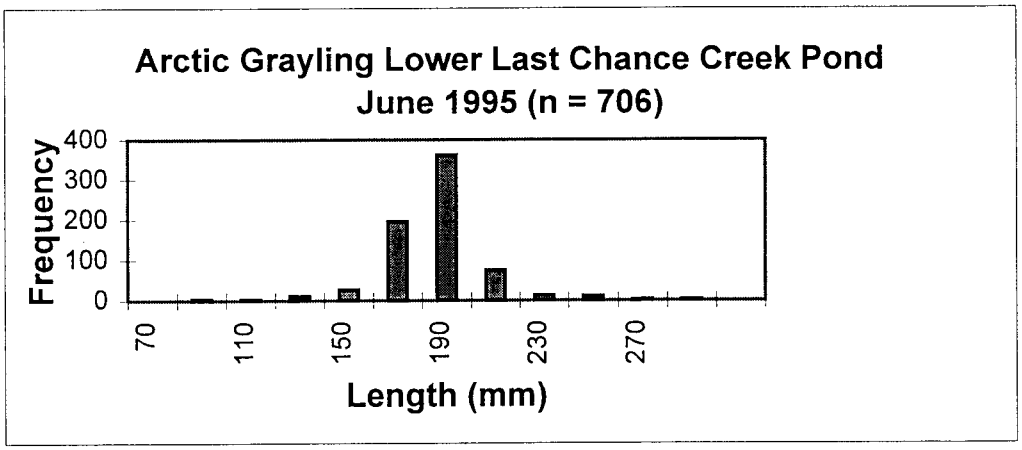


Figure 20. Length frequency distribution of Arctic grayling in Upper and Lower Last Chance Creek Ponds, 1995.





of 150 in the lower pond. Apparently, spawning occurs in the upper pond and rivulet connecting the seepage and upper pond. Good survival and recruitment in these areas maintain a viable population of Arctic grayling in the upper pond.

In early June 1995, we tagged and marked Arctic grayling in the lower pond. We handled 706 fish during our mark event and 701 at recapture (Figure 20). Our estimated population was 65 fish (95% CI 52 - 78) <150 mm and 1,326 (95% CI 1256 - 1396) fish ≥150 mm. In 1993 we estimated there were 429 Arctic grayling in the lower pond ≥150 mm and 1376 Arctic grayling <150 mm. Based on initial aging data, fish <150 mm are mainly one year old with some two year olds. Little or no survival of young-of-the-year fish was documented in Upper Last Chance Creek in 1994. Although some young-of-the-year Arctic grayling were seen in 1995, it appeared that high stream flows following spawning again caused high mortalities. Our population estimate of 65 fish <150 mm in the lower pond confirms the virtual absence of any recruitment of young-of-the-year fish in either 1993 or 1994. The number of Arctic grayling in the lower pond ≥150 mm was substantially higher in 1995 (1,326) than 1993 (429). It appears that survival of smaller fish in the lower pond and recruitment from the upper pond has resulted in a 3-fold increase in the Arctic grayling population ≥150 mm in the lower pond. Fish ≥200 mm are more prevalent in the lower than upper pond. We caught 706 Arctic grayling in the lower pond and 50 were ≥200 mm whereas we handled 507 from the upper pond and 4 were ≥200 mm.

Our fish population data strongly suggest that small Arctic grayling from the upper pond are not moving to the lower pond until they reach a larger size. We believe that outmigration from the upper to lower pond by larger fish may be due to natural dispersal of Arctic grayling during spawning and movements back into the upper pond are restricted in part by extremely shallow water across the low water crossing that separates the two ponds.

The Last Chance Creek pond complex was flooded by June 1996. Our plan to make a population estimate for Arctic grayling in these ponds in 1996 was cancelled. A population estimate for the freshwater reservoir will be made in 1997 or 1998.

Polar Ponds #1 and #2

In 1993 we found juvenile burbot in the outlet of Polar Pond #1 and in 1994, we caught burbot in minnow traps in the pond. In spring 1995 we sampled both Polar Ponds #1 and #2 to estimate the burbot population. We marked 90 burbot in Polar Pond #1 and 73 in Polar Pond #2 on May 11. We resampled the ponds on May 18, catching 75 burbot with 16 recaptures in Polar Pond #1 and 138 burbot with 23 recaptures in Polar Pond #2. Our burbot population estimate for Polar Pond #1 was 407 (95% CI = 258 to 556) and for Polar Pond #2 was 429 (95% CI = 303 to 555). The average length of all burbot caught during both the mark and recapture events was 216 mm, with few small and large burbot (Figure 21). Gear selectivity may explain the low catch of small burbot but larger burbot appear to be absent from the population.

During the tag event (May 11) for Polar Pond #1, 7 of the 90 burbot were <150 mm. The average length for burbot ≥150 mm was 212 mm (SD = 35, Range 154 to 283). In Polar Pond #2, the average length of burbot ≥150 mm was 227 (SD = 34, Range 152 to 331) and only one of the 73 fish handled was less than 150 mm.

Polar Pond #2 was sampled through the ice in November 1995. Minnow traps baited with fish and salmon roe caught 40 burbot. Fifteen were released and 23 retained to determine sexual maturity, stomach contents, and age. Predominate food items found were Chironomidae. Fourteen of the burbot were sexually mature and would have spawned in February-March 1996 (Table 3). Four of 8 females and 10 of 15 males were mature. Male burbot ranged in size from 218 to 285 mm and females varied from 228 to 298 mm. The smallest mature male was 223 mm and the smallest mature female was 253 mm. Maturity at these sizes has not been found in previous studies conducted by the department. In the Tanana River drainage, Evenson (1990) reported onset of sexual maturity was first noted at age 4 and 452 mm for males and age 6 and 498 mm for females.

In early May 1995, we marked Arctic grayling in Polar Pond #1 and #2 for a population estimate (Appendix 9). In Polar Pond #1 we marked 293 Arctic grayling on May 11. We caught 135 fish on May 18 with 23 recaptures of marked fish. We estimated Polar Pond #1 contained 1,037 (95% CI = 277 to 1,797) Arctic grayling <150 mm and 794 (95% CI = 510 to 1,078) fish ≥150 mm. During our mark event in Polar Pond #2, we

caught 256 Arctic grayling; 251 were <150 mm. We resampled Polar Pond #2 and caught only 28 Arctic grayling in two fyke-nets. Each fyke-net contained about 50 burbot and we assume that our low recapture of small Arctic grayling was due to predation by burbot. Therefore, a population estimate for Arctic grayling in Polar Pond #2 could not be made.

Figure 21. Length frequency distribution for burbot collected in Polar Ponds #1 and #2, 1995.

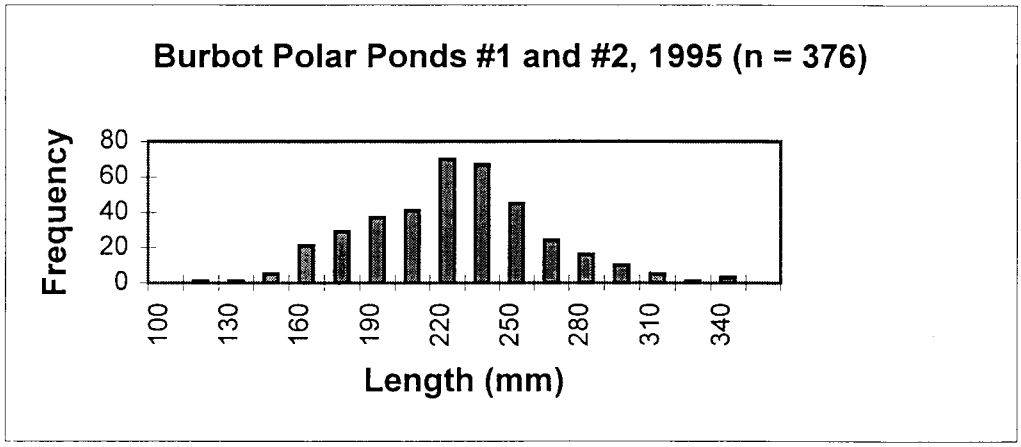


Table 3. Sex, maturity, gonad weight, length, and age of burbot collected in Polar Pond #2 in November 1995 (Evenson 1996).

Date	Sex	Mature	Gonad Weight (g)	Length (mm)	Age
11/30/95	M	Yes	11	265	4
11/30/95	M	Yes	13	267	3
11/30/95	M	Yes	16	285	4
11/30/95	M	No	1	259	3
11/30/95	M	Yes	10	244	4
11/30/95	F	Yes	4	261	4
11/30/95	F	Yes	6	257	5
11/30/95	M	Yes	8	232	3
11/30/95	M	No	1	218	3
11/30/95	M	No	1	242	3
11/30/95	M	Yes	10	236	2
11/30/95	F	Yes	6	253	4
11/30/95	M	Yes	13	249	5
11/30/95	F	No	1	298	4
11/30/95	F	Yes	6	262	4
11/30/95	M	No	1	273	3
11/30/95	F	No	1	228	3
11/30/95	M	Yes	5	223	3
11/30/95	M	No		260	
11/30/95	M	Yes		252	
11/30/95	M	Yes		247	
11/30/95	F	No		288	
11/30/95	F	No		275	

Bear Creek

Bear Creek flows into Fish Creek about 4 km (2.5 mi) below the freshwater dam. Bear Creek is incised, mostly shaded, and flows from north-facing slopes. Melting ice lenses occur in the banks. Generally, water temperatures are 4°C cooler than Fish Creek. Peak water temperatures were found in June or July and only in 1994 did we find temperatures above 10°C. Water is clear and stained with low turbidity (<6 NTU during breakup) and trace settleable solids. Alkalinity (18 mg/L $CaCO_3$) and hardness (29.5 mg/L) are low after breakup but by July, alkalinity and hardness had increased to 57.5 mg/L and 79 mg/L. Water quality data are summarized in Appendix 5.

In 1992, we sampled 6 pool-riffle reaches and in 1993 we expanded to 11 pool-riffle sequences (Appendix 7). In 1994 and 1995, we continued to sample 11 pool-riffle sequences (Appendices 8 and 9). Total length of our sample area in Bear Creek was 278 m. Because the size and character of individual pool-riffle sequences changed substantially from year to year, we now report only total fish caught in the 278 m reach. Arctic grayling, round whitefish, slimy sculpin, and burbot use Bear Creek during the ice-free season (Table 4). Burbot were first found in August 1993 and were caught during each sample event in 1995. Numbers of Arctic grayling and round whitefish tend to increase as summer progresses, indicating movement from overwintering to rearing habitat. The total number of Arctic grayling and round whitefish using Bear Creek appears to have increased since 1993, with the highest catches occurring in August of 1995 (Table 4).

Table 4. Number of fish caught, excluding young-of-the-year Arctic grayling, in Bear Creek using an electrofisher (1992-1995).

Sample Date	AG	SS	RWF	BB	LNS	Total Fish
6/18/92	3	0	0	0	0	3
7/21/92	26	0	6	0	0	32
8/25/92	36	4	24	0	0	64
5/19/93	3	0	2	0	0	5
7/12/93	17	3	0	0	0	20
8/11/93	20	2	1	0	0	23
5/16/94	11	0	0	0	0	11
7/6/94	22	5	1	0	0	28
8/2/94	30	3	24	4	0	61
9/6/94	36	2	11	2	0	51
5/15/95	22	5	0	2	0	29
6/14/95	30	9	7	1	0	47
7/11/95	45	3	20	1	0	69
8/8/95	56	4	51	5	0	116

AG = Arctic grayling, SS = slimy sculpin, RWF = round whitefish
BB = burbot, and LNS = longnose sucker

Fish Creek at Fairbanks Creek

Our Fish Creek sample reach is 389 m long and is located just upstream of where intragravel flow from Fairbanks Creek merges with Fish Creek waters. Fish Creek is incised, banks are vegetated with willow, alder, and black spruce, and melting ice lenses occur in the banks. Fish Creek is about 10 m (33 ft) wide with shallow riffles separating pools with depths to 1.5 m (5 ft). Peak water temperatures occur in July and early August. Peak temperatures recorded in 1992, 1993, 1994, and 1995 were 11, 12, 11.8, and 13.7°C (Appendix 6). Water quality in Lower Fish Creek was highly turbid in 1992 and 1993. In 1994 and 1995, turbidity was lower and clear water conditions were observed.

Fish Creek has been sampled each year since 1992 (Appendices 7 through 9). Arctic grayling, slimy sculpin, round whitefish, burbot, and longnose sucker use Lower Fish Creek (Weber Scannell and Ott 1993). Young-of-the-year Arctic grayling were not present in 1992 and 1994, but several were collected in 1993 and 1995. Large numbers of young-of-the-year Arctic grayling have not been observed or collected in Lower Fish Creek.

Fish catches tend to increase through summer, with highest catches in the fall (Table 5). We caught 192 fish in Lower Fish Creek in fall 1995; this was the largest catch in this site since sampling started in 1992. As in Bear Creek, numbers of Arctic grayling and round whitefish were substantially higher in fall than spring. On July 13 and August 9, 1995, we observed large numbers of slimy sculpin and estimated that we captured about 10% of the sculpin population. Burbot numbers also increased, particularly in the July 1995 sample event. We speculate that improvements in water quality related to diversion of Upper Fish Creek into the Polar Pond complex during the summers of 1994 and 1995 resulted in increased fish use of Lower Fish Creek. Settleable solids and turbidity should continue to decrease in Fish Creek in 1996 with construction of the freshwater dam; we believe the improved water quality will result in increased fish use. High, or flood, flows will be moderated by the 67 ha (165 ac) freshwater reservoir. Moderation in peak flow events could result in increased spawning success for spring spawning species (i.e., Arctic grayling, slimy sculpin, and longnose sucker) and high population levels of fish in Lower Fish Creek.

Table 5. Number of fish caught, excluding young-of-the-year Arctic grayling, in Lower Fish Creek (1992-1995).

Sample Date	AG	SS	RWF	BB	LNS	Total Fish
7/22/92	9	1	7	1	4	22
8/26/92	14	4	4	2	0	24
5/18/93	9	1	0	0	0	10
6/17/93	22	3	9	0	0	34
7/13/93	40	37	26	2	0	105
8/10/93	14	29	10	2	0	55
5/17/94	26	4	2	1	0	33
7/5/94	20	3	18	2	0	43
8/3/94	5	1	8	1	0	15
9/6/94	20	3	29	0	0	52
5/16/95	36	11	9	0	0	56
6/14/95	25	22	16	2	0	65
7/13/95	46	38	30	9	1	124
8/9/95	58	77	55	2	0	192

AG = Arctic grayling, SS = slimy sculpin, RWF = round whitefish
BB = burbot, and LNS = longnose sucker

Baseline Fish Population Estimate

In late May and early June 1995, we estimated Arctic grayling populations in the Upper and Lower Last Chance Creek Ponds and Polar Pond #1 and burbot populations in Polar Ponds #1 and #2. Using data from 1993 and 1994 (Appendices 7 and 8), we estimated the number of Arctic grayling using Upper Last Chance Creek, Lower Last Chance Creek, and Upper Fish Creek. Our objective was to estimate burbot and Arctic grayling populations upstream of the freshwater dam at a time coinciding with isolation of Upper Fish Creek by construction of the freshwater dam. These fish are available to colonize the new freshwater reservoir and form a base for future populations in the reservoir. Although there may be slimy sculpin and round whitefish present, the numbers are low.

We used fish data from the June 15, 1995, sample event for Upper Last Chance Creek to estimate Arctic grayling population size. The two sample reaches contain 344 m with about 1.2 km of available habitat between Lower Last Chance Creek Pond and a fish barrier. We caught 13 Arctic grayling <150 mm and 155 ≥150 mm. We assumed that densities were similar throughout the 1.2 km of creek. By extrapolation we estimated that 45 Arctic grayling <150 mm and 541 Arctic grayling ≥150 mm were present in Upper Last Chance Creek in June 1995.

To estimate numbers of Arctic grayling in Lower Last Chance, Upper Fish, and Solo Creek we used electrofishing data from 1993 and 1994. Our average catch during 1993 and 1994 per sample reach in Lower Last Chance, Upper Fish, and Solo Creeks was 26, 34, and 14 for Arctic grayling ≥150 mm. Few Arctic grayling <150 mm were found in these areas and we did not estimate the population size. Sample reach lengths and available stream habitat were as follows: (a) Lower Last Chance Creek 100 m sample reach, 300 m total habitat; (b) Upper Fish Creek 150 m sample reach, 370 m total habitat; and (c) Solo Creek 100 m sample reach, 300 m total habitat. We made the assumption that fish densities were similar for the available habitat. Expanding the average catch per sample reach to estimate the number of fish present in the total available habitat yields 78 Arctic grayling in Lower Last Chance Creek, 84 in Upper Fish Creek, and 42 in Solo Creek (Table 6).

Fish, primarily Arctic grayling, also were present in Horseshoe Pond and in three beaver ponds associated with Lower Last Chance Creek. These ponds were visually surveyed and sampling was done by angling. Based on these observations and results on fish densities in ponds where population estimates were made, we made an estimate for the number of Arctic grayling in each pond. Because of the low numbers of Arctic grayling <150 mm in Lower Last Chance, Upper Fish, and Solo Creeks we did not make an estimate for that size group. We believe that about 150 Arctic grayling ≥150 mm were present in each of the four ponds (Table 6).

Table 6. Estimated number of Arctic grayling in Fish Creek upstream of the freshwater dam in 1995 just prior to dam completion and isolation of fish in the headwaters of Fish Creek.

Sample Area	Estimated Number Arctic Grayling <150 mm	Estimated Number Arctic Grayling ≥150 mm
Upper Last Chance Creek	45	541
Upper Last Chance Pond	576	893
Lower Last Chance Pond	65	1326
Polar Pond #1	1037	794
Polar Pond #2	N/A	N/A
Lower Last Chance Creek	N/A	78
Solo Creek	N/A	42
Upper Fish Creek Beaver Ponds	N/A	84
Horseshoe Pond	N/A	600
Total Number of Arctic Grayling in Fish Creek (1995)	1723	4358

N/A = no estimate was made

We estimate that in 1995 there were 1,723 Arctic grayling <150 mm and 4,358 ≥150 m in Fish Creek upstream of the freshwater dam. These fish are the base stock of fish for colonization of the freshwater reservoir. Our estimate for Arctic grayling <150 mm is low because we did not include a Polar Pond #2 estimate. In the Polar Pond #2 mark event, we caught and marked several hundred small Arctic grayling but at recapture we only caught eight and the fyke-net contained many burbot that appeared to have eaten the small Arctic grayling.

In late May 1995, we marked and recaptured burbot in Polar Ponds #1 and #2. We found a few burbot in Upper Last Chance Creek, Lower Last Chance Creek, and in Horseshoe Pond. Our total estimate for burbot in Polar Ponds #1 and #2 is 836. Evenson (1996) noted that the tagged to untagged ratio for the November sample was 9% compared with 20% for the May recapture event. This suggests trap-induced behavior during the mark-recapture event. Furthermore, young-of-the-year burbot

previously found in stream habitat, those young-of-the-year in the pond complex, burbot in the Lower Last Chance Creek pond, and burbot in Upper Last Chance Creek were not included in the population estimate. Therefore, we believe our estimate of 836 burbot is low.

Fish Tissue Analysis for Metals

Fish Creek and Last Chance Creek Ponds

The first fish tissue samples collected in 1992 were analyzed for Al, Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Ti, V, and Zn (Appendix 10). Based upon results from this sample and characteristics of the ore deposit, we decided that long-term monitoring of fish tissues should be done for Al, As, Cd, Pb, and Hg. As is common in the Fairbanks area, Hg had been used historically in mining operations for gold, and Al was found in high concentrations in the gills of Arctic grayling. Although concentrations of Cd and Pb appeared comparable with existing data from other sources, both were selected for inclusion in the baseline data because of their importance if edibility of fish became an issue in the future.

In October 1992, we collected 12 Arctic grayling and 12 round whitefish to analyze for whole body concentrations of our target metals. There was no significant difference in concentrations of Al, As, Cd, Pb, or Hg between Arctic grayling and round whitefish (Two sample T-test, assuming unequal variances $p<0.01$); therefore, these two species were treated as one sample.

Concentrations of Al were higher in Arctic grayling and round whitefish collected in Fish Creek than reported for similar fish in Alaska (Lowe et al. 1985, Schmitt et al. 1990). In October we found an average of 113.4 mg Al/kg ($n = 24$, $SD = 54.7$, dry weight basis).

As, Cd, Pb, and Hg were detected in all fish sampled in October. Whole body concentrations of metals were comparable to amounts found in individual tissues during the initial sampling conducted in June. Concentrations of Cd were higher in liver and kidney, concentrations of Pb were highest in gill tissue, and concentrations of Hg were higher in muscle than whole body samples.

In August 1993, we collected 24 Arctic grayling from the Upper Last Chance Creek Ponds; 12 fish were collected form the lower pond and 12 fish from the upper pond. We selected fish from the two ponds because our information of the Arctic grayling communities of this area indicate that these fish are most likely to inhabit the freshwater reservoir that will be constructed with development of the Ft. Knox gold mine.

Fish were selected within a narrow size range of 150 to 180 mm and 34 to 55 g. The fish were similar to length to Arctic grayling and round whitefish tested in 1992 for metals.

The fish were analyzed for whole body concentrations of Al, As, Cd, Pb, and Hg (Appendix 11). Although movement between upper and lower ponds is not frequent, fish are able to mix. Therefore, we combined fish into one sample group representing Last Chance Creek ponds.

Arctic grayling from the Last Chance Creek ponds were compared with Arctic grayling and round whitefish from Fish Creek. Fish collected in Fish Creek contained significantly higher concentrations of Al ($P=1.378x10^{-5}$, n=48) and As ($P=2.79x10^{-9}$, n=48), than fish collected in the Last Chance Creek ponds (Two sample t-test, Figure 22, Appendix 11). Fish from Last Chance Creek ponds contained significantly higher concentrations of Cd (n=48, P=0.00039) and Hg (n=48, $P=9.79x10^{-11}$) than fish collected in Fish Creek (Figure 22, Appendix 11). Whole body concentrations of Pb were not significantly different between Fish Creek and Last Chance Creek Ponds (n=48, P=0.0781).

In October 1995, we collected and analyzed a sample of 24 Arctic grayling from the Last Chance Creek ponds. This sample was the final opportunity to sample fish before construction of the fresh water reservoir and creation of a barrier to migration between the upstream and downstream portions of the drainage. The fish were tested for Pb.

Arctic grayling sampled in 1995 contained an average of 0.232 mg Pb/kg, dry weight basis (n=24, SD=0.210, Appendix 12). Concentrations were not higher than those measured in 1992 (in Arctic grayling and round whitefish from Fish Creek at Fairbanks Creek) or 1993 (in fish from the Last Chance Creek Ponds) (Figure 23). Most fish contained concentrations of Pb that were less than 10 times the limit of detection: only 17% of fish sampled in 1992, 8% in 1993, and 33% in 1994 contained Pb concentrations that were more than 10 times higher than the limit of detection.

Standard quality control and quality assurance procedures were followed by the analytical laboratory for all tissue samples (ADF&G open file reports).

Figure 22. Median, maximum, and minimum concentrations of Al, As, Cd, Pb, and Hg in fish from Fish Creek (1992) and Last Chance Creek ponds (1993). All concentrations are on a dry-weight basis.

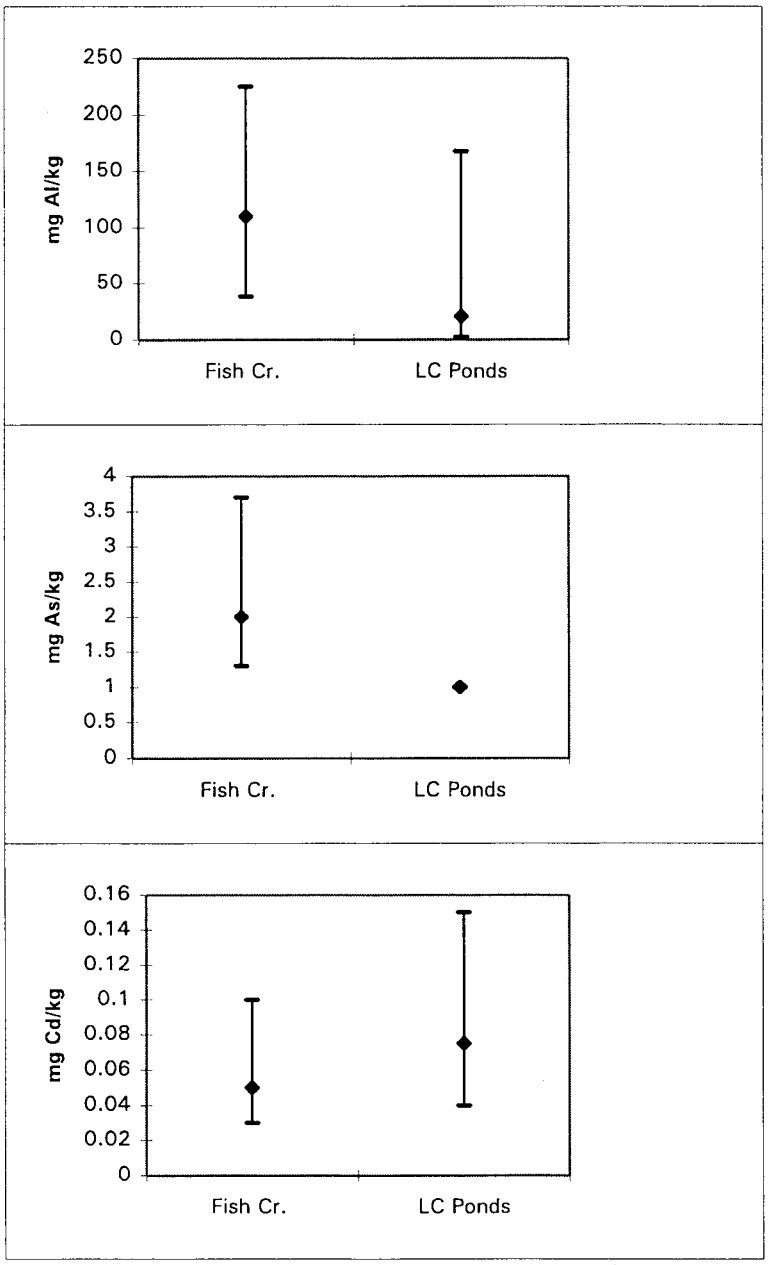


Figure 22. Concluded.

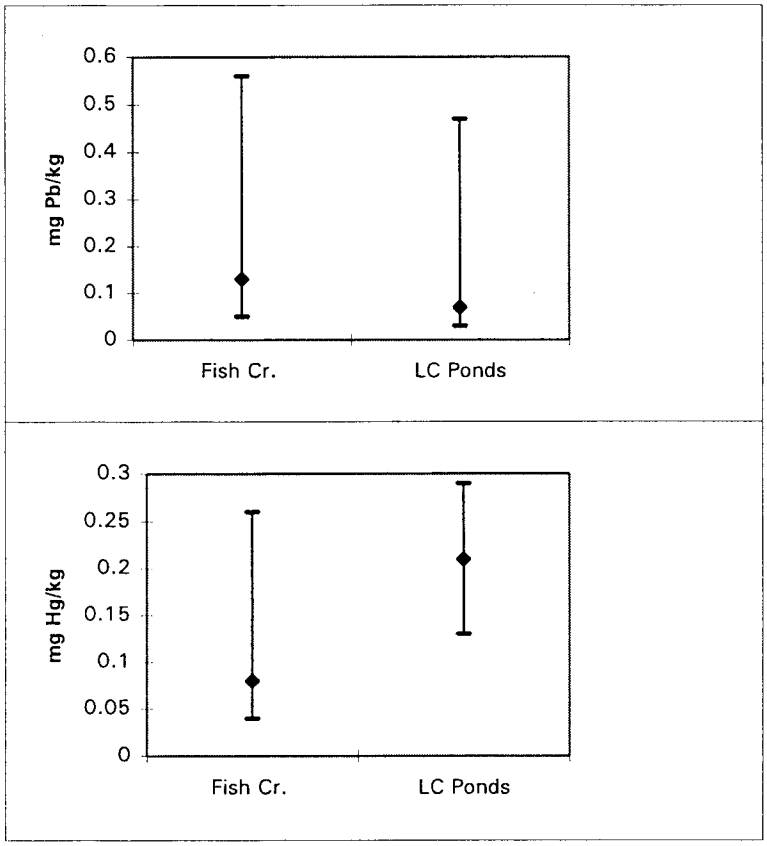
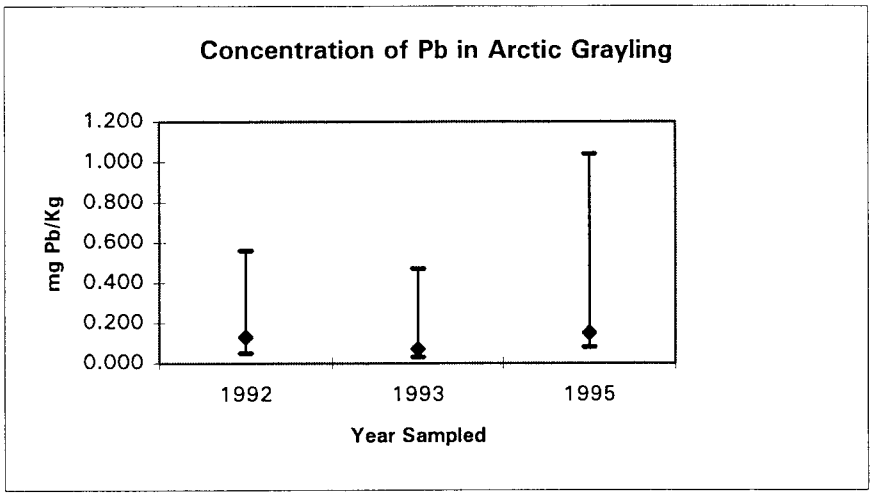


Figure 23. Comparisons of lead concentrations in fish collected in Fish Creek (1992) and Last Chance Creek ponds (1993 and 1995).



Aquatic Invertebrate Communities

Fish Creek

ADF&G sampled invertebrate communities in Fish Creek and Bear Creek in 1992 and 1993 (Weber Scannell and Ott 1994). In 1992, we reported invertebrate community densities in Fish Creek to be lower than is typical for streams of similar size and latitude, with few taxonomic groups represented (Tables 7 and 8). In June 1992, we collected an average of 4 invertebrates per $0.1m^2$, compared to an average of 154 invertebrates per $0.1m^2$ in 1993. In August 1992, we found an average of 40.3 invertebrates per $0.1m^2$ compared to a June 1993 average of 358 invertebrates per $0.1m^2$. Low invertebrate densities in 1992 were attributed to late breakup, extensive icing in Fish Creek (for June) and failure of upstream placer mine settling ponds and subsequent catastrophic flooding in July (affecting August samples).

Predominate invertebrates found in Fish Creek in 1992 were Diptera: Chironomidae (40% of the total invertebrates collected), Nematode (18.5%), and Ephemeroptera: Baetidae (11%); in 1993 they were Diptera: Chironomidae (53%) and Plecoptera: Perlodidae (18%) (Appendices 13 through 15). Samples collected in June 1993 showed a higher proportion of Chironomidae (Appendix 16) and few Ephemeroptera.

Bear Creek

Aquatic invertebrates were sampled in Bear Creek in June, July, and August 1992 (Appendices 17 through 19) and August 1993 (Appendix 20). August 1993 samples had higher densities than summer averages for 1992: in 1993 we collected an average of 95 invertebrates per m^2 in 1993 and 66 invertebrates per m^2 in 1992. Numbers of taxa collected were similar in both years. (Tables 7 and 8).

The predominant invertebrates in Bear Creek in 1992 were Diptera: Chironomidae (35% of the total invertebrates collected), Ephemeroptera: Heptagenidae (27%), and E.:Baetidae (16%). Samples collected in 1993 contained primarily Diptera: Chironomidae (71%) and Plecoptera: Nemouridae (15%).

Table 7. Average invertebrate density in Bear Creek and Fish Creek.

Sample Date	Bear Creek number/0.1m^2	Fish Creek number/0.1m^2	Significantly Different*
June 1992	37.8	4	
July 1992	80.2	5.5	
August 1992	65.8	40.3	
Average for 1992	61.3 (32.8,30)	16.6 (22.2, 30)	yes
Summer 1993	154	322.4	

*Significance was tested with a two-tailed T-test, P=6.77x10^{-8}, n=60.
Numbers in parenthesis are standard deviation and sample size.

Table 8. Average and total number of taxonomic groups found in Bear Creek and Fish Creek.

Sample Date	Bear Creek Average	Bear Creek Total	Fish Creek Average	Fish Creek Total	Significantly Different*
June 1992	6.5	12	2.6	9	
July 1992	5.4	10	2.4	5	
August 1992	6.8	14	7.4	13	
Average for 1992	6.23 (1.59, 30)		4.13 (2.7, 30)		yes
Summer 1993	5.9	8	3.4	7	

*Significance was tested with a two-tailed T-test, P=0.0005, n=60.
Numbers in parenthesis are standard deviation and sample size.

Invertebrate communities in Fish Creek and Bear Creek were compared to determine possible effects of water quality on proportions of Ephemeroptera, Plecoptera, and Trichoptera (EPT). The proportion of EPT was significantly lower in Fish Creek than in Bear Creek (T-test, $P=1.62x10^{-4}$, n=60) in 1992 (Table 9). Similar comparisons were not made in 1993 because insufficient samples were collected throughout the summer.

Table 9. Percent of invertebrate communities consisting of Ephemeroptera, Plecoptera, and Trichoptera in Bear Creek and Fish Creek, 1992.

Sample Date	Bear Creek	Fish Creek	Significantly Different*
June 1992	75.8%	46.4%	
July 1992	58.3%	30.8%	
August 1992	34.1%	30.8%	
Average for 1992	56.0% (21.1, 30)	29.8% (17.9, 30)	yes
June 1993		<1%	
August 1993	20%		

*Significance was tested with a two-tailed T-test, $P=1.62x10^{-4}$, n=60.
Numbers in parenthesis are standard deviation and sample size.

LITERATURE CITED

American Public Health Association. 1985. Standard methods for the examination of water and wastewater. Sixteenth Edition.

Chapman, D.G. 1951. Some practices of the hypergeometric distribution with applications to zoological censuses. University of California Publications in Statistics 1:131-60.

Evenson, M. 1996. Summary of burbot sampling during 1995 at Fort Knox ponds. Memorandum dated March 1, 1996. Alaska Department of Fish and Game. Sport Fish Division. Fairbanks. 5 pp.

Kopp, J.F. and G.D. McKee. 1983. Methods for chemical analysis of water and wastes. Environmental Monitoring and Support Lab. Cincinnati. U.S. Environmental Protection Agency.

Lowe, T.P., T.W. May, W.G. Brumbaugh, and D.A. Kane. 1985. National contaminant Biomonitoring program concentrations of seven elements in freshwater fish, 1978-1981. Arch. Environ. Contam. and Toxic. 14:363-388.

Ott, A.G., P.W. Scannell, and A.H. Townsend. 1995. Aquatic habitat and fisheries studies upper Fish Creek, 1992-1995. Alaska Department of Fish and Game Tech. Rept. 95-4. Habitat and Restoration Division. Juneau. 61 pp.

Ott, A.G. and P.W. Scannell. 1996. Fishery resources below the Red Dog mine northwest Alaska 1990-1995. Alaska Department of Fish and Game Tech. Rept. 96-2. Habitat and Restoration Division. Juneau. 89 pp.

Schmitt, C.J., and W.G. Brumbaugh. 1990. National Contaminant Biomonitoring Program Concentrations of Arsenic, Cadmium, Copper, Lead, Mercury, Selenium, and Zinc in U.S. freshwater fish, 1976-1984. Arch. Environ. Contam. and Toxic. 19:731-747.

Weber Scannell, P. and A.G. Ott. 1993. Aquatic habitat study, upper Fish Creek drainage, with an emphasis on Arctic grayling (*Thymallus arcticus*): baseline studies 1992. Alaska Department of Fish and Game Tech. Rept. 93-4. Habitat and Restoration Division. Juneau. 76 pp.

Weber Scannell, P. and A.G. Ott. 1994. Aquatic habitat of Fish Creek before development of the Fort Knox gold mine 1992-1993. Alaska Department of Fish and Game Tech. Rept. 94-5. Habitat and Restoration Division. Juneau. 79 pp.

APPENDICES

Appendix 1. Sediment and flow in Fish Creek during 1992. Data from Alaska Department of Natural Resources, Division of Mining and Water Management.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)
1-June					
2-June				160	1090
3-June				330	2070
4-June			e220	350	1860
5-June			e190	300	1660
6-June			e200	280	1720
7-June			e150	230	1010
8-June			e110	210	746
9-June			e94	230	697
10-June			e83	240	797
11-June			e71	330	801
12-June			e59	230	721
13-June			e67	300	769
14-June			e57	360	811
15-June			e61	360	751
16-June			e66	350	563
17-June			e170	500	2320
18-June			e100	330	1260
19-June			e57	270	611
20-June			e49	180	500
21-June			e75	170	684
22-June			e170	240	1550
23-June			e140	330	2150
24-June			e72	95	455
25-June			e92	90	450
26-June			e110	190	512
27-June			e77	450	419
28-June			e59	450	296
29-June			e52	380	417
30-June			e49	370	422
1-July	9.4	16.6	41.1	330	353
2-July	10.5	18.3	38.5	340	363
3-July	11.3	19.9	35.9	330	205
4-July	11.8	19.1	32.9	240	256
5-July	11.3	18.6	31.8	120	149

Appendix 1. Continued.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)
6-July	11.0	17.2	30.2	160	198
7-July	10.3	14.2	32.9	120	204
8-July	10.1	16.4	31.0	95	154
9-July	10.8	14.5	99.7	2900	919
10-July	10.4	17.8	54.6	1500	1660
11-July	10.1	14.4	37.3	70	143
12-July	9.5	14.7	43.1	49.8	142
13-July	9.1	14.0	39.8	36.6	119
14-July	8.8	14.4	35.9	29.8	62.0
15-July	9.9	15.6	34.7	26.5	41.1
16-July	10.5	17.9	43.3	45	90.7
17-July	10.1	15.2	36.0	32.4	45.1
18-July	10.7	17.0	36.0	35.6	42.1
19-July	10.0	14.1	34.0	35	41.3
20-July	9.8	13.9	32.3	24.4	27.3
21-July	8.8	12.6	30.8	22.1	24.3
22-July	9.9	15.1	29.6		
23-July	10.5	15.6	33.9	80	125.6
24-July	10.1	13.9	32.2	33	38.9
25-July	9.0	14.2	43.9	45	84.2
26-July	9.2	13.7	48.3	55	140
27-July	8.3	15.0	125.3	250	901
28-July	8.6	14.1	99.6	180	406
29-July	8.3	12.3	61.1	140	174
30-July	8.2	15.3	91.3	150	266
31-July	8.3	13.7	71.3	240	244
1-August	8.2	15.4	56.1	270	193
2-August	9.1	13.3	48.0	260.1	177
3-August	9.2	15.0	45.3	220	185
4-August	9.0	14.5	39.5	190	97
5-August	9.3	16.3	36.9	200	132
6-August	9.8	15.9	34.2	180	102
7-August	8.9	11.0	34.9	190	109
8-August	8.0	12.2	36.4	230	186
9-August	8.0	10.8	36.0	200	123
10-August	7.8	12.3	36.6	150	78.9
11-August	8.1	11.5	33.6	120	78.0
12-August	7.9	11.5	34.2	65	54.1
13-August	8.0	10.9	31.7	55	42.1

Appendix 1. Continued.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)
14-August	8.2	11.6	35.9	80	64.3
15-August	7.4	8.9	34.3	120	88.9
16-August	7.4	8.1	37.3	1000	837
17-August	6.9	7.8	30.3	200	94.4
18-August	6.5	7.6	38.8	200	157
19-August	6.3	9.9	39.0	130	130
20-August	6.0	8.5	35.2	80	69.6
21-August	6.7	11.7	33.1	80	55.8
22-August	7.0	11.3	31.9	90	48.5
23-August	7.3	11.0	30.2	110	62.2
24-August	7.3	11.8	29.3	130	69.9
25-August	8.0	13.7	28.2	90	102
26-August	6.8	6.3	27.4	80	106
27-August	6.6	8.5	29.3	30.8	153
28-August	6.7	8.8	29.0	33	188
29-August	5.6	5.9	28.1		
30-August	5.2	6.9	27.8		
31-August	6.2	7.9	29.5		
1-Sept.	6.0	7.2	32.2		
2-Sept.	4.7	4.1	30.2		
3-Sept.	4.9	5.9	28.9		
4-Sept.	3.8	4.4	28.0		
5-Sept.	4.3	6.5	27.5		
6-Sept.	4.5	6.6	26.8		
7-Sept.	4.9	6.3	25.7		
8-Sept.	3.5	2.9	24.8		
9-Sept.	3.5	2.3	24.6		
10-Sept.	1.5	-2.6	25.2		
11-Sept.	1.0	-1.4	24.8		
12-Sept.	0.4	-2.3	24.2		
13-Sept.	0.5	-0.2	24.4		
14-Sept.	0.0	-1.5	25.2		
15-Sept.	-0.3	-2.6	25.3		
16-Sept.	-0.3	-7.0	33.1		
17-Sept.	-0.3	-3.6	29.1		
18-Sept.	-0.3	-1.8	27.7		
19-Sept.	-0.3	-4.9	25.9		
20-Sept.	-0.3	-5.3	24.7		
21-Sept.	-0.3	-5.7	24.3		
22-Sept.	-0.3	-8.5	e24		

Appendix 1. Concluded.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)
23-Sept.	-0.3	-13.2	e23		
24-Sept.	-0.3	-10.5	e23		
25-Sept.	-0.3	-5.9	e22		
26-Sept.	-0.3	-7.7	e22		
27-Sept.	-0.3	-10.0	e21		
28-Sept.	-0.3	-6.3	e20		
29-Sept.	-0.3	-6.7	e20		
30-Sept.	-0.3	-10.7	e19		
October					
1-Oct.	-0.3	-3.2	e19		
2-Oct.	-0.3	-3.6	e19		
3-Oct.	-0.3	-7.0	e18		
4-Oct.	-0.3	-3.3	e18		
5-Oct.	-0.3	-5.7	e18		
6-Oct.	-0.3	-0.4	e18		
7-Oct.	-0.3	-1.4	e17		

e = estimated stream flow. Estimations were made from staff gauge and rating curve.

Appendix 2. Sediment and flow in Fish Creek during 1993. Data from Alaska Department of Natural Resources, Division of Mining and Water Management.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
19-May			75.0			
20-May			70.9	39	801	153.2
21-May			64.8	80	1310	229
22-May			58.5	70	1090	172
23-May			54.7	65	1470	217
24-May			52.2	80	1790	252
25-May			51.3	80	1160	160
26-May			49.2	80	888	118
27-May			50.5	70	847	115
28-May			50.1	60	851	115
29-May			47.0	80	1060	134
30-May			43.8	85	1530	181
31-May			41.9	100	1420	160
1-June			42.1	75	872	99.0
2-June			38.3	80	1070	111
3-June			38.6	75	1020	106
4-June			37.0	90	1240	124
5-June			36.4	90	954	93.6
6-June			38.7	100	1090	114
7-June			38.5	100	970	101
8-June			36.6	95	1020	101
9-June			37.3	75	731	73.5
10-June			35.0	100	1050	99.1
11-June			34.1	95	902	83.0
12-June			37.2	90	779	78.2
13-June			34.1	80	663	61.0
14-June			33.1	70	635	56.7
15-June			32.1	80	563	48.7
16-June			34.8	75	581	54.5
17-June			38.7			
18-June			74.7			
19-June			65.9			
20-June			67.3			
21-June			52.6			
22-June			43.9			
23-June			39.4			
24-June			36.7			
25-June			35.9			

Appendix 2. Continued.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
26-June			33.4			
27-June			32.1			
28-June			32.4			
29-June			30.5			
30-June			29.1			
1-July			32.5			
2-July			59.6			
3-July			44.8			
4-July			36.1			
5-July			34.0			
6-July			31.8			
7-July			37.1			
8-July			34.6			
9-July			32.1			
10-July			30.5			
11-July			29.4			
12-July			29.0			
13-July			27.8	30	66.1	5.0
14-July	12.6	21.0	25.2	30	43.9	3.0
15-July	13.0	20.7	22.6	17	34.2	2.1
16-July	13.1	18.4	21.8	9.4	36.9	2.2
17-July	12.0	15.8	24.2	28	53.7	3.5
18-July	11.5	16.9	25.6	20	62.6	4.3
19-July	11.0	15.5	23.8	21	46.2	3.0
20-July	11.2	17.0	25.1	33	46.3	3.1
21-July	12.0	17.0	24.5	33	48.3	3.2
22-July	11.5	16.2	23.4	17	33.8	2.1
23-July	11.7	16.0	22.8	38	122	7.5
24-July	11.7	14.7	26.0	12	113	7.9
25-July	11.4	17.4	25.4	36	58.6	4.0
26-July	11.8	17.6	24.3	22	51.1	3.3
27-July	12.2	17.5	23.5	19	37.2	2.4
28-July	12.2	17.1	21.6	16	22.6	1.3
29-July	12.8	16.6	22.9	28	24.3	1.5
30-July	12.4	15.0	21.9	18	25.4	1.5
31-July	11.6	16.4	21.5	22	27.1	1.6
1-August	12.4	18.5	20.5	25	32.8	1.8
2-August	12.1	15.9	20.3	37	64.5	3.5
3-August	11.1	13.9	23.6	38	42.1	2.7
4-August	10.6	12.8	22.5	28	46.8	2.8

Appendix 2. Continued.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
5-August	10.5	11.7	26.9	80	291	21.1
6-August	9.9	12.1	45.4	290	774	94.8
7-August	9.7	13.7	55.9	150	359	54.1
8-August	9.0	10.2	42.4			
10-August	9.4	12.4	35.1	100	255	24.1
11-August	9.1	11.8	32.5	110	243	21.3
12-August	8.5	10.5	32.6	120	260	22.9
13-August	7.8	9.0	27.9	95	201	15.1
14-August	8.3	13.4	28.8	85	123	9.6
15-August	8.7	12.6	27.3	70	89.2	6.6
16-August	8.2	8.1	27.3	60	75.4	5.6
17-August	7.2	8.7	27.8	70	82.1	6.2
18-August	7.8	11.7	26.8	75	72.7	5.3
19-August	8.4	14.4	24.9	70	72.7	4.9
20-August	7.9	10.7	25.0	70	67.5	4.6
21-August	8.2	9.3	32.8	85	132	11.7
22-August	7.2	6.9	36.8	70	129	12.8
23-August	6.1	6.0	39.9	55	105	11.3
24-August	5.8	6.9	36.9	45	68.7	6.8
25-August	5.3	7.0	34.5	60	81.3	7.6
26-August	5.9	7.7	33.0	70	59.6	5.3
27-August	5.8	7.7	29.7	70	53.3	4.3
28-August	6.0	8.8	29.7	90	55.8	4.5
29-August	6.2	7.3	26.9	55	45.3	3.3
30-August	6.7	11.8	28.1	27	26.8	2.0
31-August	7.9	12.8	39.2	70	123	13.0
1-Sept.	7.7	10.3	58.2	140	418	65.6
2-Sept.	6.8	9.3	76.7	120	482	99.7
3-Sept.	6.2	10.0	73.4	75	284	56.2
4-Sept.	6.1	8.4	60.1	60	219	35.5
5-Sept.	6.5	12.7	53.9	65	181	26.3
6-Sept.	7.0	14.1	48.2	70	161	20.9
7-Sept.	6.3	7.6	45.2	130	154	18.8
8-Sept.	5.8	6.9	42.8	140	160	18.5
9-Sept.	5.3	6.9	41.3	150	153	17.0
10-Sept.	5.7	7.2	39.0	160	139	14.6
11-Sept.	5.3	4.9	39.3	220	165	17.5
12-Sept.	4.9	6.2	37.4	210	160	16.1
13-Sept.	5.8	9.0	37.2	160	138	13.8
14-Sept.	6.1	10.0	37.6	230	222	22.5
15-Sept.	6.0	9.1	36.5	230	150	14.8

Appendix 2. Continued.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
16-Sept.	6.0	6.4	37.7	270	187	19.0
17-Sept.	4.0	1.1	70.9	240	582	111
18-Sept.	1.9	-0.5	59.0	85	217	34.5
19-Sept.	1.8	2.8	66.8	120	558	101
20-Sept.	2.5	7.1		160	1760	
21-Sept.	2.9	3.6		130	787	
22-Sept.	1.6	-0.5		140	492	
23-Sept.	0.5	-3.2				
24-Sept.	1.0	-0.2		34	381	
25-Sept.	0.1	-3.1				
26-Sept.	-0.3	-3.9				
27-Sept.	-0.3	-6.7				
28-Sept.	-0.3	-3.7				
29-Sept.	-0.3	-2.6				
30-Sept.	-0.3	-1.6				
1-Oct.	-0.3	2.8				
2-Oct.						
3-Oct.						
4-Oct.	-0.3	1.5				
5-Oct.	-0.3	-1.9				
6-Oct.	-0.3	1.8				
7-Oct.	0.0	4.9				
8-Oct.	0.9	3.6				
9-Oct.	1.3	8.1				
10-Oct.	1.2	1.6				
11-Oct.	0.7	-0.9				
12-Oct.	-0.3	-3.3				
13-Oct.	0.2	1.4				
14-Oct.	1.1	2.2				
15-Oct.	1.3	1.3				
16-Oct.	0.0	-1.9				
17-Oct.	-0.3	-3.3				
18-Oct.	-0.3	-1.5				
19-Oct.	-0.3	-10.8				
20-Oct.	-0.3	-14.5				
21-Oct.	-0.3	-15.3				
22-Oct.	-0.3	-12.7				
23-Oct.	-0.3	-10.6				
24-Oct.	-0.3	-17.3				

Appendix 2. Concluded.

Date	Water Temp (C)	Air Temp (C)	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
25-Oct.	-0.3	-9.5				
26-Oct.	-0.3	-7.1				
27-Oct.	-0.3	-10.3				
28-Oct.	-0.3	-9.1				
29-Oct.	-0.3	-3.3				
30-Oct.	-0.3	-5.0				
31-Oct.	-0.3	-7.2				
1-Nov.	-0.3	-13.7				
2-Nov.	-0.3	-9.1				
3-Nov.	-0.3	-12.7				
4-Nov.	-0.3	-14.1				
5-Nov.	-0.3	-9.2				
6-Nov.	-0.3	-6.7				
7-Nov.	-0.3	-10.0				
8-Nov.	-0.3	-10.2				
9-Nov.	-0.3	-8.9				
10-Nov.	-0.3	-1.2				
11-Nov.	-0.3	-5.3				
12-Nov.	-0.3	-3.7				
13-Nov.	-0.3	-5.3				
14-Nov.	-0.3	-5.8				
15-Nov.	-0.3	-9.4				
16-Nov.	-0.3	-9.6				
17-Nov.	-0.3	-26.6				
18-Nov.	-0.3	-28.7				
19-Nov.	-0.3	-36.2				

Appendix 3. Sediment and flow in Fish Creek during 1994. Data from Alaska Department of Natural Resources, Division of Mining and Water Management.

Date	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
9-June	26.4			
10-June	22.0			
11-June	17.2			
12-June	14.1			
13-June	7.9			
14-June	4.9			
15-June	5.7			
16-June	2.9	2.5	15.5	0.12
17-June	8.6	2.8	58.2	1.36
18-June	54.0			
19-June	68.4	3.3	60.4	11.2
20-June	132			
21-June	120			
22-June	147			
23-June	121			
24-June	81.0			
25-June	113			
26-June	119			
27-June	82.6			
28-June	68.6			
29-June	60.5			
30-June	55.0			
1-July	50.4	2.6	7.5	1.0
2-July	47.0			
3-July	45.0			
4-July	45.7			
5-July	45.8			
6-July	43.1			
7-July	41.5			
8-July	40.2			
9-July	38.2	17	59.2	6.1
10-July	36.0	17	61.0	5.9
11-July	34.6	17	69.7	6.5
12-July	32.8	12	53.9	4.8
13-July	33.9	13	45.4	4.1
14-July	32.2	14	56.4	4.9
15-July	31.1	13	42.9	3.6
16-July	35.0	11	11.9	1.1

Appendix 3. Continued.

Date	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
17-July	32.6	26	71.7	6.3
18-July	37.3	8	28.6	2.9
19-July	38.6	12	31.0	3.2
20-July	38.4	8.2	34.5	3.6
21-July	38.8	11	27.3	2.9
22-July	35.3	7.3	17.7	1.7
23-July	32.5	6.1	15.7	1.4
24-July	31.2	5.7	14.4	1.2
25-July	29.6	5.9	12.6	1.0
26-July	27.6	3.9	10.3	0.8
27-July	33.7	4.6	11.6	1.1
28-July	32.3	5.3	23.2	2.0
29-July	33.0	5.1	12.9	1.1
30-July	29.8			
31-July	28.2			
1-August	25.6			
2-August	25.6			
3-August	26.0			
4-August	23.9			
5-August	22.1			
6-August	20.3			
7-August	19.2			
8-August	19.8			
9-August	19.7			
10-August	18.3			
11-August	17.8			
12-August	19.9			
13-August	20.6			
14-August	21.6			
15-August	19.8			
16-August	20.1	6.5	19.8	1.1
17-August	20.2	4.9	13.3	0.7
18-August	21.4	4.8	12.8	0.7
19-August	20.5	4.9	17.2	1.0
20-August	21.7	5.8	15.1	0.9
21-August	23.7	5.3	15.0	1.0
22-August	26.3	3.9	12.3	0.9
23-August	25.2	5.3	13.0	0.9
24-August	24.6	4.2	14.5	1.0
25-August	46.2	4.3	13.3	1.7

Appendix 3. Continued.

Date	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
26-August	52.6	3.9	13.9	2.0
27-August	43.9	2.9	11.4	1.4
28-August	40.5	3.7	9.2	1.0
29-August	37.3	3.1	10.4	1.0
30-August	34.9	4.9	17.4	1.6
31-August	32.5	3.8	13.1	1.1
1-Sept.	31.3	4.2	14.0	1.2
2-Sept.	31.4	2.9	8.8	0.7
3-Sept.	30.3	3.8	14.3	1.2
4-Sept.	29.0	3.6	9.5	0.7
5-Sept.	27.9	2.5	8.9	0.7
6-Sept.	27.9	3.8	12.9	1.0
7-Sept.	27.7	8.2	20.7	1.5
8-Sept.	29.1	4.4	11.7	0.9
9-Sept.	29.3	4.2	16.1	1.3
10-Sept.	28.3	4.0	9.5	0.7
11-Sept.	29.1	4.4	13.3	1.0
12-Sept.	30.1			
13-Sept.	28.7			
14-Sept.	28.1			
15-Sept.	27.4			
16-Sept.	26.6			
17-Sept.	25.7			
18-Sept.	25.7			
19-Sept.	29.5			
20-Sept.	28.0			
21-Sept.	27.8			
22-Sept.	27.2			
23-Sept.	26.6			
24-Sept.	26.3			
25-Sept.	26.8			
26-Sept.	26.0			
27-Sept.	26.4			
28-Sept.	24.3			
29-Sept.	24.7			
30-Sept.	26.5			
1-Oct.	39.8			
2-Oct.	32.1			
3-Oct.	29.0			
4-Oct.	24.0			

Appendix 3. Concluded.

Date	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
5-Oct.	23.4			
6-Oct.	22.7			
7-Oct.	22.4			
8-Oct.	21.0			
9-Oct.	26.5			
10-Oct.	33.5			
11-Oct.	36.9			
12-Oct.	30.8			
13-Oct.	28.5			
14-Oct.	30.8			
15-Oct.	31.7			
16-Oct.	34.3			

Appendix 4. Sediment and flow in Fish Creek during 1995. Data from Alaska Department of Natural Resources, Division of Mining and Water Management.

Date	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
16-June	14.3	18	40.6	1.56
17-June	15.1	15	23.2	0.94
18-June	16.3	26	39.3	1.73
19-June	15.1	14	18.2	0.74
20-June	13.9	14	22.9	0.86
21-June	12.8	9.2	12.9	0.44
22-June	12.0	15	20.7	0.67
23-June	11.6	14	18.4	0.58
24-June	12.8	17	24.6	0.85
25-June	15.5	13	20.2	0.84
26-June	25.7	16	505	35
27-June	143			
28-June	178			
29-June	82.6			
30-June	55.6			
1-July	42.9			
2-July	35.3			
3-July	30.0			
4-July	28.0			
5-July	25.1			
6-July	23.2			
7-July	21.4	170	259	15.0
8-July	19.7	100	131	6.97
9-July	18.8	220	239	12.10
10-July	19.2	65	93.5	4.84
11-July	17.9	110	121.3	5.87
12-July	17.1	60	72.7	3.35
13-July	15.5	70	76.2	3.19
14-July	14.3	70	71.2	2.74
15-July	17.1	90	105	4.86
16-July	23.8	65	72.8	4.68
17-July	26.5	55	48.5	3.47
18-July	22.3	60	41.5	2.50
19-July	20.1	50	35.5	1.92
20-July	18.8	50	33.3	1.69
21-July	18.3	50	43.6	2.16
22-July	17.5	55	49.5	2.34
23-July	19.3	100	130	6.78
24-July	24.6	60	56.3	3.74
25-July	25.6	60	49.5	3.42
26-July	24.6	85	70.3	4.67

Appendix 4. Continued.

Date	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
27-July	24.2	80	53.4	3.48
28-July	21.9	110	90.5	5.34
29-July	20.5	90	62.0	3.43
30-July	18.4	110	82.2	4.07
31-July	17.5	110	80.0	3.78
1-August	18.8	110	67.8	3.44
2-August	19.2	100	73.4	3.80
3-August	19.2	70	54.2	2.81
4-August	20.1	110	88.6	4.80
5-August	22.3	140	162	9.75
6-August	26.0	140	98.9	6.94
7-August	29.0	120	90.3	7.06
8-August	29.5	180	120	9.53
9-August	25.1	140	103	6.94
10-August	22.8	140	114	7.00
11-August	20.5	150	130	7.20
12-August	19.6	140	130	6.89
13-August	19.6	200	317	16.8
14-August	20.1	210	398	21.5
15-August	33.4	130	200	18.0
16-August	53.1	95	149	21.3
17-August	51.9	90	138	19.4
18-August	41.8	80	111	12.5
19-August	38.4	190	461	47.7
20-August	37.9	95	251	25.7
21-August	51.2	110	183	25.3
22-August	58.1	220	450	70.5
23-August	50.0	75	196	26.4
24-August	40.7			
25-August	45.4			
26-August	69.1			
27-August	74.9			
28-August	57.4			
29-August	49.4			
30-August	45.2			
31-August	80.1			
1-Sept.	114			
2-Sept.	92.1			
3-Sept.	80.2			

Appendix 4. Concluded.

Date	Q (cfs)	Turbidity (NTU)	TSS (mg/L)	Sediment Load (tons/day)
4-Sept.	105			
5-Sept.	117			
6-Sept.	86.2			
7-Sept.	69.9			
8-Sept.	61.2			
9-Sept.	57.4			
10-Sept.	57.4			
11-Sept.	56.1			
12-Sept.	60.0			
13-Sept.	63.2			
14-Sept.	59.9			
15-Sept.	55.5			
16-Sept.	49.4			
17-Sept.	48.2			
18-Sept.	46.4			
19-Sept.	45.2			
20-Sept.	43.5			
21-Sept.	46.4			
22-Sept.	43.6			
23-Sept.	38.4			
24-Sept.	34.7			
25-Sept.	42.3			
26-Sept.	45.8			
27-Sept.	76.0			
28-Sept.	92.7			
29-Sept.	69.3			
30-Sept.	60.6			

Appendix 5. Water Quality in Bear Creek, 1992 through 1995.

Date Sampled	Temp. °C	Settleable Solids ml/L	Turbidity NTU	Total Suspended Solids mg/L	Alkalinity mg/L	Hardness mg/L
6/18/92	3	0.1				
7/21/92	7	<0.1	14			
8/25/92	4.7	trace				
5/19/93	3.1	trace	5.7	51.4	18	29.5
7/12/93	7.9	ND			57.5	7.9
8/11/93	5				37.5	52
5/16/94			1.6	6.36		
7/6/94	5.6	trace			28	45
8/2/94	10.9	trace				
9/6/94						
5/15/95	3	trace	2.6	9.42	28	60
6/14/95	9.3		1.6	2.25	46.5	50
7/11/95			2.3	7.58		

trace = trace, ND = not detectable.

Appendix 6. Water quality in Fish Creek upstream of Fairbanks Creek, 1992-1995.

Date	Temp. °C	Settleable Solids ml/L	Turbidity NTU	Total Suspended Solids mg/L	Alkalinity mg/L	Hardness mg/L
5/28/92			360			
6/17/92	5	4.5	500	3680		
6/25/92	8	0.5				
7/22/92	11	trace	13	20.6		
8/26/92	6.2	trace				
5/18/93	6.4	trace	55	199	17.9	30
6/17/93	9.8	trace			41	53
7/13/93	12	trace				
7/14/93		trace			48	63
8/10/93	9.8	<0.2			40.6	58
5/11/94		2.5				
5/20/94		0.2				
7/5/94					34	56
7/7/94						
8/3/94	11.9					
5/16/95		trace			45	64
6/14/95	13		11	15.2	61	69
7/13/95			90	133		

trace = trace.

Appendix 7. Arctic grayling caught and tagged in 1992 and 1993.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
2638	Y	154	5/28/93	Upper Pond	6/2/95	Lower Pond	173
2755	Y	180	5/28/93	Upper Pond			
2756	Y	151	5/28/93	Upper Pond			
2757	Y	152	5/28/93	Upper Pond	8/26/93	Upper Pond	172
2758	Y	160	5/28/93	Upper Pond			
2759	Y	162	5/28/93	Upper Pond	6/2/95	Lower Pond	197
2760	Y	187	5/28/93	Upper Pond	4/21/95	Upper Pond	200
2761	Y	178	5/28/93	Upper Pond			
2762	Y	155	5/28/93	Upper Pond			
2763	Y	160	5/28/93	Upper Pond			
2764	Y	150	5/28/93	Upper Pond	8/25/93	Upper Pond	166
2765	Y	153	5/28/93	Upper Pond	4/21/95	Upper Pond	209
2766	Y	163	5/28/93	Upper Pond			
2768	Y	157	5/28/93	Upper Pond			
2769	Y	163	5/28/93	Upper Pond			
2770	Y	153	5/28/93	Upper Pond			
2771	Y	154	5/28/93	Upper Pond			
2772	Y	157	5/28/93	Upper Pond			
2773	Y	190	5/28/93	Upper Pond	4/21/95	Upper Pond	246
2774	Y	170	5/28/93	Upper Pond			
2775	Y	155	5/28/93	Upper Pond			
2776	Y	158	5/28/93	Upper Pond			
2777	Y	153	5/28/93	Upper Pond			
2778	Y	161	5/28/93	Upper Pond			
2779	Y	155	5/28/93	Upper Pond			
2780	Y	158	5/28/93	Upper Pond			
2781	Y	167	5/28/93	Upper Pond	8/26/93	Upper Pond	180
					5/10/94	Upper LC	177
2782	Y	154	5/28/93	Upper Pond	8/26/93	Upper Pond	171
2783	Y	152	5/28/93	Upper Pond	8/26/93	Upper Pond	170
					4/19/95	Upper Pond	185
2803	Y	166	6/4/93	Upper Pond	8/25/93	Upper Pond	177
2804	Y	166	6/4/93	Upper Pond	8/26/93	Upper Pond	183
					4/19/95	Upper Pond	200
2806	Y	157	6/4/93	Upper Pond			
2807	Y	155	6/4/93	Upper Pond			
2808	Y	157	6/4/93	Upper Pond			
2809	Y	160	6/4/93	Upper Pond	5/23/95	Upper Pond	180
					6/8/95	Lower Pond	180
2810	Y	160	6/4/93	Upper Pond	4/20/94	Upper Pond	181
2811	Y	178	6/4/93	Upper Pond			
2812	Y	155	6/4/93	Upper Pond			
2813	Y	160	6/4/93	Upper Pond	8/26/93	Upper Pond	172
2814	Y	179	6/4/93	Upper Pond	4/20/94	Upper Pond	201
2815	Y	160	6/4/93	Upper Pond			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
2816	Y	156	6/4/93	Upper Pond	8/25/93	Upper Pond	168
					5/10/94	Upper LC	175
2817	Y	160	6/4/93	Upper Pond	8/25/93	Upper Pond	168
2818	Y	150	6/4/93	Upper Pond			
2820	Y	154	6/4/93	Upper Pond			
2821	Y	164	6/4/93	Upper Pond			
2822	Y	169	6/4/93	Upper Pond			
2823	Y	161	6/4/93	Upper Pond	8/25/93	Upper Pond	184
2824	Y	160	6/4/93	Upper Pond	4/21/95	Upper Pond	174
2825	Y	194	6/4/93	Upper Pond	6/2/95	Lower Pond	230
2826	Y	151	6/4/93	Upper Pond			
2827	Y	158	6/4/93	Upper Pond	5/26/94	Upper LC	174
2828	Y	161	6/4/93	Upper Pond			
2829	Y	157	6/4/93	Upper Pond	8/26/93	Upper Pond	164
					6/2/95	Lower Pond	178
2830	Y	152	6/4/93	Upper Pond	8/26/93	Upper Pond	166
					5/17/95	Upper LC	178
					6/8/95	Lower Pond	177
2831	Y	168	6/4/93	Upper Pond			
2832	Y	152	6/4/93	Upper Pond			
2833	Y	155	6/4/93	Upper Pond	8/26/93	Upper Pond	173
2834	Y	153	6/4/93	Upper Pond			
2835	Y	162	6/4/93	Upper Pond	8/25/93	Upper Pond	177
2836	Y	164	6/4/93	Upper Pond			
2837	Y	180	6/4/93	Upper Pond			
2838	Y	152	6/4/93	Upper Pond			
2839	Y	165	6/4/93	Upper Pond	4/20/94	Upper Pond	190
					4/21/95	Upper Pond	214
					6/2/95	Lower Pond	213
2840	Y	154	6/4/93	Upper Pond			
2841	Y	169	6/4/93	Upper Pond	5/26/94	Upper LC	178
					4/19/95	Upper Pond	185
					6/8/95	Lower Pond	185
2842	Y	170	6/4/93	Upper Pond	6/8/95	Lower Pond	190
2843	Y	154	6/4/93	Upper Pond	5/20/94	Upper Pond	172
2844	Y	168	6/4/93	Upper Pond	5/20/94	Upper Pond	182
2845	Y	152	6/4/93	Upper Pond			
2846	Y	158	6/4/93	Upper Pond	6/15/95	Upper LC	185
2847	Y	165	6/4/93	Upper Pond			
2848	Y	164	6/4/93	Upper Pond	8/4/94	Upper LC	179
					5/17/95	Upper LC	182
					6/8/95	Lower Pond	180
2849	Y	162	6/4/93	Upper Pond			
2896	Y	162	6/13/93	Upper Pond	6/2/95	Lower Pond	190
2897	Y	162	6/13/93	Upper Pond			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
2898	Y	169	6/13/93	Upper Pond			
2900	Y	171	6/15/93	Upper Pond	8/25/93	Upper Pond	177
3184	Y	167	4/20/94	Upper Pond	4/18/95	Upper LC	193
					6/2/95	Lower Pond	192
3185	Y	185	4/20/94	Upper Pond	6/2/95	Lower Pond	186
3186	Y	180	4/20/94	Upper Pond			
3187	Y	165	4/20/94	Upper Pond			
3188	Y	174	4/20/94	Upper Pond	4/18/95	Upper LC	190
					5/17/95	Upper LC	190
					6/2/95	Lower Pond	191
3189	Y	173	4/20/94	Upper Pond	5/20/94	Upper Pond	171
					4/21/95	Upper Pond	182
3192	Y	168	4/20/94	Upper Pond	8/4/94	Upper LC	172
					9/5/94	Upper LC	171
					5/23/95	Upper Pond	173
3193	Y	187	4/20/94	Upper Pond			
3194	Y	182	4/20/94	Upper Pond			
3195	Y	173	4/20/94	Upper Pond			
3196	Y	168	4/20/94	Upper Pond			
3197	Y	162	4/20/94	Upper Pond			
3198	Y	176	4/20/94	Upper Pond	5/17/95	Upper LC	176
3199	Y	177	4/20/94	Upper Pond			
3200	Y	179	4/20/94	Upper Pond			
3351	Y	189	4/20/94	Upper Pond			
3352	Y	180	4/20/94	Upper Pond	5/17/95	Upper LC	192
					6/8/95	Lower Pond	194
3353	Y	158	4/20/94	Upper Pond			
3354	Y	184	4/20/94	Upper Pond	6/8/95	Lower Pond	202
3355	Y	156	4/20/94	Upper Pond	5/20/94	Upper Pond	159
					9/5/94	Upper LC	172
3356	Y	185	4/20/94	Upper Pond			
3357	Y	157	4/20/94	Upper Pond	8/4/94	Upper LC	168
					9/5/94	Upper LC	165
3358	Y	185	4/20/94	Upper Pond	6/8/95	Lower Pond	191
3359	Y	163	4/20/94	Upper Pond			
3360	Y	173	4/20/94	Upper Pond			
3361	Y	191	4/20/94	Upper Pond			
3362	Y	176	4/20/94	Upper Pond			
3363	Y	165	4/20/94	Upper Pond			
3364	Y	168	4/20/94	Upper Pond	4/18/95	Upper LC	180
3365	Y	165	4/20/94	Upper Pond			
3366	Y	176	4/20/94	Upper Pond	4/18/95	Upper LC	188
3367	Y	160	4/20/94	Upper Pond			
3451	Y	160	4/20/94	Upper Pond			
3452	Y	193	4/20/94	Upper Pond	5/18/94	Upper LC	192

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
					5/26/94	Upper LC	191
					4/18/95	Upper Pond	193
					5/17/95	Upper LC	193
3453	Y	187	4/20/94	Upper Pond			
3454	Y	193	4/20/94	Upper Pond			
3455	Y	180	4/20/94	Upper Pond			
3456	Y	166	4/20/94	Upper Pond	6/2/95	Lower Pond	183
3457	Y	175	4/20/94	Upper Pond			
3458	Y	180	4/20/94	Upper Pond	4/18/95	Upper Pond	187
3459	Y	179	4/20/94	Upper Pond			
3460	Y	168	4/20/94	Upper Pond	6/8/95	Lower Pond	172
3461	Y	178	4/20/94	Upper Pond	6/8/95	Lower Pond	188
3462	Y	155	4/20/94	Upper Pond			
3464	Y	175	4/20/94	Upper Pond	5/18/94	Upper LC	176
					6/15/95	Upper LC	184
3465	Y	158	4/20/94	Upper Pond			
3466	Y	178	4/20/94	Upper Pond	4/19/95	Upper Pond	180
					6/2/95	Lower Pond	183
3467	Y	170	4/20/94	Upper Pond	6/2/95	Lower Pond	188
3469	Y	187	4/20/94	Upper Pond			
3470	Y	182	4/20/94	Upper Pond	4/21/95	Upper Pond	190
3471	Y	161	4/20/94	Upper Pond			
3472	Y	171	4/20/94	Upper Pond			
3473	Y	164	4/20/94	Upper Pond	5/17/95	Upper LC	175
					6/2/95	Lower Pond	175
					7/10/95	Upper LC	179
					8/7/95	Upper LC	182
3475	Y	180	4/20/94	Upper Pond			
2626	Y	225	5/28/93	Lower Pond	8/13/93	Lower Pond	220
					9/5/94	Upper LC	223
2627	Y	220	5/28/93	Lower Pond	8/13/93	Lower Pond	222
					6/2/95	Lower Pond	230
2628	Y	186	5/28/93	Lower Pond			
2629	Y	160	5/28/93	Lower Pond			
2630	Y	154	5/28/93	Lower Pond			
2631	Y	195	5/28/93	Lower Pond			
2632	Y	193	5/28/93	Lower Pond			
2633	Y	193	5/28/93	Lower Pond			
2634	Y	179	5/28/93	Lower Pond			
2635	Y	210	5/28/93	Lower Pond			
2636	Y	205	5/28/93	Lower Pond	8/12/93	Lower Pond	208
					6/8/95	Lower Pond	206
2637	Y	313	5/28/93	Lower Pond			
2639	Y	159	5/28/93	Lower Pond			
2640	Y	154	5/28/93	Lower Pond			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
2641	Y	204	5/28/93	Lower Pond			
2642	Y	227	5/28/93	Lower Pond			
2643	Y	203	5/28/93	Lower Pond	6/2/95	Lower Pond	211
2644	Y	190	5/28/93	Lower Pond			
2645	Y	243	5/28/93	Lower Pond			
2646	Y	236	5/28/93	Lower Pond			
2647	Y	227	5/28/93	Lower Pond			
2751	Y	186	5/28/93	Lower Pond			
2752	Y	152	5/28/93	Lower Pond			
2753	Y	169	5/28/93	Lower Pond			
2754	Y	152	5/28/93	Lower Pond			
2784	Y	154	5/28/93	Lower Pond			
2785	Y	162	5/28/93	Lower Pond	5/10/94	Upper LC	195
2786	Y	175	5/28/93	Lower Pond	8/13/93	Lower Pond	193
2787	Y	163	5/28/93	Lower Pond			
2788	Y	154	5/28/93	Lower Pond			
2789	Y	153	5/28/93	Lower Pond	4/19/95	Upper Pond	200
2792	Y	164	5/28/93	Lower Pond			
2793	Y	163	5/28/93	Lower Pond	7/7/94	Upper LC	213
2794	Y	152	5/28/93	Lower Pond			
2795	Y	223	5/28/93	Lower Pond	8/13/93	Lower Pond	222
2795	Y	222	8/13/95	Lower Pond			
2796	Y	150	5/28/93	Lower Pond	5/17/95	Upper LC	199
2797	Y	215	5/28/93	Lower Pond	8/13/93	Lower Pond	212
					6/2/95	Lower Pond	216
2798	Y	165	5/28/93	Lower Pond			
2799	Y	154	5/28/93	Lower Pond			
2800	Y	154	5/28/93	Lower Pond			
2801	Y	162	5/28/93	Lower Pond			
2802	Y	150	5/28/93	Lower Pond	8/13/93	Lower Pond	168
2850	Y	155	6/4/93	Lower Pond			
2851	Y	160	6/4/93	Lower Pond	6/1/94	Lower Pond	180
2852	Y	152	6/4/93	Lower Pond	8/13/93	Lower Pond	167
2853	Y	152	6/4/93	Lower Pond	9/5/94	Upper LC	186
2854	Y	202	6/4/93	Lower Pond			
2855	Y	198	6/4/93	Lower Pond	5/10/94	Upper LC	197
					6/2/95	Lower Pond	198
2856	Y	180	6/4/93	Lower Pond			
2857	Y	151	6/4/93	Lower Pond			
2858	Y	170	6/4/93	Lower Pond			
2859	Y	163	6/4/93	Lower Pond	6/1/95	Upper Pond	188
2861	Y	170	6/4/93	Lower Pond			
2878	Y	231	6/4/93	Lower Pond	6/2/95	Lower Pond	238
2879	Y	211	6/4/93	Lower Pond			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
2880	Y	170	6/4/93	Lower Pond	6/2/95	Lower Pond	180
2881	Y	196	6/4/93	Lower Pond			
2882	Y	153	6/4/93	Lower Pond			
2883	Y	177	6/4/93	Lower Pond			
2884	Y	154	6/4/93	Lower Pond	6/1/94	Lower Pond	180
2885	Y	151	6/4/93	Lower Pond			
2886	Y	155	6/4/93	Lower Pond	6/2/95	Lower Pond	186
					6/15/95	Upper LC	183
2887	Y	225	6/13/93	Lower Pond	6/1/94	Lower Pond	226
					8/4/94	Upper LC	220
2888	Y	215	6/13/93	Lower Pond			
2889	Y	207	6/13/93	Lower Pond	7/7/94	Upper LC	216
2890	Y	221	6/13/93	Lower Pond			
2891	Y	182	6/13/93	Lower Pond	6/2/95	Lower Pond	193
					6/15/95	Upper LC	191
2892	Y	222	6/13/93	Lower Pond	7/14/93	Lower LC	230
					8/9/93	Upper Fish	229
2893	Y	218	6/13/93	Lower Pond	7/14/93	Lower LC	246
2894	Y	311	6/13/93	Lower Pond			
2895	Y	300	6/13/93	Lower Pond			
2650	Y	172	5/27/93	Lower LC			
3851	Y	296	5/27/93	Lower LC			
3852	Y	325	5/27/93	Lower LC			
3853	Y	132	5/27/93	Lower LC			
3854	Y	166	5/27/93	Lower LC			
3855	Y	169	5/27/93	Lower LC			
3856	Y	187	5/27/93	Lower LC	8/9/93	Solo	215
3857	Y	325	5/27/93	Lower LC			
3858	Y	244	5/27/93	Lower LC			
2862	Y	194	6/4/93	Lower LC	8/9/93	Upper Fish	217
2863	Y	276	6/4/93	Lower LC			
2864	Y	209	6/4/93	Lower LC			
2865	Y	224	6/4/93	Lower LC			
2866	Y	250	6/4/93	Lower LC			
2867	Y	189	6/4/93	Lower LC	5/10/95	Polar 1	241
2868	Y	163	6/4/93	Lower LC			
2869	Y	227	6/4/93	Lower LC			
2870	Y	238	6/4/93	Lower LC			
2871	Y	170	6/4/93	Lower LC	7/14/93	Upper Fish	192
2872	Y	169	6/4/93	Lower LC			
2873	Y	188	6/4/93	Lower LC			
2874	Y	178	6/4/93	Lower LC			
2875	Y	153	6/4/93	Lower LC			
2876	Y	164	6/4/93	Lower LC			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
2877	Y	162	6/4/93	Lower LC	6/18/93	Lower LC	165
2899	Y	184	6/13/93	Lower LC			
3001	Y	160	6/18/93	Lower LC	7/14/93	Lower LC	170
3002	Y	170	6/18/93	Lower LC			
3003	Y	163	6/18/93	Lower LC			
3004	Y	163	6/18/93	Lower LC	8/9/93	Lower LC	180
3005	Y	152	6/18/93	Lower LC			
3026	Y	200	6/18/93	Lower LC			
3027	Y	204	6/18/93	Lower LC	8/9/93	Lower LC	216
3028	Y	185	6/18/93	Lower LC	8/9/93	Lower LC	203
3029	Y	201	6/18/93	Lower LC			
3030	Y	179	6/18/93	Lower LC	7/14/93	Lower LC	185
3031	Y	153	6/18/93	Lower LC	7/14/93	Lower LC	175
3032	Y	184	6/18/93	Lower LC			
3033	Y	180	6/18/93	Lower LC			
3034	Y	160	6/18/93	Lower LC			
3035	Y	165	6/18/93	Lower LC			
3036	Y	161	6/18/93	Lower LC			
3037	Y	212	6/18/93	Lower LC			
3038	Y	228	6/18/93	Lower LC	8/9/93	Lower LC	231
3039	Y	190	6/18/93	Lower LC			
3040	Y	174	6/18/93	Lower LC	5/10/95	Polar 1	215
3041	Y	201	6/18/93	Lower LC	7/14/93	Lower LC	198
					8/9/93	Lower LC	202
3042	Y	180	6/18/93	Lower LC			
3043	Y	177	6/18/93	Lower LC	7/14/93	Lower LC	190
3044	Y	170	6/18/93	Lower LC			
3045	Y	200	6/18/93	Lower LC			
3046	Y	195	6/18/93	Lower LC			
3047	Y	190	6/18/93	Lower LC	7/14/93	Lower LC	210
3048	Y	165	6/18/93	Lower LC	7/14/93	Lower LC	170
3049	Y	170	6/18/93	Lower LC	7/14/93	Lower LC	179
3050	Y	162	6/18/93	Lower LC			
3881	Y	180	6/18/93	Lower LC	8/9/93	Lower LC	196
3882	Y	174	6/18/93	Lower LC			
3883	Y	173	6/18/93	Lower LC	7/14/93	Lower LC	184
					8/9/93	Lower LC	187
3884	Y	191	6/18/93	Lower LC	7/14/93	Lower LC	202
3885	Y	181	6/18/93	Lower LC			
3886	Y	184	6/18/93	Lower LC			
3887	Y	170	6/18/93	Lower LC			
3888	Y	177	6/18/93	Lower LC			
3889	Y	157	6/18/93	Lower LC			
3890	Y	158	6/18/93	Lower LC			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
3891	Y	153	6/18/93	Lower LC	7/14/93	Lower LC	161
3892	Y	223	6/18/93	Lower LC	8/9/93	Upper Fish	226
3893	Y	244	6/18/93	Lower LC	8/9/93	Lower LC	245
3895	Y	190	6/18/93	Lower LC			
3896	Y	180	6/18/93	Lower LC			
3897	Y	226	6/18/93	Lower LC			
3898	Y	181	6/18/93	Lower LC	8/9/93	Lower LC	185
3899	Y	183	6/18/93	Lower LC			
3900	Y	175	6/18/93	Lower LC			
3224	Y	204	7/14/93	Lower LC			
3225	Y	201	7/14/93	Lower LC	8/9/93	Lower LC	200
3226	Y	201	7/14/93	Lower LC			
3227	Y	185	7/14/93	Lower LC	8/9/93	Lower LC	185
					8/8/95	Bear	229
3228	Y	185	7/14/93	Lower LC			
3229	Y	161	7/14/93	Lower LC			
3230	Y	193	7/14/93	Lower LC			
3231	Y	177	7/14/93	Lower LC	5/10/95	Polar 1	216
3232	Y	211	7/14/93	Lower LC	9/6/94	Bear	238
3233	Y	166	7/14/93	Lower LC			
3234	Y	205	7/14/93	Lower LC	8/9/93	Lower LC	203
3235	Y	188	7/14/93	Lower LC	8/9/93	Lower LC	190
3236	Y	164	7/14/93	Lower LC			
3237	Y	161	7/14/93	Lower LC			
3238	Y	226	7/14/93	Lower LC			
3239	Y	205	7/14/93	Lower LC			
3240	Y	196	7/14/93	Lower LC			
3241	Y	214	7/14/93	Lower LC			
3242	Y	207	7/14/93	Lower LC	5/18/95	Polar 1	241
3243	Y	189	7/14/93	Lower LC	8/9/93	Lower LC	194
3244	Y	168	7/14/93	Lower LC	8/9/93	Lower LC	175
3245	Y	216	7/14/93	Lower LC			
3246	Y	153	7/14/93	Lower LC			
3247	Y	173	7/14/93	Lower LC			
3248	Y	219	7/14/93	Lower LC			
3249	Y	184	7/14/93	Lower LC			
3250	Y	157	7/14/93	Lower LC	8/9/93	Solo	172
					5/11/94	Upper Fish	176
3981	Y	159	7/20/92	Lower LC			
3982	Y	151	7/20/92	Lower LC			
2911	Y	195	8/9/93	Lower LC			
2912	Y	173	8/9/93	Lower LC			
2913	Y	176	8/9/93	Lower LC			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
2914	Y	232	8/9/93	Lower LC			
2915	Y	256	8/9/93	Lower LC	5/11/94	Lower LC	258
2916	Y	191	8/9/93	Lower LC			
2917	Y	223	8/9/93	Lower LC			
2918	Y	195	8/9/93	Lower LC			
2919	Y	200	8/9/93	Lower LC			
2920	Y	188	8/9/93	Lower LC			
2921	Y	201	8/9/93	Lower LC			
2922	Y	189	8/9/93	Lower LC			
2923	Y	204	8/9/93	Lower LC			
2924	Y	176	8/9/93	Lower LC			
2925	Y	175	8/9/93	Lower LC			
3087	Y	191	8/9/93	Lower LC	8/18/94	Lower LC	208
3088	Y	188	8/9/93	Lower LC			
3089	Y	170	8/9/93	Lower LC			
2648	Y	163	5/27/93	Upper Fish	5/11/94	Upper Fish	195
2649	Y	180	5/27/93	Upper Fish	6/18/93	Upper Fish	184
2947	Y	237	6/18/93	Upper Fish			
2948	Y	220	6/18/93	Upper Fish			
2949	Y	221	6/18/93	Upper Fish	7/14/93	Upper Fish	225
					5/11/94	Lower LC	230
2950	Y	182	6/18/93	Upper Fish	7/14/93	Lower LC	191
3876	Y	161	6/18/93	Upper Fish			
3877	Y	159	6/18/93	Upper Fish			
3878	Y	158	6/18/93	Upper Fish			
3879	Y	260	6/18/93	Upper Fish	5/11/94	Lower LC	263
3880	Y	187	6/18/93	Upper Fish			
3201	Y	176	7/14/93	Upper Fish			
3202	Y	199	7/14/93	Upper Fish			
3203	Y	213	7/14/93	Upper Fish			
3204	Y	196	7/14/93	Upper Fish	8/9/93	Lower LC	199
3205	Y	187	7/14/93	Upper Fish			
3206	Y	200	7/14/93	Upper Fish			
3207	Y	203	7/14/93	Upper Fish			
3208	Y	162	7/14/93	Upper Fish			
3209	Y	193	7/14/93	Upper Fish			
3210	Y	172	7/14/93	Upper Fish			
3211	Y	227	7/14/93	Upper Fish	5/11/94	Lower LC	230
3212	Y	166	7/14/93	Upper Fish			
3213	Y	212	7/14/93	Upper Fish			
3214	Y	200	7/14/93	Upper Fish	8/9/93	Lower LC	201
					8/18/94	Lower LC	220
3215	Y	210	7/14/93	Upper Fish			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
3216	Y	201	7/14/93	Upper Fish			
3217	Y	182	7/14/93	Upper Fish			
3218	Y	182	7/14/93	Upper Fish	8/9/93	Solo	188
3219	Y	160	7/14/93	Upper Fish	8/9/93	Lower LC	162
3220	Y	172	7/14/93	Upper Fish			
3221	Y	179	7/14/93	Upper Fish			
3222	Y	192	7/14/93	Upper Fish	8/9/93	Lower LC	192
3223	Y	168	7/14/93	Upper Fish			
3976	Y	205	7/20/92	Upper Fish			
3977	Y	227	7/20/92	Upper Fish			
3978	Y	241	7/20/92	Upper Fish			
3979	Y	151	7/20/92	Upper Fish	7/14/93	Lower LC	175
3980	Y	152	7/20/92	Upper Fish			
2901	Y	276	8/9/93	Upper Fish			
2902	Y	215	8/9/93	Upper Fish			
2903	Y	208	8/9/93	Upper Fish			
2904	Y	191	8/9/93	Upper Fish			
2905	Y	235	8/9/93	Upper Fish	5/18/94	Upper Fish	239
2906	Y	200	8/9/93	Upper Fish			
2907	Y	194	8/9/93	Upper Fish	5/18/94	Upper Fish	201
					5/26/94	Upper LC	200
2908	Y	285	8/9/93	Upper Fish	5/18/94	Upper Fish	290
2909	Y	201	8/9/93	Upper Fish			
3006	Y	238	6/18/93	Solo	7/14/93	Upper Fish	240
3076	Y	277	7/14/93	Solo			
3077	Y	258	7/14/93	Solo	8/9/93	Solo	259
3078	Y	194	7/14/93	Solo			
3080	Y	202	7/14/93	Solo	5/11/94	Lower LC	202
3081	Y	196	7/14/93	Solo			
3082	Y	234	7/14/93	Solo			
3083	Y	244	7/14/93	Solo			
3084	Y	205	7/14/93	Solo			
3085	Y	197	7/14/93	Solo	8/9/93	Solo	195
					5/18/94	Upper Fish	199
3086	Y	175	7/14/93	Solo	5/18/94	Upper Fish	182
3090	Y	223	8/9/93	Solo	5/18/94	Upper Fish	215
3091	Y	215	8/9/93	Solo			
3092	Y	249	8/9/93	Solo			
3093	Y	205	8/9/93	Solo			
3094	Y	257	8/9/93	Solo			
3095	Y	263	8/9/93	Solo			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
3096	Y	233	8/9/93	Solo			
3097	Y	211	8/9/93	Solo			
3098	Y	236	8/9/93	Solo			
3099	Y	202	8/9/93	Solo	5/11/94	Lower LC	204
					5/18/95	Polar 1	227
3100	Y	190	8/9/93	Solo			
563	Y	207	8/9/93	Solo	5/11/94	Lower LC	214
					5/18/94	Upper Fish	216
564	Y	238	8/9/93	Solo			
565	Y	179	8/9/93	Solo			
566	Y	216	8/9/93	Solo			
567	Y	260	8/9/93	Solo			
568	Y	210	8/9/93	Solo			
569	Y	187	8/9/93	Solo			
570	Y	195	8/9/93	Solo			
571	Y	190	8/9/93	Solo			
572	Y	218	8/9/93	Solo	5/26/94	Upper LC	220
					8/18/94	Upper LC	226
573	Y	198	8/9/93	Solo			
574	Y	201	8/9/93	Solo			
575	Y	204	8/9/93	Solo			
2597	Y	197	8/9/93	Solo			
2598	Y	254	8/9/93	Solo			
2599	Y	150	8/9/93	Solo			
2600	Y	195	8/9/93	Solo	5/10/95	Polar 1	226
2601	Y	180	8/9/93	Solo			
3983	Y	239	7/21/92	Bear	8/25/92	Bear	230
3984	Y	177	7/21/92	Bear			
3985	Y	166	7/21/92	Bear			
3986	Y	301	7/21/92	Bear			
3988	Y	150	7/21/92	Bear			
3989	Y	164	7/21/92	Bear			
3990	Y	252	7/21/92	Bear	8/25/92	Bear	254
3991	Y	187	7/21/92	Bear			
3992	Y	236	7/21/92	Bear			
3993	Y	163	7/21/92	Bear			
3994	Y	189	7/21/92	Bear			
3995	Y	165	7/21/92	Bear			
3996	Y	201	7/21/92	Bear	8/25/92	Bear	223
3997	Y	194	7/21/92	Bear			
3998	Y	193	7/21/92	Bear			
3999	Y	280	7/21/92	Bear			
4000	Y	186	7/21/92	Bear			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
3921	Y	175	8/1/92	Bear			
3922	Y	174	8/1/92	Bear			
3923	Y	171	8/1/92	Bear			
3924	Y	178	8/1/92	Bear			
3925	Y	152	8/1/92	Bear			
3959	Y	210	8/25/92	Bear	8/9/93	Bear	237
3960	Y	184	8/25/92	Bear			
3962	Y	180	8/25/92	Bear			
3963	Y	162	8/25/92	Bear			
3965	Y	156	8/25/92	Bear			
3966	Y	164	8/25/92	Bear			
3967	Y	158	8/25/92	Bear			
3968	Y	162	8/25/92	Bear			
3969	Y	170	8/25/92	Bear			
3970	Y	243	8/25/92	Bear			
3971	Y	314	8/25/92	Bear			
3972	Y	164	8/25/92	Bear			
3973	Y	185	8/25/92	Bear			
3974	Y	153	8/25/92	Bear			
3975	Y	162	8/25/92	Bear			
3906	Y	180	5/19/93	Bear			
3907	Y	289	5/19/93	Bear			
3908	Y	195	5/19/93	Bear			
3007	Y	234	7/12/93	Bear			
3008	Y	188	7/12/93	Bear			
3009	Y	175	7/12/93	Bear			
3010	Y	224	7/12/93	Bear	6/14/95	Bear	231
3011	Y	215	7/12/93	Bear			
3012	Y	205	7/12/93	Bear			
3013	Y	225	7/12/93	Bear	9/6/94	Bear	239
3014	Y	190	7/12/93	Bear			
3015	Y	216	7/12/93	Bear			
3016	Y	165	7/12/93	Bear			
3017	Y	171	7/12/93	Bear	7/11/95	Bear	217
					8/8/95	Bear	219
3018	Y	280	7/12/93	Bear			
3019	Y	227	7/12/93	Bear	7/6/94	Bear	235
					8/2/94	Bear	237
3020	Y	212	7/12/93	Bear			
3021	Y	168	7/12/93	Bear			
3176	Y	170	8/11/93	Bear	8/2/94	Bear	178
3177	Y	191	8/11/93	Bear			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
3178	Y	212	8/11/93	Bear	7/11/95	Bear	241
3179	Y	189	8/11/93	Bear			
3180	Y	200	8/11/93	Bear	8/2/94	Bear	210
					5/15/95	Bear	210
3181	Y	272	8/11/93	Bear			
3182	Y	204	8/11/93	Bear	7/6/94	Bear	211
					9/6/94	Bear	213
					7/11/95	Bear	225
3183	Y	222	8/11/93	Bear			
2614	Y	292	8/11/93	Bear			
2615	Y	227	8/11/93	Bear	8/2/94	Bear	230
					9/5/94	Bear	230
					5/16/95	Lower Fish	235
					6/14/95	Bear	230
2616	Y	215	8/11/93	Bear			
2617	Y	180	8/11/93	Bear			
2618	Y	186	8/11/93	Bear			
2619	Y	242	8/11/93	Bear	8/2/94	Bear	245
2620	Y	208	8/11/93	Bear			
2621	Y	173	8/11/93	Bear			
2622	Y	217	8/11/93	Bear			
2623	Y	202	8/11/93	Bear			
2624	Y	196	8/11/93	Bear			
2625	Y	191	8/11/93	Bear			
3951	Y	244	7/22/92	Lower Fish	8/25/92	Lower Fish	243
					7/7/93	Chena	
3952	Y	167	7/22/92	Lower Fish			
3953	Y	198	7/22/92	Lower Fish			
3954	Y	187	7/22/92	Lower Fish			
3955	Y	184	7/22/92	Lower Fish	5/1/93	Solo	188
3956	Y	151	7/22/92	Lower Fish			
3957	Y	204	7/22/92	Lower Fish			
3916	Y	214	8/25/92	Lower Fish			
3917	Y	163	8/25/92	Lower Fish	7/13/93	Lower Fish	174
3918	Y	191	8/25/92	Lower Fish			
3919	Y	192	8/25/92	Lower Fish			
3909	Y	207	8/26/92	Lower Fish			
3910	Y	183	8/26/92	Lower Fish	6/17/93	Lower Fish	190
					7/13/95	Lower Fish	190
3911	Y	213	8/26/92	Lower Fish			
3912	Y	186	8/26/92	Lower Fish			
3913	Y	175	8/26/92	Lower Fish			
3914	Y	173	8/26/92	Lower Fish			

Appendix 7. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
3915	Y	177	8/26/92	Lower Fish	8/10/93	Lower Fish	185
					8/3/94	Lower Fish	195
					9/5/94	Lower Fish	200
					5/16/95	Lower Fish	203
					7/13/95	Lower Fish	206
2926	Y	249	6/17/93	Lower Fish			
2927	Y	212	6/17/93	Lower Fish	7/13/93	Lower Fish	225
2928	Y	188	6/17/93	Lower Fish	7/13/93	Lower Fish	190
2929	Y	174	6/17/93	Lower Fish			
2930	Y	160	6/17/93	Lower Fish			
2931	Y	220	6/17/93	Lower Fish	7/13/93	Lower Fish	226
2932	Y	202	6/17/93	Lower Fish			
2933	Y	207	6/17/93	Lower Fish	7/13/93	Lower Fish	207
2934	Y	195	6/17/93	Lower Fish			
2935	Y	223	6/17/93	Lower Fish			
2936	Y	174	6/17/93	Lower Fish			
2937	Y	150	6/17/93	Lower Fish			
2938	Y	231	6/17/93	Lower Fish			
2939	Y	200	6/17/93	Lower Fish	7/5/94	Lower Fish	214
					5/10/95	Polar 1	225
2940	Y	233	6/17/93	Lower Fish			
2941	Y	219	6/17/93	Lower Fish			
2942	Y	183	6/17/93	Lower Fish	7/13/93	Lower Fish	187
2943	Y	177	6/17/93	Lower Fish			
2944	Y	220	6/17/93	Lower Fish			
2945	Y	185	6/17/93	Lower Fish			
2946	Y	180	6/17/93	Lower Fish			
3022	Y	228	7/13/93	Lower Fish			
3023	Y	214	7/13/93	Lower Fish			
3024	Y	212	7/13/93	Lower Fish			
3025	Y	185	7/13/93	Lower Fish			
3051	Y	154	7/13/93	Lower Fish			
3052	Y	239	7/13/93	Lower Fish			
3053	Y	225	7/13/93	Lower Fish			
3054	Y	197	7/13/93	Lower Fish			
3055	Y	193	7/13/93	Lower Fish			
3056	Y	192	7/13/93	Lower Fish			
3057	Y	174	7/13/93	Lower Fish			
3058	Y	171	7/13/93	Lower Fish			
3059	Y	150	7/13/93	Lower Fish			
3060	Y	350	7/13/93	Lower Fish			
3061	Y	228	7/13/93	Lower Fish			
3062	Y	172	7/13/93	Lower Fish			
3063	Y	215	7/13/93	Lower Fish			

Appendix 7. Concluded

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
3064	Y	165	7/13/93	Lower Fish			
3065	Y	169	7/13/93	Lower Fish			
3066	Y	152	7/13/93	Lower Fish			
3067	Y	177	7/13/93	Lower Fish			
3068	Y	179	7/13/93	Lower Fish			
3069	Y	150	7/13/93	Lower Fish			
3070	Y	151	7/13/93	Lower Fish			
3071	Y	151	7/13/93	Lower Fish			
3072	Y	154	7/13/93	Lower Fish	5/17/94	Lower Fish	170
					7/5/94	Lower Fish	170
3073	Y	152	7/13/93	Lower Fish	8/10/93	Lower Fish	155
3074	Y	190	7/13/93	Lower Fish			
3075	Y	195	7/13/93	Lower Fish			
2603	Y	225	8/10/93	Lower Fish	7/5/94	Lower Fish	238
2604	Y	209	8/10/93	Lower Fish			
2605	Y	211	8/10/93	Lower Fish			
2606	Y	263	8/10/93	Lower Fish			
2607	Y	174	8/10/93	Lower Fish			
2608	Y	155	8/10/93	Lower Fish			
2609	Y	200	8/10/93	Lower Fish			
2610	Y	191	8/10/93	Lower Fish			
2611	Y	211	8/10/93	Lower Fish			
2613	Y	174	8/10/93	Lower Fish			

Appendix 8. Arctic grayling caught and tagged in 1994.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
1	W	224	5/10/94	Upper LC			
2	W	190	5/10/94	Upper LC	8/4/94	Upper LC	189
					9/5/94	Upper LC	190
					5/10/95	Polar 1	196
					6/2/95	Lower Pond	196
3	W	174	5/10/94	Upper LC	8/4/94	Upper LC	173
					9/5/94	Upper LC	173
					6/15/95	Upper LC	190
4	W	175	5/10/94	Upper LC	6/1/94	Lower LC	172
					6/1/95	Upper Pond	183
					7/10/95	Upper LC	194
5	W	180	5/10/94	Upper LC	8/4/94	Lower LC	182
					6/15/95	Upper LC	185
6	W	190	5/10/94	Upper LC			
7	W	170	5/10/94	Upper LC	5/23/95	Upper Pond	181
8	W	177	5/10/94	Upper LC	6/2/95	Lower Pond	183
9	W	170	5/10/94	Upper LC			
10	W	168	5/10/94	Upper LC	6/8/95	Lower Pond	164
11	W	154	5/10/94	Upper LC	8/4/94	Upper LC	165
					9/5/94	Upper LC	167
					5/17/95	Upper LC	165
12	W	163	5/10/94	Upper LC	8/7/95	Upper LC	181
13	W	157	5/10/94	Upper LC			
14	W	172	5/10/94	Upper LC	8/7/94	Lower Pond	173
					6/8/95	Lower Pond	172
15	W	170	5/10/94	Upper LC	9/5/94	Upper LC	174
					6/15/95	Upper LC	177
					7/10/95	Upper LC	181
16	W	171	5/10/94	Upper LC			
17	W	153	5/10/94	Upper LC			
18	W	150	5/10/94	Upper LC			
19	W	150	5/10/94	Upper LC	6/2/95	Lower Pond	169
20	W	171	5/10/94	Upper LC	5/17/95	Upper LC	181
					5/23/95	Upper Pond	181
21	W	170	5/10/94	Upper LC			
22	W	152	5/10/94	Upper LC			
23	W	164	5/10/94	Upper LC			
24	W	155	5/10/94	Upper LC	8/4/94	Upper LC	167
25	W	156	5/10/94	Upper LC	8/4/94	Upper LC	165
					9/5/94	Upper LC	165
					8/7/95	Upper LC	172
26	W	220	5/10/94	Upper LC			
27	W	202	5/10/94	Upper LC	7/7/94	Upper LC	200
28	W	194	5/10/94	Upper LC	7/7/94	Upper LC	192
					8/4/94	Upper LC	197
29	W	230	5/10/94	Upper LC			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
30	W	160	5/10/94	Upper LC			
31	W	158	5/10/94	Upper LC			
32	W	166	5/10/94	Upper LC			
33	W	226	5/10/94	Upper LC	7/7/94	Upper LC	220
34	W	169	5/10/94	Upper LC			
35	W	174	5/10/94	Upper LC			
36	W	155	5/10/94	Upper LC	8/4/94	Upper LC	168
					6/2/95	Lower Pond	172
					7/10/95	Upper LC	176
37	W	152	5/10/94	Upper LC	8/7/95	Upper LC	179
38	W	179	5/10/94	Upper LC			
39	W	160	5/10/94	Upper LC	6/8/95	Lower Pond	175
40	W	162	5/10/94	Upper LC	5/17/95	Upper LC	183
					6/2/95	Lower Pond	182
					7/10/95	Upper LC	189
41	W	162	5/10/94	Upper LC			
42	W	181	5/10/94	Upper LC	7/7/94	Upper LC	190
					8/4/94	Upper LC	190
					9/5/94	Upper LC	193
					7/10/95	Upper LC	203
43	W	170	5/10/94	Upper LC	5/26/94	Upper LC	170
					6/2/95	Lower Pond	170
44	W	163	5/10/94	Upper LC	7/7/94	Upper LC	165
45	W	156	5/10/94	Upper LC	6/15/95	Upper LC	175
					7/10/95	Upper LC	181
46	W	154	5/10/94	Upper LC	5/26/94	Upper LC	152
					6/1/94	Upper LC	152
					7/10/95	Upper LC	160
47	W	165	5/10/94	Upper LC	7/7/94	Upper LC	170
					9/5/94	Upper LC	174
48	W	160	5/10/94	Upper LC	5/17/95	Upper LC	180
					6/2/95	Lower Pond	180
49	W	178	5/10/94	Upper LC	7/7/94	Upper LC	177
					8/4/94	Upper LC	175
					8/7/95	Upper LC	182
50	W	165	5/10/94	Upper LC			
51	W	159	5/10/94	Upper LC			
52	W	180	5/10/94	Upper LC			
53	W	191	5/10/94	Upper LC	8/4/94	Upper LC	190
					6/8/95	Lower Pond	190
					6/15/95	Upper LC	190
					7/10/95	Upper LC	195
54	W	180	5/10/94	Upper LC	7/7/94	Upper LC	179
55	W	178	5/10/94	Upper LC	6/8/95	Lower Pond	189
56	W	170	5/10/94	Upper LC	7/7/94	Upper LC	178
					8/4/94	Upper LC	182

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
					9/5/94	Upper LC	182
					7/10/95	Upper LC	189
57	W	158	5/10/94	Upper LC			
58	W	175	5/10/94	Upper LC	6/2/95	Lower Pond	180
59	W	183	5/10/94	Upper LC			
60	W	162	5/10/94	Upper LC			
61	W	154	5/10/94	Upper LC			
62	W	151	5/10/94	Upper LC	6/2/95	Lower Pond	171
63	W	199	5/10/94	Upper LC			
64	W	152	5/10/94	Upper LC			
65	W	175	5/10/94	Upper LC			
66	W	176	5/10/94	Upper LC	9/5/94	Upper LC	185
					7/10/95	Upper LC	189
67	W	164	5/10/94	Upper LC			
68	W	171	5/10/94	Upper LC			
69	W	173	5/10/94	Upper LC	5/17/95	Upper LC	185
					6/2/95	Lower Pond	184
					6/15/95	Upper LC	182
70	W	195	5/10/94	Upper LC			
71	W	178	5/10/94	Upper LC			
72	W	184	5/10/94	Upper LC	5/17/95	Upper LC	182
73	W	163	5/10/94	Upper LC			
74	W	154	5/10/94	Upper LC			
75	W	156	5/10/94	Upper LC			
76	W	172	5/10/94	Upper LC			
77	W	171	5/10/94	Upper LC			
78	W	153	5/10/94	Upper LC	6/1/95	Upper Pond	167
79	W	165	5/10/94	Upper LC	6/15/95	Upper LC	182
					7/10/95	Upper LC	190
80	W	153	5/10/94	Upper LC			
81	W	215	5/10/94	Upper LC			
82	W	219	5/10/94	Upper LC	5/17/95	Upper LC	230
					6/15/95	Upper LC	228
83	W	174	5/10/94	Upper LC			
84	W	185	5/10/94	Upper LC			
85	W	201	5/10/94	Upper LC			
86	W	189	5/10/94	Upper LC	9/5/94	Upper LC	187
					5/17/95	Upper LC	190
					7/10/95	Upper LC	193
87	W	175	5/10/94	Upper LC			
88	W	180	5/10/94	Upper LC	5/18/94	Upper LC	181
					5/17/95	Upper LC	175
					7/10/95	Upper LC	181
89	W	170	5/10/94	Upper LC			
90	W	195	5/10/94	Upper LC			
91	W	166	5/10/94	Upper LC			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
92	W	171	5/10/94	Upper LC			
93	W	162	5/10/94	Upper LC			
94	W	182	5/10/94	Upper LC	6/1/94	Lower Pond	184
					7/7/94	Upper LC	190
					8/4/94	Upper LC	192
					9/5/94	Upper LC	192
					5/17/95	Upper LC	194
					6/15/95	Upper LC	195
					7/10/95	Upper LC	197
95	W	170	5/10/94	Upper LC	8/4/94	Upper LC	189
					9/5/94	Upper LC	191
					6/15/95	Upper LC	190
					7/10/95	Upper LC	193
96	W	166	5/10/94	Upper LC			
97	W	176	5/10/94	Upper LC			
98	W	160	5/10/94	Upper LC			
99	W	156	5/10/94	Upper LC			
100	W	175	5/10/94	Upper LC			
101	W	250	5/10/94	Upper LC	9/5/94	Upper LC	244
					5/17/95	Upper LC	243
					6/15/95	Upper LC	243
102	W	224	5/10/94	Upper LC			
103	W	198	5/10/94	Upper LC	5/17/95	Upper LC	212
					6/15/95	Upper LC	207
104	W	200	5/10/94	Upper LC			
105	W	188	5/10/94	Upper LC	7/7/94	Upper LC	193
					8/4/94	Upper LC	192
					6/8/95	Lower Pond	195
106	W	185	5/10/94	Upper LC	5/18/94	Upper LC	189
					8/4/94	Upper LC	188
					9/5/94	Upper LC	184
107	W	193	5/10/94	Upper LC	8/4/94	Upper LC	199
					9/5/94	Upper LC	195
					5/17/95	Upper LC	196
					6/15/95	Upper LC	201
108	W	189	5/10/94	Upper LC	8/7/94	Lower LC	192
					5/17/95	Upper LC	192
					6/15/95	Upper LC	191
109	W	205	5/10/94	Upper LC	5/18/94	Upper LC	194
					5/17/95	Upper LC	195
					6/15/95	Upper LC	198
110	W	188	5/10/94	Upper LC	7/7/94	Upper LC	190
					8/4/94	Upper LC	192
					5/17/95	Upper LC	192
					7/10/95	Upper LC	194
111	W	226	5/10/94	Upper LC			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
112	W	190	5/10/94	Upper LC			
113	W	195	5/10/94	Upper LC			
114	W	175	5/10/94	Upper LC	6/15/95	Upper LC	194
115	W	184	5/10/94	Upper LC			
116	W	171	5/10/94	Upper LC			
117	W	195	5/10/94	Upper LC			
118	W	192	5/10/94	Upper LC	5/18/94	Upper LC	181
119	W	184	5/10/94	Upper LC			
120	W	174	5/10/94	Upper LC			
121	W	158	5/10/94	Upper LC			
122	W	180	5/10/94	Upper LC	5/17/95	Upper LC	193
123	W	164	5/10/94	Upper LC			
124	W	159	5/10/94	Upper LC			
125	W	169	5/10/94	Upper LC			
288	W	164	5/18/94	Upper LC	6/2/95	Lower Pond	176
289	W	176	5/18/94	Upper LC			
290	W	240	5/18/94	Upper LC	5/26/94	Upper LC	230
291	W	180	5/18/94	Upper LC			
292	W	166	5/18/94	Upper LC			
293	W	183	5/18/94	Upper LC	5/26/94	Upper LC	183
294	W	183	5/18/94	Upper LC			
295	W	171	5/18/94	Upper LC	7/7/94	Upper LC	173
296	W	160	5/18/94	Upper LC			
297	W	163	5/18/94	Upper LC	5/10/95	Polar 1	220
298	W	214	5/18/94	Upper LC	5/17/95	Upper LC	213
299	W	234	5/18/94	Upper LC	5/17/95	Upper LC	237
300	W	188	5/18/94	Upper LC			
301	W	181	5/18/94	Upper LC	7/7/94	Upper LC	182
301					9/5/94	Upper LC	187
					8/4/94	Upper LC	185
302	W	185	5/18/94	Upper LC			
303	W	172	5/18/94	Upper LC	6/8/95	Lower Pond	181
304	W	182	5/18/94	Upper LC			
305	W	199	5/18/94	Upper LC			
306	W	184	5/18/94	Upper LC			
307	W	174	5/18/94	Upper LC			
308	W	169	5/18/94	Upper LC	8/4/94	Upper LC	183
309	W	180	5/18/94	Upper LC	8/4/94	Upper LC	174
310	W	170	5/18/94	Upper LC			
311	W	176	5/18/94	Upper LC	5/26/94	Upper LC	176
312	W	170	5/18/94	Upper LC			
313	W	174	5/18/94	Upper LC	7/11/94	Polar 1	172
314	W	170	5/18/94	Upper LC	9/5/94	Upper LC	174
					6/15/95	Upper LC	174
315	W	204	5/18/94	Upper LC			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
316	W	169	5/18/94	Upper LC			
317	W	176	5/18/94	Upper LC			
318	W	168	5/18/94	Upper LC			
319	W	160	5/18/94	Upper LC	7/10/95	Upper LC	168
320	W	175	5/18/94	Upper LC	5/17/95	Upper LC	184
					6/15/95	Upper LC	184
					7/10/95	Upper LC	187
321	W	179	5/18/94	Upper LC			
322	W	160	5/18/94	Upper LC	8/4/94	Upper LC	169
					9/5/94	Upper LC	172
					6/15/95	Upper LC	172
					7/10/95	Upper LC	178
323	W	182	5/18/94	Upper LC			
324	W	170	5/18/94	Upper LC	6/2/95	Lower Pond	185
325	W	163	5/18/94	Upper LC			
326	W	218	5/18/94	Upper LC	5/26/94	Upper LC	205
327	W	237	5/18/94	Upper LC			
328	W	225	5/18/94	Upper LC			
329	W	193	5/18/94	Upper LC	7/7/94	Upper LC	198
					8/4/94	Upper LC	197
					5/17/95	Upper LC	200
					6/15/95	Upper LC	201
					7/10/95	Upper LC	206
330	W	175	5/18/94	Upper LC			
331	W	208	5/18/94	Upper LC			
332	W	180	5/18/94	Upper LC			
333	W	190	5/18/94	Upper LC			
334	W	170	5/18/94	Upper LC	6/1/95	Upper Pond	168
465	W	227	5/26/94	Upper LC			
466	W	191	5/26/94	Upper LC			
467	W	191	5/26/94	Upper LC			
468	W	195	5/26/94	Upper LC			
469	W	182	5/26/94	Upper LC	6/15/95	Upper LC	184
					7/10/95	Upper LC	189
470	W	177	5/26/94	Upper LC	5/17/95	Upper LC	185
					6/2/95	Lower Pond	185
471	W	167	5/26/94	Upper LC			
472	W	178	5/26/94	Upper LC	9/5/94	Upper LC	182
					6/15/95	Upper LC	180
473	W	170	5/26/94	Upper LC			
474	W	163	5/26/94	Upper LC			
475	W	174	5/26/94	Upper LC	6/2/95	Lower Pond	190
476	W	164	5/26/94	Upper LC	8/4/94	Upper LC	174
					6/8/95	Lower Pond	175
					6/15/95	Upper LC	175

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
477	W	178	5/26/94	Upper LC			
478	W	194	5/26/94	Upper LC			
479	W	178	5/26/94	Upper LC	6/2/95	Upper LC	200
480	W	170	5/26/94	Upper LC	6/15/95	Upper LC	185
					7/10/95	Upper LC	188
481	W	181	5/26/94	Upper LC	9/5/94	Upper LC	186
					6/15/95	Upper LC	185
					7/10/95	Upper LC	192
482	W	175	5/26/94	Upper LC			
483	W	185	5/26/94	Upper LC	6/2/95	Lower Pond	193
484	W	178	5/26/94	Upper LC			
485	W	188	5/26/94	Upper LC	6/1/95	Upper Pond	185
486	W	176	5/26/94	Upper LC	6/1/94	Upper LC	176
					9/5/94	Upper LC	182
					9/5/94	Upper LC	182
					7/10/95	Upper LC	188
487	W	162	5/26/94	Upper LC			
511	W	215	6/1/94	Upper LC			
512	W	203	6/1/94	Upper LC			
513	W	215	6/1/94	Upper LC			
514	W	182	6/1/94	Upper LC	8/4/94	Upper LC	185
					6/2/95	Lower Pond	191
					7/10/95	Upper LC	195
515	W	235	6/1/94	Upper LC			
516	W	222	6/1/94	Upper LC			
517	W	220	6/1/94	Upper LC			
518	W	185	6/1/94	Upper LC	9/5/94	Upper LC	192
519	W	158	6/1/94	Upper LC	8/4/94	Upper LC	182
					9/5/94	Upper LC	180
					5/17/95	Upper LC	180
					5/17/95	Upper LC	180
520	W	166	6/1/94	Upper LC			
521	W	179	6/1/94	Upper LC			
522	W	166	6/1/94	Upper LC			
523	W	184	6/1/94	Upper LC			
524	W	169	6/1/94	Upper LC			
525	W	180	6/1/94	Upper LC	7/7/94	Upper LC	185
526	W	181	6/1/94	Upper LC			
527	W	218	6/1/94	Upper LC			
528	W	188	6/1/94	Upper LC			
529	W	175	6/1/94	Upper LC			
530	W	187	6/1/94	Upper LC			
531	W	178	6/1/94	Upper LC			
532	W	152	6/1/94	Upper LC			
533	W	210	6/1/94	Upper LC			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
535	W	154	6/1/94	Upper LC	7/7/94	Upper LC	160
					8/4/94	Upper LC	163
					9/5/94	Upper LC	159
					8/7/95	Upper LC	183
536	W	159	6/1/94	Upper LC			
616	W	177	7/7/94	Upper LC			
617	W	171	7/7/94	Upper LC	9/5/94	Upper LC	169
618	W	187	7/7/94	Upper LC			
619	W	190	7/7/94	Upper LC			
620	W	180	7/7/94	Upper LC	8/4/94	Upper LC	181
					6/15/95	Upper LC	185
					7/10/95	Upper LC	194
621	W	156	7/7/94	Upper LC			
622	W	194	7/7/94	Upper LC	5/17/95	Upper LC	196
					7/10/95	Upper LC	198
623	W	190	7/7/94	Upper LC			
624	W	166	7/7/94	Upper LC	6/15/95	Upper LC	171
					7/10/95	Upper LC	174
625	W	166	7/7/94	Upper LC	9/5/94	Upper LC	169
626	W	181	7/7/94	Upper LC	8/4/94	Upper LC	188
					5/17/95	Upper LC	188
					6/2/95	Lower Pond	188
					7/10/95	Upper LC	193
627	W	169	7/7/94	Upper LC	6/2/95	Lower Pond	177
628	W	169	7/7/94	Upper LC	8/4/94	Upper LC	175
					9/5/94	Upper LC	172
					5/17/95	Upper LC	174
					6/2/95	Lower Pond	178
629	W	200	7/7/94	Upper LC	5/17/95	Upper LC	204
					6/15/95	Upper LC	203
					7/10/95	Upper LC	208
630	W	202	7/7/94	Upper LC	8/4/94	Upper LC	201
					5/17/95	Upper LC	199
					6/2/95	Lower Pond	199
					6/15/95	Upper LC	200
					7/10/95	Upper LC	205
631	W	165	7/7/94	Upper LC	6/2/95	Lower Pond	172
					6/15/95	Upper LC	171
					7/10/95	Upper LC	177
632	W	173	7/7/94	Upper LC	8/4/94	Upper LC	171
					6/8/95	Lower Pond	175
633	W	169	7/7/94	Upper LC	8/4/94	Upper LC	175
					9/5/94	Upper LC	178

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
					6/15/95	Upper LC	183
					7/10/95	Upper LC	185
634	W	162	7/7/94	Upper LC			
635	W	176	7/7/94	Upper LC	6/15/95	Upper LC	176
					7/10/95	Upper LC	181
636	W	175	7/7/94	Upper LC			
637	W	171	7/7/94	Upper LC	8/4/94	Upper LC	173
					9/5/94	Upper LC	174
					5/23/95	Upper Pond	173
					6/15/95	Upper LC	176
					7/10/95	Upper LC	183
638	W	171	7/7/94	Upper LC	8/4/94	Upper LC	174
					9/5/94	Upper LC	170
					6/2/95	Lower Pond	181
					6/15/95	Upper LC	179
					7/10/95	Upper LC	185
639	W	180	7/7/94	Upper LC	8/4/94	Upper LC	183
					9/5/94	Upper LC	188
					6/15/95	Upper LC	186
					7/10/95	Upper LC	192
640	W	168	7/7/94	Upper LC			
641	W	176	7/7/94	Upper LC	9/5/94	Upper LC	173
642	W	174	7/7/94	Upper LC			
643	W	176	7/7/94	Upper LC	6/15/95	Upper LC	184
644	W	183	7/7/94	Upper LC	5/17/95	Upper LC	179
645	W	175	7/7/94	Upper LC	6/15/95	Upper LC	183
					7/10/95	Upper LC	187
646	W	200	7/7/94	Upper LC	8/4/94	Upper LC	200
					9/5/94	Upper LC	203
647	W	195	7/7/94	Upper LC	8/4/94	Upper LC	196
					5/17/95	Upper LC	198
					6/15/95	Upper LC	201
					7/10/95	Upper LC	204
648	W	171	7/7/94	Upper LC			
649	W	212	7/7/94	Upper LC	8/4/94	Upper LC	218
					9/5/94	Upper LC	208
					5/17/95	Upper LC	208
					6/2/95	Lower Pond	210
					6/15/95	Upper LC	209
					7/10/95	Upper LC	217
650	W	180	7/7/94	Upper LC	8/4/94	Upper LC	179
					9/5/94	Upper LC	181
					5/17/95	Upper LC	182
651	W	185	7/7/94	Upper LC	8/4/94	Upper LC	188
					6/2/95	Lower Pond	190
652	W	190	7/7/94	Upper LC			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
653	W	185	7/7/94	Upper LC	8/4/94	Upper LC	182
					7/10/95	Upper LC	190
654	W	240	7/7/94	Upper LC			
655	W	177	7/7/94	Upper LC	9/5/94	Upper LC	181
656	W	185	7/7/94	Upper LC			
657	W	161	7/7/94	Upper LC			
658	W	187	7/7/94	Upper LC	8/7/95	Upper LC	195
659	W	198	7/7/94	Upper LC	8/4/94	Upper LC	196
					5/17/95	Upper LC	200
660	W	170	7/7/94	Upper LC			
661	W	190	7/7/94	Upper LC	8/4/94	Upper LC	194
					9/5/94	Upper LC	195
					5/17/95	Upper LC	197
					6/2/95	Lower Pond	198
					6/15/95	Upper LC	195
					7/10/95	Upper LC	200
662	W	180	7/7/94	Upper LC	9/5/94	Upper LC	185
663	W	192	7/7/94	Upper LC	6/15/95	Upper LC	195
664	W	163	7/7/94	Upper LC	8/4/94	Upper LC	162
665	W	178	7/7/94	Upper LC	8/4/94	Upper LC	176
666	W	186	7/7/94	Upper LC	8/4/94	Upper LC	192
					9/5/94	Upper LC	188
					5/17/95	Upper LC	187
					6/15/95	Upper LC	192
					7/10/95	Upper LC	193
667	W	161	7/7/94	Upper LC	8/4/94	Upper LC	166
					6/15/95	Upper LC	171
668	W	175	7/7/94	Upper LC	8/4/94	Upper LC	179
					9/5/94	Upper LC	171
					5/17/95	Upper LC	180
					6/15/95	Upper LC	178
					7/10/95	Upper LC	185
669	W	159	7/7/94	Upper LC	6/2/95	Lower Pond	161
670	W	198	7/7/94	Upper LC	7/10/95	Upper LC	208
671	W	178	7/7/94	Upper LC	6/15/95	Upper LC	186
672	W	190	7/7/94	Upper LC			
673	W	163	7/7/94	Upper LC	8/4/94	Upper LC	182
674	W	185	7/7/94	Upper LC	8/4/94	Upper LC	191
675	W	166	7/7/94	Upper LC			
676	W	157	7/7/94	Upper LC	8/4/94	Upper LC	157
					9/5/94	Upper LC	159
					5/17/95	Upper LC	162
					6/15/95	Upper LC	164
					7/10/95	Upper LC	168
677	W	182	7/7/94	Upper LC	8/4/94	Upper LC	185
					9/5/94	Upper LC	189

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
					5/18/95	Polar 2	186
					6/15/95	Upper LC	188
					7/10/95	Upper LC	189
678	W	233	7/7/94	Upper LC			
679	W	172	7/7/94	Upper LC	5/17/95	Upper LC	171
680	W	180	7/7/94	Upper LC	8/4/94	Upper LC	177
					6/2/95	Lower Pond	178
					7/10/95	Upper LC	180
681	W	164	7/7/94	Upper LC			
682	W	159	7/7/94	Upper LC	9/5/94	Upper LC	171
					6/2/95	Lower Pond	172
					6/15/95	Upper LC	171
					7/10/95	Upper LC	175
683	W	200	7/7/94	Upper LC	9/5/94	Upper LC	203
					5/17/95	Upper LC	203
					6/15/95	Upper LC	204
684	W	198	7/7/94	Upper LC			
685	W	174	7/7/94	Upper LC	9/5/94	Upper LC	173
686	W	180	7/7/94	Upper LC	6/1/95	Upper Pond	182
					6/8/95	Lower Pond	178
687	W	170	7/7/94	Upper LC	8/4/94	Upper LC	175
					7/10/95	Upper LC	210
688	W	195	7/7/94	Upper LC			
689	W	167	7/7/94	Upper LC			
690	W	168	7/7/94	Upper LC	8/4/94	Upper LC	170
					9/5/94	Upper LC	170
					6/15/95	Upper LC	176
					7/10/95	Upper LC	182
691	W	181	7/7/94	Upper LC			
692	W	177	7/7/94	Upper LC			
693	W	190	7/7/94	Upper LC	7/10/95	Upper LC	198
694	W	185	7/7/94	Upper LC	8/4/94	Upper LC	189
					9/5/94	Upper LC	183
695	W	189	7/7/94	Upper LC	6/2/95	Lower Pond	191
696	W	206	7/7/94	Upper LC			
697	W	177	7/7/94	Upper LC			
698	W	160	7/7/94	Upper LC			
699	W	182	7/7/94	Upper LC	7/10/95	Upper LC	194
700	W	165	7/7/94	Upper LC	8/4/94	Upper LC	169
					9/5/94	Upper LC	170
754	W	169	8/4/94	Upper LC	6/8/95	Lower Pond	173
755	W	179	8/4/94	Upper LC			
756	W	190	8/4/94	Upper LC	6/15/95	Upper LC	194
					7/10/95	Upper LC	199
758	W	173	8/4/94	Upper LC	9/5/94	Upper LC	178

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
					7/10/95	Upper LC	180
759	W	174	8/4/94	Upper LC			
760	W	190	8/4/94	Upper LC			
761	W	176	8/4/94	Upper LC	6/15/95	Upper LC	176
762	W	195	8/4/94	Upper LC	6/15/95	Upper LC	199
					7/10/95	Upper LC	202
					10/24/95	Lower Pond	197
763	W	169	8/4/94	Upper LC			
764	W	160	8/4/94	Upper LC	9/5/94	Upper LC	160
765	W	150	8/4/94	Upper LC	9/5/94	Upper LC	159
766	W	173	8/4/94	Upper LC	9/5/94	Upper LC	176
					6/8/95	Lower Pond	183
					6/15/95	Upper LC	181
					7/10/95	Upper LC	180
767	W	158	8/4/94	Upper LC			
768	W	160	8/4/94	Upper LC	5/17/95	Upper LC	167
					6/1/95	Upper Pond	166
					7/10/95	Upper LC	167
769	W	170	8/4/94	Upper LC			
770	W	156	8/4/94	Upper LC	6/2/95	Lower Pond	160
771	W	173	8/4/94	Upper LC	8/11/94	Lower Pond	174
					7/10/95	Upper LC	182
772	W	171	8/4/94	Upper LC	7/10/95	Upper LC	187
773	W	157	8/4/94	Upper LC	9/5/94	Upper LC	159
					6/15/95	Upper LC	160
774	W	192	8/4/94	Upper LC	9/5/94	Upper LC	183
775	W	178	8/4/94	Upper LC	7/10/95	Upper LC	185
776	W						
777	W	205	8/4/94	Upper LC			
778	W	165	8/4/94	Upper LC			
779	W	186	8/4/94	Upper LC			
780	W	173	8/4/94	Upper LC	9/5/94	Upper LC	170
					5/17/95	Upper LC	170
					6/15/95	Upper LC	170
781	W	175	8/4/94	Upper LC	6/15/95	Upper LC	178
					7/10/95	Upper LC	179
782	W	162	8/4/94	Upper LC			
783	W	176	8/4/94	Upper LC			
784	W	190	8/4/94	Upper LC	8/7/95	Upper LC	196
785	W	174	8/4/94	Upper LC			
786	W	163	8/4/94	Upper LC	9/5/94	Upper LC	164
787	W	165	8/4/94	Upper LC			
788	W	169	8/4/94	Upper LC			
789	W	162	8/4/94	Upper LC			
790	W	182	8/4/94	Upper LC	9/5/94	Upper LC	183
					6/15/95	Upper LC	187

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
					7/10/95	Upper LC	194
791	W	169	8/4/94	Upper LC			
792	W	169	8/4/94	Upper LC			
793	W	168	8/4/94	Upper LC	9/5/94	Upper LC	170
					5/17/95	Upper LC	172
					6/15/95	Upper LC	174
794	W	191	8/4/94	Upper LC			
795	W	156	8/4/94	Upper LC	5/23/95	Upper Pond	162
796	W	160	8/4/94	Upper LC	6/15/95	Upper LC	159
					7/10/95	Upper LC	166
797	W	160	8/4/94	Upper LC	5/23/95	Upper Pond	164
798	W	181	8/4/94	Upper LC	6/8/95	Lower Pond	180
					7/10/95	Upper LC	185
799	W	178	8/4/94	Upper LC			
800	W	183	8/4/94	Upper LC	9/5/94	Upper LC	185
					6/2/95	Lower Pond	190
					7/10/95	Upper LC	192
801	W	171	8/4/94	Upper LC	8/7/94	Lower Pond	172
					9/5/94	Upper LC	172
					6/2/95	Lower Pond	170
802	W	189	8/4/94	Upper LC			
803	W	176	8/4/94	Upper LC	9/5/94	Upper LC	171
804	W	165	8/4/94	Upper LC	9/5/94	Upper LC	160
					6/8/95	Lower Pond	167
805	W	175	8/4/94	Upper LC			
806	W	168	8/4/94	Upper LC			
807	W	168	8/4/94	Upper LC	5/23/95	Upper Pond	173
					6/15/95	Upper LC	170
808	W	167	8/4/94	Upper LC	9/5/94	Upper LC	170
					5/17/95	Upper LC	170
					6/2/95	Lower Pond	170
					7/10/95	Upper LC	176
809	W	185	8/4/94	Upper LC			
810	W	168	8/4/94	Upper LC	8/7/95	Upper LC	178
811	W	158	8/4/94	Upper LC			
812	W	166	8/4/94	Upper LC			
813	W	191	8/4/94	Upper LC			
814	W	169	8/4/94	Upper LC	8/7/94	Lower Pond	169
815	W	165	8/4/94	Upper LC			
816	W	182	8/4/94	Upper LC	9/5/94	Upper LC	183
					6/15/95	Upper LC	187
817	W	162	8/4/94	Upper LC	6/15/95	Upper LC	167
					7/10/95	Upper LC	171
818	W	185	8/4/94	Upper LC			
819	W	174	8/4/94	Upper LC	9/5/94	Upper LC	173
					6/15/95	Upper LC	180

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
					7/10/95	Upper LC	182
820	W	173	8/4/94	Upper LC			
821	W	206	8/4/94	Upper LC			
822	W	175	8/4/94	Upper LC	5/23/95	Upper Pond	176
823	W	173	8/4/94	Upper LC	8/11/94	Lower Pond	172
					6/2/95	Lower Pond	173
824	W	160	8/4/94	Upper LC	9/5/94	Upper LC	162
					5/17/95	Upper LC	162
					7/10/95	Upper LC	170
825	W	183	8/4/94	Upper LC			
826	W	170	8/4/94	Upper LC	6/2/95	Lower Pond	165
					7/10/95	Upper LC	169
827	W	170	8/4/94	Upper LC			
828	W	183	8/4/94	Upper LC	6/15/95	Upper LC	187
					7/10/95	Upper LC	194
829	W	164	8/4/94	Upper LC			
830	W	160	8/4/94	Upper LC			
831	W	172	8/4/94	Upper LC	6/8/95	Lower Pond	171
832	W	190	8/4/94	Upper LC	9/5/94	Upper LC	185
833	W	188	8/4/94	Upper LC			
834	W	170	8/4/94	Upper LC			
835	W	168	8/4/94	Upper LC	6/2/95	Lower Pond	166
836	W	169	8/4/94	Upper LC	9/5/94	Upper LC	171
					6/15/95	Upper LC	170
					7/10/95	Upper LC	168
837	W	178	8/4/94	Upper LC	5/17/95	Upper LC	180
					6/2/95	Lower Pond	179
					6/15/95	Upper LC	180
838	W	166	8/4/94	Upper LC			
839	W	175	8/4/94	Upper LC	6/2/95	Lower Pond	175
840	W	184	8/4/94	Upper LC	6/15/95	Upper LC	184
841	W	173	8/4/94	Upper LC	5/23/95	Upper Pond	170
842	W	171	8/4/94	Upper LC	9/5/94	Upper LC	173
					6/1/95	Upper Pond	171
					6/15/95	Upper LC	172
					7/10/95	Upper LC Cr	180
843	W	178	8/4/94	Upper LC			
844	W	172	8/4/94	Upper LC	6/15/95	Upper LC	171
					7/10/95	Upper LC	170
845	W	165	8/4/94	Upper LC	6/15/95	Upper LC	165
					7/10/95	Upper LC	171
846	W	175	8/4/94	Upper LC	6/2/95	Lower Pond	179
847	W	176	8/4/94	Upper LC	6/8/95	Lower Pond	176
					7/10/95	Upper LC	180
848	W	186	8/4/94	Upper LC			
849	W	175	8/4/94	Upper LC	6/1/95	Upper Pond	178

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
850	W	161	8/4/94	Upper LC			
851	W	192	8/4/94	Upper LC	6/15/95	Upper LC	194
					7/10/95	Upper LC	199
852	W	159	8/4/94	Upper LC			
853	W	167	8/4/94	Upper LC	9/5/94	Upper LC	162
					6/15/95	Upper LC	168
					7/10/95	Upper LC	171
854	W	165	8/4/94	Upper LC			
855	W	170	8/4/94	Upper LC	9/5/94	Upper LC	171
856	W	181	8/4/94	Upper LC	6/2/95	Lower Pond	184
					6/15/95	Upper LC	183
857	W	176	8/4/94	Upper LC			
858	W	174	8/4/94	Upper LC			
859	W	184	8/4/94	Upper LC	5/17/95	Upper LC	185
					6/15/95	Upper LC	187
					7/10/95	Upper LC	184
860	W	175	8/4/94	Upper LC			
861	W	164	8/4/94	Upper LC			
862	W	210	8/4/94	Upper LC	5/17/95	Upper LC	208
					6/15/95	Upper LC	209
					7/10/95	Upper LC	212
863	W	162	8/4/94	Upper LC	6/2/95	Lower Pond	167
864	W	172	8/4/94	Upper LC			
865	W	173	8/4/94	Upper LC	6/15/95	Upper LC	173
866	W	165	8/4/94	Upper LC			
867	W	195	8/4/94	Upper LC			
868	W	184	8/4/94	Upper LC	9/5/94	Upper LC	185
					5/17/95	Upper LC	183
					6/15/95	Upper LC	182
869	W	179	8/4/94	Upper LC	9/5/94	Upper LC	175
870	W	181	8/4/94	Upper LC	9/5/94	Upper LC	175
					7/10/95	Upper LC	196
871	W	163	8/4/94	Upper LC			
872	W	164	8/4/94	Upper LC	7/10/95	Upper LC	170
873	W	164	8/4/94	Upper LC	9/5/94	Upper LC	165
874	W	173	8/4/94	Upper LC	6/2/95	Lower Pond	172
875	W	170	8/4/94	Upper LC			
876	W	156	8/4/94	Upper LC	9/5/94	Upper LC	160
877	W	168	8/4/94	Upper LC	5/23/95	Upper Pond	165
878	W	157	8/4/94	Upper LC	6/1/95	Upper Pond	160
412	W	172	5/20/94	Upper Pond	6/2/95	Lower Pond	173
413	W	172	5/20/94	Upper Pond	5/23/95	Upper Pond	178
					6/2/95	Lower Pond	180

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
414	W	204	5/20/94	Upper Pond			
415	W	191	5/20/94	Upper Pond			
416	W	186	5/20/94	Upper Pond			
417	W	168	5/20/94	Upper Pond	5/23/95	Upper Pond	180
					6/8/95	Lower Pond	182
418	W	182	5/20/94	Upper Pond			
419	W	163	5/20/94	Upper Pond	4/21/95	Upper Pond	172
420	W	179	5/20/94	Upper Pond			
421	W	184	5/20/94	Upper Pond	6/8/95	Lower Pond	192
422	W	161	5/20/94	Upper Pond			
423	W	164	5/20/94	Upper Pond			
424	W	181	5/20/94	Upper Pond	6/2/95	Lower Pond	191
425	W	176	5/20/94	Upper Pond			
426	W	180	5/20/94	Upper Pond	6/8/95	Lower Pond	186
427	W	180	5/20/94	Upper Pond			
428	W	172	5/20/94	Upper Pond			
429	W	190	5/20/94	Upper Pond	5/17/95	Upper LC	195
430	W	180	5/20/94	Upper Pond			
431	W	173	5/20/94	Upper Pond	6/2/95	Lower Pond	181
432	W	166	5/20/94	Upper Pond	6/8/95	Lower Pond	170
433	W	169	5/20/94	Upper Pond			
434	W	182	5/20/94	Upper Pond	4/19/95	Upper Pond	190
435	W	180	5/20/94	Upper Pond	6/8/95	Lower Pond	199
436	W	182	5/20/94	Upper Pond			
437	W	177	5/20/94	Upper Pond			
438	W	178	5/20/94	Upper Pond			
439	W	168	5/20/94	Upper Pond			
440	W	182	5/20/94	Upper Pond	4/21/95	Upper Pond	189
441	W	174	5/20/94	Upper Pond			
442	W	166	5/20/94	Upper Pond			
443	W	164	5/20/94	Upper Pond			
444	W	185	5/20/94	Upper Pond	5/23/95	Upper Pond	190
445	W	168	5/20/94	Upper Pond			
446	W	184	5/20/94	Upper Pond			
447	W	170	5/20/94	Upper Pond	5/17/95	Upper Pond	177
					6/2/95	Lower Pond	178
448	W	175	5/20/94	Upper Pond			
449	W	165	5/20/94	Upper Pond	10/24/95	Lower Pond	185
450	W	182	5/20/94	Upper Pond	5/23/95	Upper Pond	196
452	W	170	5/20/94	Upper Pond			
453	W	152	5/20/94	Upper Pond	6/2/95	Lower Pond	170
454	W	171	5/20/94	Upper Pond			
455	W	163	5/20/94	Upper Pond	6/15/95	Upper LC	170
456	W	155	5/20/94	Upper Pond			
457	W	160	5/20/94	Upper Pond	6/2/95	Lower Pond	172
458	W	153	5/20/94	Upper Pond	6/2/95	Lower Pond	169

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
459	W	172	5/20/94	Upper Pond			
460	W	160	5/20/94	Upper Pond			
461	W	174	5/20/94	Upper Pond			
462	W	152	5/20/94	Upper Pond	6/2/95	Lower Pond	161
463	W	160	5/20/94	Upper Pond	8/4/94	Upper LC	167
464	W	155	5/20/94	Upper Pond			
575	W	169	6/1/94	Lower Pond			
576	W	162	6/1/94	Lower Pond			
577	W	154	6/1/94	Lower Pond	6/2/95	Lower Pond	168
578	W	185	6/1/94	Lower Pond			
579	W	172	6/1/94	Lower Pond	9/5/94	Upper LC	170
580	W	194	6/1/94	Lower Pond			
581	W	157	6/1/94	Lower Pond			
582	W	175	6/1/94	Lower Pond	5/23/95	Upper Pond	170
583	W	170	6/1/94	Lower Pond	6/2/95	Lower Pond	183
584	W	150	6/1/94	Lower Pond			
585	W	171	6/1/94	Lower Pond			
586	W	167	6/1/94	Lower Pond			
587	W	151	6/1/94	Lower Pond	6/2/95	Lower Pond	158
588	W	167	6/1/94	Lower Pond			
589	W	170	6/1/94	Lower Pond			
590	W	180	6/1/94	Lower Pond			
591	W	176	6/1/94	Lower Pond	6/1/95	Upper Pond	180
592	W	177	6/1/94	Lower Pond	7/7/94	Upper LC	180
					8/7/95	Upper LC	183
593	W	181	6/1/94	Lower Pond			
594	W	218	6/1/94	Lower Pond			
595	W	174	6/1/94	Lower Pond			
701	W	182	7/8/94	Polar 1			
702	W	207	7/8/94	Polar 1			
703	W	222	7/8/94	Polar 1			
704	W	178	7/8/94	Polar 1			
705	W	160	7/8/94	Polar 1			
706	W	232	7/8/94	Polar 1			
707	W	220	7/8/94	Polar 1			
708	W	231	7/8/94	Polar 1			
709	W	220	7/8/94	Polar 1			
710	W	216	7/8/94	Polar 1	5/10/95	Polar 1	221
711	W	179	7/8/94	Polar 1			
712	W	165	7/8/94	Polar 1			
713	W	157	7/8/94	Polar 1			
714	W	157	7/8/94	Polar 1	8/18/94	Upper Fish	172
715	W	155	7/8/94	Polar 1			
716	W	157	7/8/94	Polar 1			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
717	W	152	7/8/94	Polar 1			
718	W	155	7/8/94	Polar 1	5/18/95	Polar 1	177
719	W	177	7/8/94	Polar 1			
720	W	158	7/8/94	Polar 1			
721	W	180	7/8/94	Polar 1			
722	W	155	7/8/94	Polar 1			
723	W	164	7/8/94	Polar 1			
724	W	153	7/8/94	Polar 1			
725	W	165	7/8/94	Polar 1			
726	W	153	7/8/94	Polar 1	5/18/95	Polar 2	183
727	W	152	7/8/94	Polar 1			
728	W	158	7/8/94	Polar 1			
729	W	153	7/8/94	Polar 1			
730	W	160	7/8/94	Polar 1			
731	W	156	7/8/94	Polar 1			
732	W	151	7/8/94	Polar 1	6/8/95	Lower Pond	181
733	W	158	7/8/94	Polar 1			
734	W	167	7/11/94	Polar 1			
735	W	238	7/11/94	Polar 1			
736	W	205	7/11/94	Polar 1			
737	W	230	7/11/94	Polar 1			
126	W	214	5/11/94	Upper Fish			
127	W	229	5/11/94	Upper Fish	5/18/95	Polar 1	242
128	W	237	5/11/94	Upper Fish			
129	W	223	5/11/94	Upper Fish	5/18/94	Upper LC	215
130	W	215	5/11/94	Upper Fish			
131	W	238	5/11/94	Upper Fish			
132	W	235	5/11/94	Upper Fish			
133	W	232	5/11/94	Upper Fish			
134	W	241	5/11/94	Upper Fish			
135	W	225	5/11/94	Upper Fish	6/1/94	Upper Fish	227
136	W	226	5/11/94	Upper Fish			
137	W	230	5/11/94	Upper Fish	5/18/95	Polar 1	248
138	W	240	5/11/94	Upper Fish			
139	W	247	5/11/94	Upper Fish			
140	W	206	5/11/94	Upper Fish	5/18/95	Polar 1	234
141	W	218	5/11/94	Upper Fish			
142	W	234	5/11/94	Upper Fish	5/18/94	Upper LC	230
143	W	180	5/11/94	Upper Fish			
145	W	234	5/11/94	Upper Fish	5/18/94	Upper LC	235
146	W	195	5/11/94	Upper Fish			
147	W	203	5/11/94	Upper Fish			
148	W	219	5/11/94	Upper Fish			
196	W	205	5/11/94	Upper Fish			
197	W	506	5/11/94	Upper Fish			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
198	W	275	5/11/94	Upper Fish			
199	W	216	5/11/94	Upper Fish			
200	W	210	5/11/94	Upper Fish			
201	W	214	5/11/94	Upper Fish			
202	W	235	5/11/94	Upper Fish			
203	W	190	5/11/94	Upper Fish			
204	W	195	5/11/94	Upper Fish	5/18/94	Upper LC	195
205	W	226	5/11/94	Upper Fish	5/18/94	Upper LC	225
206	W	186	5/11/94	Upper Fish			
207	W	195	5/11/94	Upper Fish	8/7/95	Upper LC	190
208	W	198	5/11/94	Upper Fish			
209	W	196	5/11/94	Upper Fish			
210	W	199	5/11/94	Upper Fish			
211	W	190	5/11/94	Upper Fish	6/14/95	Bear	208
212	W	185	5/11/94	Upper Fish			
213	W	175	5/11/94	Upper Fish			
214	W	202	5/11/94	Upper Fish			
215	W	218	5/11/94	Upper Fish	5/18/94	Upper LC	218
					5/26/94	Upper Fish	217
216	W	178	5/11/94	Upper Fish			
217	W	205	5/11/94	Upper Fish			
218	W	216	5/11/94	Upper Fish			
219	W	189	5/11/94	Upper Fish	5/26/94	Upper Fish	190
					6/1/94	Upper Fish	189
220	W	194	5/11/94	Upper Fish			
221	W	200	5/11/94	Upper Fish			
222	W	197	5/11/94	Upper Fish			
223	W	202	5/11/94	Upper Fish			
224	W	188	5/11/94	Upper Fish			
225	W	200	5/11/94	Upper Fish			
226	W	200	5/11/94	Upper Fish			
227	W	175	5/11/94	Upper Fish			
335	W	244	5/18/94	Upper Fish			
336	W	280	5/18/94	Upper Fish			
337	W	203	5/18/94	Upper Fish			
338	W	207	5/18/94	Upper Fish			
339	W	205	5/18/94	Upper Fish			
340	W	296	5/18/94	Upper Fish			
341	W	251	5/18/94	Upper Fish			
342	W	242	5/18/94	Upper Fish			
343	W	220	5/18/94	Upper Fish			
344	W	230	5/18/94	Upper Fish			
345	W	194	5/18/94	Upper Fish			
346	W	214	5/18/94	Upper Fish			
347	W	198	5/18/94	Upper Fish			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
348	W	196	5/18/94	Upper Fish			
349	W	208	5/18/94	Upper Fish			
350	W	198	5/18/94	Upper Fish	6/1/94	Upper Fish	200
351	W	222	5/18/94	Upper Fish			
352	W	198	5/18/94	Upper Fish			
353	W	202	5/18/94	Upper Fish			
354	W	197	5/18/94	Upper Fish			
355	W	217	5/18/94	Upper Fish			
356	W	180	5/18/94	Upper Fish			
357	W	244	5/18/94	Upper Fish			
358	W	245	5/18/94	Upper Fish			
359	W	237	5/18/94	Upper Fish			
360	W	213	5/18/94	Upper Fish			
361	W	206	5/18/94	Upper Fish			
362	W	207	5/18/94	Upper Fish	6/1/94	Upper Fish	209
363	W	202	5/18/94	Upper Fish	6/1/94	Upper Fish	204
					8/8/95	Bear	212
364	W	200	5/18/94	Upper Fish	5/10/95	Polar 1	203
365	W	219	5/18/94	Upper Fish			
366	W	194	5/18/94	Upper Fish			
367	W	208	5/18/94	Upper Fish			
368	W	185	5/18/94	Upper Fish			
369	W	202	5/18/94	Upper Fish			
370	W	182	5/18/94	Upper Fish	6/1/94	Upper Fish	185
371	W	206	5/18/94	Upper Fish			
372	W	210	5/18/94	Upper Fish			
373	W	207	5/18/94	Upper Fish			
374	W	202	5/18/94	Upper Fish	5/26/94	Upper Fish	201
375	W	190	5/18/94	Upper Fish			
376	W	185	5/18/94	Upper Fish	5/18/95	Polar 1	213
377	W	213	5/18/94	Upper Fish			
378	W	190	5/18/94	Upper Fish			
379	W	204	5/18/94	Upper Fish			
380	W	189	5/18/94	Upper Fish			
381	W	166	5/18/94	Upper Fish			
382	W	208	5/18/94	Upper Fish			
383	W	224	5/18/94	Upper Fish	5/10/95	Polar 1	230
384	W	246	5/18/94	Upper Fish			
385	W	250	5/18/94	Upper Fish			
386	W	229	5/18/94	Upper Fish			
387	W	232	5/18/94	Upper Fish			
388	W	210	5/18/94	Upper Fish			
389	W	196	5/18/94	Upper Fish			
390	W	218	5/18/94	Upper Fish			
391	W	232	5/18/94	Upper Fish			
392	W	220	5/18/94	Upper Fish			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
393	W	203	5/18/94	Upper Fish			
394	W	206	5/18/94	Upper Fish			
395	W	220	5/18/94	Upper Fish			
396	W	182	5/18/94	Upper Fish			
397	W	204	5/18/94	Upper Fish			
398	W	225	5/18/94	Upper Fish			
399	W	285	5/18/94	Upper Fish			
400	W	230	5/18/94	Upper Fish			
401	W	222	5/18/94	Upper Fish			
402	W	210	5/18/94	Upper Fish			
403	W	214	5/18/94	Upper Fish			
404	W	254	5/18/94	Upper Fish			
405	W	240	5/18/94	Upper Fish	9/5/94	Bear	241
406	W	202	5/18/94	Upper Fish			
407	W	251	5/18/94	Upper Fish			
408	W	242	5/18/94	Upper Fish			
409	W	205	5/18/94	Upper Fish			
410	W	222	5/18/94	Upper Fish			
411	W	175	5/18/94	Upper Fish			
488	W	195	5/26/94	Upper Fish			
489	W	205	5/26/94	Upper Fish			
490	W	230	5/26/94	Upper Fish			
491	W	202	5/26/94	Upper Fish			
492	W	200	5/26/94	Upper Fish			
493	W	225	5/26/94	Upper Fish			
494	W	185	5/26/94	Upper Fish			
495	W	187	5/26/94	Upper Fish			
496	W	200	5/26/94	Upper Fish			
497	W	208	5/26/94	Upper Fish			
498	W	195	5/26/94	Upper Fish			
499	W	200	5/26/94	Upper Fish			
500	W	200	5/26/94	Upper Fish			
501	W	205	5/26/94	Upper Fish			
502	W	206	6/1/94	Upper Fish	5/18/95	Polar 1	220
503	W	218	6/1/94	Upper Fish	5/10/95	Polar 1	230
504	W	195	6/1/94	Upper Fish			
505	W	205	6/1/94	Upper Fish			
506	W	198	6/1/94	Upper Fish			
507	W	185	6/1/94	Upper Fish			
508	W	190	6/1/94	Upper Fish	5/10/95	Polar 1	208
509	W	205	6/1/94	Upper Fish			
510	W	186	6/1/94	Upper Fish			
879	W	224	8/18/94	Upper Fish			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
880	W	253	8/18/94	Upper Fish			
881	W	259	8/18/94	Upper Fish			
882	W	170	8/18/94	Upper Fish			
883	W	214	8/18/94	Upper Fish			
884	W	180	8/18/94	Upper Fish			
885	W	196	8/18/94	Upper Fish			
886	W	218	8/18/94	Upper Fish			
887	W	150	8/18/94	Upper Fish			
888	W	170	8/18/94	Upper Fish	8/8/95	Bear	203
149	W	290	5/11/94	Lower LC			
150	W	209	5/11/94	Lower LC			
151	W	243	5/11/94	Lower LC	5/18/95	Polar 1	257
152	W	260	5/11/94	Lower LC			
153	W	245	5/11/94	Lower LC			
154	W	208	5/11/94	Lower LC			
155	W	192	5/11/94	Lower LC			
156	W	205	5/11/94	Lower LC			
157	W	160	5/11/94	Lower LC			
158	W	182	5/11/94	Lower LC			
159	W	198	5/11/94	Lower LC			
160	W	337	5/11/94	Lower LC			
161	W	201	5/11/94	Lower LC			
162	W	255	5/11/94	Lower LC			
163	W	270	5/11/94	Lower LC			
164	W	268	5/11/94	Lower LC	7/11/95	Bear	271
165	W	242	5/11/94	Lower LC			
166	W	205	5/11/94	Lower LC	5/10/95	Polar 1	230
167	W	235	5/11/94	Lower LC			
168	W	204	5/11/94	Lower LC			
169	W	202	5/11/94	Lower LC			
170	W	238	5/11/94	Lower LC			
171	W	192	5/11/94	Lower LC	5/18/95	Polar 1	232
172	W	246	5/11/94	Lower LC			
173	W	208	5/11/94	Lower LC			
174	W	265	5/11/94	Lower LC			
175	W	296	5/11/94	Lower LC	5/26/94	Upper Fish	297
176	W	211	5/11/94	Lower LC			
177	W	231	5/11/94	Lower LC			
178	W	191	5/11/94	Lower LC			
179	W	242	5/11/94	Lower LC			
180	W	210	5/11/94	Lower LC			
181	W	230	5/11/94	Lower LC			
182	W	210	5/11/94	Lower LC	7/10/95	Upper LC	236
183	W	234	5/11/94	Lower LC			
184	W	294	5/11/94	Lower LC			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
185	W	304	5/11/94	Lower LC			
186	W	226	5/11/94	Lower LC			
187	W	243	5/11/94	Lower LC			
188	W	236	5/11/94	Lower LC			
189	W	243	5/11/94	Lower LC			
190	W	249	5/11/94	Lower LC			
191	W	220	5/11/94	Lower LC			
192	W	215	5/11/94	Lower LC			
193	W	217	5/11/94	Lower LC			
194	W	202	5/11/94	Lower LC	8/18/94	Lower LC	224
195	W	192	5/11/94	Lower LC			
537	W	179	6/1/94	Lower LC			
538	W	208	6/1/94	Lower LC			
539	W	166	6/1/94	Lower LC			
540	W	166	6/1/94	Lower LC			
541	W	182	6/1/94	Lower LC			
542	W	180	6/1/94	Lower LC			
543	W	162	6/1/94	Lower LC	6/8/95	Lower Pond	172
544	W	174	6/1/94	Lower LC			
545	W	171	6/1/94	Lower LC	5/23/95	Upper Pond	175
546	W	176	6/1/94	Lower LC	6/2/95	Lower Pond	178
547	W	180	6/1/94	Lower LC	6/2/95	Lower Pond	201
548	W	155	6/1/94	Lower LC	5/23/95	Upper Pond	162
549	W	194	6/1/94	Lower LC			
550	W	173	6/1/94	Lower LC	6/2/95	Lower Pond	174
551	W	155	6/1/94	Lower LC	8/4/94	Lower Pond	165
					8/7/94	Lower Pond	165
552	W	180	6/1/94	Lower LC			
553	W	170	6/1/94	Lower LC			
554	W	170	6/1/94	Lower LC			
555	W	170	6/1/94	Lower LC	6/2/95	Lower Pond	185
556	W	180	6/1/94	Lower LC			
557	W	166	6/1/94	Lower LC	6/2/95	Lower Pond	180
558	W	178	6/1/94	Lower LC	6/2/95	Lower Pond	183
559	W	165	6/1/94	Lower LC			
560	W	150	6/1/94	Lower LC	6/2/95	Lower Pond	169
561	W	165	6/1/94	Lower LC	6/8/95	Lower Pond	171
562	W	175	6/1/94	Lower LC	6/2/95	Lower Pond	184
563	W	169	6/1/94	Lower LC			
564	W	164	6/1/94	Lower LC	5/17/95	Upper LC	170
					6/1/95	Upper Pond	170
565	W	160	6/1/94	Lower LC			
566	W	230	6/1/94	Lower LC	5/10/95	Polar 1	231
567	W	161	6/1/94	Lower LC	6/2/95	Lower Pond	170
					6/15/95	Upper LC	165

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
568	W	161	6/1/94	Lower LC			
569	W	168	6/1/94	Lower LC	8/4/94	Upper LC	169
					9/5/94	Upper LC	170
					7/10/95	Upper LC	180
570	W	170	6/1/94	Lower LC			
571	W	160	6/1/94	Lower LC			
572	W	246	6/1/94	Lower LC	8/7/94	Lower Pond	247
					5/23/95	Upper Pond	244
573	W	165	6/1/94	Lower LC	7/7/94	Upper LC	169
					8/4/94	Upper LC	171
					5/17/95	Upper LC	172
					6/15/95	Upper LC	172
					7/10/95	Upper LC	175
574	W	175	6/1/94	Lower LC			
889	W	248	8/18/94	Lower LC			
890	W	176	8/18/94	Lower LC			
891	W	231	8/18/94	Lower LC			
892	W	251	8/18/94	Lower LC			
893	W	190	8/18/94	Lower LC			
894	W	155	8/18/94	Lower LC			
895	W	188	8/18/94	Lower LC			
896	W	154	8/18/94	Lower LC			
897	W	184	8/18/94	Lower LC			
898	W	164	8/18/94	Lower LC			
899	W	164	8/18/94	Lower LC			
228	W	222	5/16/94	Bear			
229	W	195	5/16/94	Bear			
230	W	230	5/16/94	Bear			
231	W	230	5/16/94	Bear			
232	W	240	5/16/94	Bear			
233	W	250	5/16/94	Bear			
234	W	240	5/16/94	Bear			
235	W	218	5/16/94	Bear			
236	W	205	5/16/94	Bear			
602	W	225	7/6/94	Bear			
603	W	224	7/6/94	Bear	9/6/94	Bear	225
604	W	186	7/6/94	Bear			
605	W	210	7/6/94	Bear			
606	W	182	7/6/94	Bear			
607	W	215	7/6/94	Bear	8/2/94	Bear	217
608	W	155	7/6/94	Bear			
609	W	313	7/6/94	Bear			
610	W	293	7/6/94	Bear			

Appendix 8. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
611	W	250	7/6/94	Bear			
612	W	254	7/6/94	Bear	8/2/94	Bear	255
					9/5/94	Bear	255
					5/17/96	Badger	267
613	W	185	7/6/94	Bear			
614	W	168	7/6/94	Bear			
615	W	203	7/6/94	Bear			
738	W	222	8/2/94	Bear	9/6/94	Bear	218
739	W	211	8/2/94	Bear			
740	W	239	8/2/94	Bear	9/6/94	Bear	229
741	W	201	8/2/94	Bear			
742	W	216	8/2/94	Bear	9/6/94	Bear	220
743	W	230	8/2/94	Bear	9/6/94	Bear	230
744	W	178	8/2/94	Bear			
745	W	214	8/2/94	Bear	9/6/94	Bear	215
746	W	228	8/2/94	Bear	6/14/95	Bear	230
747	W	224	8/2/94	Bear			
748	W	164	8/2/94	Bear			
749	W	244	8/2/94	Bear	9/6/94	Bear	243
750	W	165	8/2/94	Bear			
237	W	238	5/17/94	Lower Fish			
238	W	218	5/17/94	Lower Fish			
239	W	222	5/17/94	Lower Fish			
240	W	201	5/17/94	Lower Fish			
241	W	220	5/17/94	Lower Fish			
242	W	223	5/17/94	Lower Fish			
243	W	214	5/17/94	Lower Fish			
244	W	265	5/17/94	Lower Fish			
245	W	180	5/17/94	Lower Fish			
246	W	161	5/17/94	Lower Fish			
247	W	217	5/17/94	Lower Fish			
248	W	224	5/17/94	Lower Fish	5/10/95	Polar 1	237
249	W	208	5/17/94	Lower Fish			
250	W	171	5/17/94	Lower Fish			
251	W	153	5/17/94	Lower Fish			
596	W	186	7/5/94	Lower Fish			
597	W	192	7/5/94	Lower Fish			
598	W	185	7/5/94	Lower Fish			
599	W	172	7/5/94	Lower Fish			
600	W	166	7/5/94	Lower Fish			
601	W	231	7/5/94	Lower Fish			
751	W	232	8/3/94	Lower Fish	9/6/94	Lower Fish	238

Appendix 8. Concluded.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	Length (mm)
752	W	210	8/3/94	Lower Fish	8/9/95	Lower Fish	251
753	W	254	8/3/94	Lower Fish			

Appendix 9. Arctic grayling caught and tagged in 1995.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6317	OR	192	5/17/95	Upper LC			
6319	OR	182	5/17/95	Upper LC			
6343	OR	197	5/17/95	Upper LC			
6344	OR	198	5/17/95	Upper LC	8/7/95	Upper LC	205
6345	OR	238	5/17/95	Upper LC			
6346	OR	192	5/17/95	Upper LC			
6347	OR	245	5/17/95	Upper LC	6/8/95	Lower Pond	243
6348	OR	190	5/17/95	Upper LC			
6349	OR	199	5/17/95	Upper LC	6/8/95	Lower Pond	217
					7/10/95	Upper LC	203
					8/7/95	Upper LC	204
6350	OR	172	5/17/95	Upper LC			
6351	OR	184	5/17/95	Upper LC			
6352	OR	170	5/17/95	Upper LC			
6353	OR	174	5/17/95	Upper LC	6/2/95	Lower Pond	177
6354	OR	228	5/17/95	Upper LC			
6355	OR	244	5/17/95	Upper LC	6/2/95	Lower Pond	241
6356	OR	197	5/17/95	Upper LC			
6357	OR	180	5/17/95	Upper LC	6/2/95	Lower Pond	181
6358	OR	203	5/17/95	Upper LC			
6359	OR	188	5/17/95	Upper LC	10/24/95	Lower Pond	204
6360	OR	172	5/17/95	Upper LC	6/2/95	Lower Pond	175
6361	OR	173	5/17/95	Upper LC			
6362	OR	165	5/17/95	Upper LC			
6363	OR	170	5/17/95	Upper LC			
6364	OR	182	5/17/95	Upper LC			
6365	OR	185	5/17/95	Upper LC	6/2/95	Lower Pond	185
					6/8/95	Lower Pond	185
6366	OR	175	5/17/95	Upper LC	6/2/95	Lower Pond	177
					6/8/95	Lower Pond	176
6367	OR	175	5/17/95	Upper LC	6/2/95	Lower Pond	178
					6/8/95	Lower Pond	174
6368	OR	169	5/17/95	Upper LC	6/2/95	Lower Pond	170
6369	OR	172	5/17/95	Upper LC	7/10/95	Upper LC	177
6370	OR	193	5/17/95	Upper LC			
6371	OR	176	5/17/95	Upper LC			
6372	OR	184	5/17/95	Upper LC			
6373	OR	174	5/17/95	Upper LC			
6374	OR	167	5/17/95	Upper LC			
6375	OR	180	5/17/95	Upper LC	6/2/95	Lower Pond	186
					6/8/95	Lower Pond	180
6376	OR	178	5/17/95	Upper LC			
6377	OR	170	5/17/95	Upper LC	6/8/95	Lower Pond	177
6378	OR	257	5/17/95	Upper LC	6/2/95	Lower Pond	256
6379	OR	199	5/17/95	Upper LC	6/8/95	Lower Pond	196
6380	OR	200	5/17/95	Upper LC	6/15/95	Upper LC	200

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
					8/7/95	Upper LC	208
					10/24/95	Lower Pond	210
6381	OR	151	5/17/95	Upper LC	6/2/95	Lower Pond	153
6382	OR	183	5/17/95	Upper LC	6/8/95	Lower Pond	184
6383	OR	161	5/17/95	Upper LC	6/15/95	Upper LC	162
6384	OR	176	5/17/95	Upper LC			
6385	OR	167	5/17/95	Upper LC			
6386	OR	182	5/17/95	Upper LC			
6387	OR	195	5/17/95	Upper LC	6/2/95	Lower Pond	196
					6/8/95	Lower Pond	196
6388	OR	176	5/17/95	Upper LC			
6389	OR	204	5/17/95	Upper LC	6/2/95	Lower Pond	203
					6/8/95	Lower Pond	206
6390	OR	230	5/17/95	Upper LC	7/10/95	Upper LC	226
6391	OR	202	5/17/95	Upper LC			
6392	OR	190	5/17/95	Upper LC			
6393	OR	203	5/17/95	Upper LC			
6394	OR	197	5/17/95	Upper LC	6/8/95	Lower Pond	199
6395	OR	175	5/17/95	Upper LC			
6396	OR	191	5/17/95	Upper LC	8/7/95	Upper LC	198
6397	OR	181	5/17/95	Upper LC			
6398	OR	197	5/17/95	Upper LC	6/8/95	Lower Pond	197
6399	OR	202	5/17/95	Upper LC	6/15/95	Upper LC	201
					7/10/95	Upper LC	209
					8/7/95	Upper LC	204
6400	OR	170	5/17/95	Upper LC	6/8/95	Lower Pond	170
6401	OR	176	5/17/95	Upper LC	6/2/95	Lower Pond	175
					6/15/95	Upper LC	174
6402	OR	187	5/17/95	Upper LC			
6403	OR	181	5/17/95	Upper LC			
6404	OR	170	5/17/95	Upper LC	6/2/95	Lower Pond	173
					6/8/95	Lower Pond	173
6405	OR	219	5/17/95	Upper LC	6/15/95	Upper LC	216
6406	OR	181	5/17/95	Upper LC			
6407	OR	206	5/17/95	Upper LC			
6408	OR	195	5/17/95	Upper LC			
6409	OR	189	5/17/95	Upper LC			
6410	OR	203	5/17/95	Upper LC			
6411	OR	212	5/17/95	Upper LC	6/1/95	Upper Pond	214
6412	OR	196	5/17/95	Upper LC			
6413	OR	212	5/17/95	Upper LC			
6414	OR	172	5/17/95	Upper LC	8/7/95	Upper LC	175
6415	OR	188	5/17/95	Upper LC			
6416	OR	176	5/17/95	Upper LC	6/2/95	Lower Pond	175
6417	OR	183	5/17/95	Upper LC			
6418	OR	186	5/17/95	Upper LC			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6419	OR	183	5/17/95	Upper LC	6/15/95	Upper LC	182
					7/10/95	Upper LC	185
6420	OR	151	5/17/95	Upper LC			
6421	OR	155	5/17/95	Upper LC			
6422	OR	223	5/17/95	Upper LC			
6423	OR	172	5/17/95	Upper LC	6/15/95	Upper LC	173
6424	OR	176	5/17/95	Upper LC			
6425	OR	186	5/17/95	Upper LC			
6426	OR	177	5/17/95	Upper LC	6/8/95	Lower Pond	177
6427	OR	247	5/17/95	Upper LC	6/2/95	Lower Pond	245
6428	OR	185	5/17/95	Upper LC			
6429	OR	240	5/17/95	Upper LC			
6430	OR	197	5/17/95	Upper LC			
6431	OR	175	5/17/95	Upper LC			
6432	OR	195	5/17/95	Upper LC			
6433	OR	188	5/17/95	Upper LC			
6434	OR	189	5/17/95	Upper LC	6/8/95	Lower Pond	187
6435	OR	170	5/17/95	Upper LC	6/8/95	Lower Pond	170
6436	OR	172	5/17/95	Upper LC			
6437	OR	185	5/17/95	Upper LC			
6438	OR	192	5/17/95	Upper LC	7/10/95	Upper LC	198
					8/7/95	Upper LC	199
6439	OR	175	5/17/95	Upper LC			
6440	OR	188	5/17/95	Upper LC			
6441	OR	169	5/17/95	Upper LC			
6442	OR	152	5/17/95	Upper LC			
6443	OR	160	5/17/95	Upper LC	6/8/95	Lower Pond	163
6444	OR	185	5/17/95	Upper LC	6/2/95	Lower Pond	185
6445	OR	179	5/17/95	Upper LC	6/2/95	Lower Pond	176
					6/8/95	Lower Pond	177
6446	OR	176	5/17/95	Upper LC			
6447	OR	194	5/17/95	Upper LC			
6448	OR	176	5/17/95	Upper LC			
6449	OR	205	5/17/95	Upper LC			
6450	OR	170	5/17/95	Upper LC			
6451	OR	164	5/17/95	Upper LC	6/1/95	Upper Pond	165
6452	OR	183	5/17/95	Upper LC	6/15/95	Upper LC	183
6453	OR	171	5/17/95	Upper LC			
6454	OR	189	5/17/95	Upper LC	6/2/95	Lower Pond	185
6455	OR	176	5/17/95	Upper LC	6/8/95	Lower Pond	180
6456	OR	198	5/17/95	Upper LC	6/15/95	Upper LC	198
					7/10/95	Upper LC	200
6457	OR	206	5/17/95	Upper LC			
6458	OR	240	5/17/95	Upper LC			
6459	OR	189	5/17/95	Upper LC	6/2/95	Lower Pond	190
6460	OR	226	5/17/95	Upper LC			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6461	OR	209	5/17/95	Upper LC	6/2/95	Lower Pond	209
					6/8/95	Lower Pond	205
6462	OR	182	5/17/95	Upper LC	6/15/95	Upper LC	173
6463	OR	211	5/17/95	Upper LC	6/2/95	Lower Pond	215
6464	OR	185	5/17/95	Upper LC	6/8/95	Lower Pond	184
6465	OR	190	5/17/95	Upper LC	6/8/95	Lower Pond	188
6466	OR	182	5/17/95	Upper LC			
6467	OR	216	5/17/95	Upper LC	8/7/95	Upper LC	215
6468	OR	173	5/17/95	Upper LC			
6469	OR	180	5/17/95	Upper LC			
6470	OR	187	5/17/95	Upper LC	5/23/95	Upper Pond	188
					6/1/95	Upper Pond	189
6471	OR	179	5/17/95	Upper LC	6/2/95	Lower Pond	179
6472	OR	155	5/17/95	Upper LC	6/2/95	Lower Pond	159
6473	OR	190	5/17/95	Upper LC	6/8/95	Lower Pond	187
6474	OR	174	5/17/95	Upper LC			
6475	OR	200	5/17/95	Upper LC	6/2/95	Lower Pond	198
					6/8/95	Lower Pond	195
6476	OR	178	5/17/95	Upper LC			
6477	OR	182	5/17/95	Upper LC	7/10/95	Upper LC	185
6478	OR	200	5/17/95	Upper LC			
6479	OR	170	5/17/95	Upper LC	6/2/95	Lower Pond	172
6480	OR	188	5/17/95	Upper LC	6/15/95	Upper LC	191
					7/10/95	Upper LC	196
6481	OR	191	5/17/95	Upper LC	7/10/95	Upper LC	198
6482	OR	185	5/17/95	Upper LC	6/2/95	Lower Pond	185
6000	OR	195	4/18/95	Upper Pond			
6001	OR	185	4/18/95	Upper Pond			
6002	OR	178	4/18/95	Upper Pond	6/2/95	Lower Pond	179
					6/8/95	Lower Pond	180
6003	OR	165	4/18/95	Upper Pond			
6004	OR	171	4/18/95	Upper Pond			
6005	OR	183	4/18/95	Upper Pond			
6006	OR	188	4/18/95	Upper Pond			
6007	OR	173	4/18/95	Upper Pond			
6008	OR	168	4/18/95	Upper Pond			
6009	OR	180	4/18/95	Upper Pond			
6010	OR	170	4/18/95	Upper Pond			
6011	OR	182	4/18/95	Upper Pond			
6012	OR	190	4/18/95	Upper Pond			
6013	OR	177	4/18/95	Upper Pond	6/2/95	Lower Pond	178
					6/8/95	Lower Pond	167
6014	OR	190	4/18/95	Upper Pond			
6015	OR	175	4/18/95	Upper Pond	5/23/95	Upper Pond	184
6016	OR	176	4/18/95	Upper Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6017	OR	165	4/18/95	Upper Pond			
6018	OR	179	4/18/95	Upper Pond			
6019	OR	185	4/18/95	Upper Pond			
6020	OR	180	4/18/95	Upper Pond	6/8/95	Lower Pond	180
6021	OR	186	4/18/95	Upper Pond	4/21/95	Upper Pond	188
6022	OR	194	4/18/95	Upper Pond			
6023	OR	172	4/18/95	Upper Pond	6/2/95	Lower Pond	174
					6/8/95	Lower Pond	172
6024	OR	160	4/18/95	Upper Pond			
6025	OR	180	4/18/95	Upper Pond	6/8/95	Lower Pond	183
6026	OR	190	4/18/95	Upper Pond	6/1/95	Upper Pond	194
					7/10/95	Upper LC	194
6027	OR	187	4/18/95	Upper Pond			
6028	OR	165	4/18/95	Upper Pond			
6029	OR	162	4/18/95	Upper Pond	6/1/95	Upper Pond	174
6030	OR	160	4/18/95	Upper Pond	5/23/95	Upper Pond	165
6031	OR	171	4/18/95	Upper Pond			
6032	OR	192	4/19/95	Upper Pond			
6033	OR	175	4/19/95	Upper Pond			
6034	OR	182	4/19/95	Upper Pond			
6035	OR	190	4/19/95	Upper Pond	5/23/95	Upper Pond	190
6036	OR	164	4/19/95	Upper Pond			
6037	OR	178	4/19/95	Upper Pond	6/2/95	Lower Pond	180
6038	OR	215	4/19/95	Upper Pond	6/8/95	Lower Pond	210
6039	OR	180	4/19/95	Upper Pond			
6040	OR	192	4/19/95	Upper Pond			
6041	OR	203	4/19/95	Upper Pond			
6042	OR	190	4/19/95	Upper Pond	6/8/95	Lower Pond	192
6043	OR	176	4/19/95	Upper Pond	6/8/95	Lower Pond	173
6044	OR	187	4/19/95	Upper Pond			
6045	OR	187	4/19/95	Upper Pond	6/2/95	Lower Pond	187
					6/8/95	Lower Pond	190
6046	OR	170	4/19/95	Upper Pond			
6047	OR	187	4/19/95	Upper Pond			
6048	OR	151	4/19/95	Upper Pond			
6049	OR	170	4/19/95	Upper Pond			
6050	OR	164	4/19/95	Upper Pond			
6051	OR	235	4/19/95	Upper Pond			
6052	OR	192	4/19/95	Upper Pond			
6053	OR	176	4/19/95	Upper Pond			
6054	OR	184	4/19/95	Upper Pond			
6055	OR	182	4/19/95	Upper Pond	6/2/95	Lower Pond	185
					6/8/95	Lower Pond	183
6056	OR	195	4/19/95	Upper Pond			
6057	OR	183	4/19/95	Upper Pond			
6059	OR	178	4/19/95	Upper Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6060	OR	153	4/19/95	Upper Pond			
6061	OR	181	4/19/95	Upper Pond			
6062	OR	193	4/19/95	Upper Pond			
6063	OR	193	4/19/95	Upper Pond			
6064	OR	183	4/19/95	Upper Pond	6/2/95	Lower Pond	182
6065	OR	180	4/19/95	Upper Pond			
6066	OR	178	4/19/95	Upper Pond	6/2/95	Lower Pond	180
6067	OR	175	4/19/95	Upper Pond			
6068	OR	204	4/21/95	Upper Pond			
6069	OR	178	4/21/95	Upper Pond	6/2/95	Lower Pond	179
					6/8/95	Lower Pond	179
6070	OR	184	4/21/95	Upper Pond			
6071	OR	209	4/21/95	Upper Pond			
6072	OR	166	4/21/95	Upper Pond	5/17/95	Upper LC	167
6073	OR	187	4/21/95	Upper Pond			
6075	OR	176	4/21/95	Upper Pond			
6076	OR	183	4/21/95	Upper Pond			
6077	OR	178	4/21/95	Upper Pond	5/17/95	Upper LC	177
6078	OR	174	4/21/95	Upper Pond			
6079	OR	198	4/21/95	Upper Pond			
6080	OR	184	4/21/95	Upper Pond			
6081	OR	173	4/21/95	Upper Pond	6/8/95	Lower Pond	176
6082	OR	180	4/21/95	Upper Pond			
6083	OR	170	4/21/95	Upper Pond			
6084	OR	189	4/21/95	Upper Pond			
6085	OR	173	4/21/95	Upper Pond			
6086	OR	157	4/21/95	Upper Pond			
6087	OR	167	4/21/95	Upper Pond			
6088	OR	167	4/21/95	Upper Pond	5/23/95	Upper Pond	167
					6/1/95	Upper Pond	168
6089	OR	161	4/21/95	Upper Pond			
6090	OR	164	4/21/95	Upper Pond	5/17/95	Upper LC	160
					6/2/95	Lower Pond	156
6091	OR	169	4/21/95	Upper Pond			
6092	OR	188	4/21/95	Upper Pond			
6093	OR	186	4/21/95	Upper Pond	6/1/95	Upper Pond	191
6094	OR	178	4/21/95	Upper Pond	6/1/95	Upper Pond	180
6095	OR	172	4/21/95	Upper Pond			
6096	OR	198	4/21/95	Upper Pond			
6097	OR	178	4/21/95	Upper Pond			
6098	OR	177	4/21/95	Upper Pond			
6099	OR	177	4/21/95	Upper Pond			
6100	OR	188	4/21/95	Upper Pond	5/17/95	Upper LC	183
6101	OR	183	4/21/95	Upper Pond			
6102	OR	186	4/21/95	Upper Pond			
6103	OR	171	4/21/95	Upper Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6104	OR	166	4/21/95	Upper Pond	6/2/95	Lower Pond	169
					6/8/95	Lower Pond	169
6105	OR	174	4/21/95	Upper Pond	5/17/95	Upper LC	166
6106	OR	173	4/21/95	Upper Pond			
6107	OR	160	4/21/95	Upper Pond	5/23/95	Upper Pond	162
					6/2/95	Lower Pond	163
6108	OR	193	4/21/95	Upper Pond	6/8/95	Lower Pond	191
6109	OR	192	4/21/95	Upper Pond			
6110	OR	190	4/21/95	Upper Pond			
6111	OR	159	4/21/95	Upper Pond			
6112	OR	197	4/21/95	Upper Pond			
6113	OR	178	4/21/95	Upper Pond			
6114	OR	180	4/21/95	Upper Pond			
6115	OR	209	4/21/95	Upper Pond			
6116	OR	174	4/21/95	Upper Pond			
6117	OR	188	4/21/95	Upper Pond	6/2/95	Lower Pond	188
6118	OR	190	4/21/95	Upper Pond	5/23/95	Upper Pond	189
					6/1/95	Upper Pond	190
6119	OR	205	4/21/95	Upper Pond			
6120	OR	207	4/21/95	Upper Pond			
6121	OR	191	4/21/95	Upper Pond			
6122	OR	170	4/21/95	Upper Pond	5/23/95	Upper Pond	173
6123	OR	160	4/21/95	Upper Pond	5/23/95	Upper Pond	163
					6/1/95	Upper Pond	168
6124	OR	183	4/21/95	Upper Pond			
6125	OR	175	4/21/95	Upper Pond			
6126	OR	181	4/21/95	Upper Pond			
6127	OR	160	4/21/95	Upper Pond			
6128	OR	180	4/21/95	Upper Pond	6/8/95	Lower Pond	180
6129	OR	168	4/21/95	Upper Pond			
6130	OR	187	4/21/95	Upper Pond	6/8/95	Lower Pond	185
6131	OR	168	4/21/95	Upper Pond			
6132	OR	177	4/21/95	Upper Pond	6/8/95	Lower Pond	177
6133	OR	176	4/21/95	Upper Pond	6/1/95	Upper Pond	178
6134	OR	186	4/21/95	Upper Pond	6/2/95	Lower Pond	181
					6/8/95	Lower Pond	184
6135	OR	168	4/21/95	Upper Pond	6/8/95	Lower Pond	174
6136	OR	171	4/21/95	Upper Pond	6/2/95	Lower Pond	171
6137	OR	170	4/21/95	Upper Pond			
6138	OR	151	4/21/95	Upper Pond	5/23/95	Upper Pond	154
					6/2/95	Lower Pond	157
					6/8/95	Lower Pond	155
6139	OR	188	4/21/95	Upper Pond			
6140	OR	180	4/21/95	Upper Pond			
6141	OR	173	4/21/95	Upper Pond	6/1/95	Upper Pond	171
6142	OR	190	4/21/95	Upper Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6143	OR	161	4/21/95	Upper Pond	5/23/95	Upper Pond	165
6144	OR	197	4/21/95	Upper Pond			
6145	OR	175	4/21/95	Upper Pond			
6146	OR	188	4/21/95	Upper Pond			
6147	OR	186	4/21/95	Upper Pond			
6148	OR	160	4/21/95	Upper Pond			
6149	OR	180	4/21/95	Upper Pond			
6150	OR	179	4/21/95	Upper Pond			
6151	OR	178	4/21/95	Upper Pond			
6152	OR	173	4/21/95	Upper Pond			
6153	OR	154	4/21/95	Upper Pond			
6154	OR	179	4/21/95	Upper Pond			
6155	OR	178	4/21/95	Upper Pond			
6156	OR	180	4/21/95	Upper Pond	6/2/95	Lower Pond	180
					6/8/95	Lower Pond	181
6157	OR	172	4/21/95	Upper Pond			
6158	OR	187	4/21/95	Upper Pond	5/17/95	Upper LC	178
					6/2/95	Lower Pond	180
					6/8/95	Lower Pond	180
6159	OR	182	4/21/95	Upper Pond			
6550	OR	154	5/23/95	Upper Pond			
6551	OR	166	5/23/95	Upper Pond			
6552	OR	191	5/23/95	Upper Pond			
6553	OR	186	5/23/95	Upper Pond			
6554	OR	163	5/23/95	Upper Pond			
6555	OR	180	5/23/95	Upper Pond			
6725	OR	174	5/23/95	Upper Pond			
6726	OR	141	5/23/95	Upper Pond			
6727	OR	159	5/23/95	Upper Pond			
6728	OR	147	5/23/95	Upper Pond			
6729	OR	145	5/23/95	Upper Pond	6/1/95	Upper Pond	146
6730	OR	238	5/23/95	Upper Pond			
6731	OR	194	5/23/95	Upper Pond			
6732	OR	183	5/23/95	Upper Pond			
6733	OR	148	5/23/95	Upper Pond			
6734	OR	201	5/23/95	Upper Pond			
6735	OR	194	5/23/95	Upper Pond			
6736	OR	172	5/23/95	Upper Pond	6/1/95	Upper Pond	174
6737	OR	159	5/23/95	Upper Pond			
6738	OR	170	5/23/95	Upper Pond			
6739	OR	175	5/23/95	Upper Pond			
6740	OR	188	5/23/95	Upper Pond			
6741	OR	154	5/23/95	Upper Pond	6/1/95	Upper Pond	161
6742	OR	163	5/23/95	Upper Pond	6/1/95	Upper Pond	168
6743	OR	151	5/23/95	Upper Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6744	OR	145	5/23/95	Upper Pond	6/1/95	Upper Pond	146
6745	OR	154	5/23/95	Upper Pond	6/1/95	Upper Pond	153
6746	OR	184	5/23/95	Upper Pond	6/1/95	Upper Pond	184
6747	OR	151	5/23/95	Upper Pond	6/8/95	Lower Pond	155
6748	OR	145	5/23/95	Upper Pond			
6749	OR	163	5/23/95	Upper Pond			
6750	OR	151	5/23/95	Upper Pond			
6751	OR	170	5/23/95	Upper Pond			
6752	OR	159	5/23/95	Upper Pond			
6753	OR	151	5/23/95	Upper Pond	6/1/95	Upper Pond	153
6754	OR	162	5/23/95	Upper Pond			
6755	OR	175	5/23/95	Upper Pond	6/1/95	Upper Pond	173
6756	OR	210	5/23/95	Upper Pond	6/1/95	Upper Pond	209
6757	OR	148	5/23/95	Upper Pond			
6758	OR	165	5/23/95	Upper Pond			
6759	OR	157	5/23/95	Upper Pond			
6760	OR	162	5/23/95	Upper Pond	6/1/95	Upper Pond	164
6761	OR	170	5/23/95	Upper Pond	6/1/95	Upper Pond	173
6762	OR	172	5/23/95	Upper Pond	6/1/95	Upper Pond	173
6763	OR	172	5/23/95	Upper Pond			
6764	OR	162	5/23/95	Upper Pond			
6765	OR	174	5/23/95	Upper Pond			
6766	OR	156	5/23/95	Upper Pond	6/2/95	Lower Pond	158
					6/8/95	Lower Pond	158
6767	OR	148	5/23/95	Upper Pond			
6768	OR	167	5/23/95	Upper Pond			
6769	OR	160	5/23/95	Upper Pond	10/24/95	Lower Pond	167
6770	OR	165	5/23/95	Upper Pond			
6771	OR	160	5/23/95	Upper Pond			
6772	OR	174	5/23/95	Upper Pond			
6773	OR	158	5/23/95	Upper Pond			
6774	OR	193	5/23/95	Upper Pond			
6775	OR	178	5/23/95	Upper Pond			
6776	OR	187	5/23/95	Upper Pond	6/1/95	Upper Pond	188
6777	OR	162	5/23/95	Upper Pond			
6778	OR	151	5/23/95	Upper Pond	6/1/95	Upper Pond	155
6779	OR	161	5/23/95	Upper Pond	6/1/95	Upper Pond	164
6780	OR	168	5/23/95	Upper Pond	6/1/95	Upper Pond	169
6781	OR	170	5/23/95	Upper Pond			
6782	OR	152	5/23/95	Upper Pond			
6783	OR	170	5/23/95	Upper Pond			
6784	OR	181	5/23/95	Upper Pond			
6785	OR	182	5/23/95	Upper Pond			
6786	OR	180	5/23/95	Upper Pond			
6787	OR	172	5/23/95	Upper Pond			
6788	OR	157	5/23/95	Upper Pond	6/1/95	Upper Pond	156

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
					6/15/95	Upper LC	155
					7/10/95	Upper LC	164
6789	OR	183	5/23/95	Upper Pond			
6790	OR	153	5/23/95	Upper Pond			
6791	OR	173	5/23/95	Upper Pond			
6792	OR	175	5/23/95	Upper Pond			
6793	OR	150	5/23/95	Upper Pond	8/7/95	Upper LC	160
6794	OR	161	5/23/95	Upper Pond	6/8/95	Lower Pond	164
6795	OR	164	5/23/95	Upper Pond	6/1/95	Upper Pond	166
6796	OR	159	5/23/95	Upper Pond			
6797	OR	179	5/23/95	Upper Pond	6/1/95	Upper Pond	181
6798	OR	161	5/23/95	Upper Pond	6/1/95	Upper Pond	164
6799	OR	168	5/23/95	Upper Pond			
6800	OR	172	5/23/95	Upper Pond			
6801	OR	168	5/23/95	Upper Pond	6/2/95	Lower Pond	171
					6/8/95	Lower Pond	170
6802	OR	150	5/23/95	Upper Pond	6/1/95	Upper Pond	154
6803	OR	164	5/23/95	Upper Pond			
6804	OR	170	5/23/95	Upper Pond			
6805	OR	155	5/23/95	Upper Pond	9/5/95	Upper Pond	179
6806	OR	173	5/23/95	Upper Pond	6/1/95	Upper Pond	173
6807	OR	174	5/23/95	Upper Pond			
6808	OR	151	5/23/95	Upper Pond			
6809	OR	165	5/23/95	Upper Pond			
6810	OR	177	5/23/95	Upper Pond	6/1/95	Upper Pond	178
6811	OR	161	5/23/95	Upper Pond			
6812	OR	163	5/23/95	Upper Pond	6/1/95	Upper Pond	172
6813	OR	188	5/23/95	Upper Pond			
6814	OR	146	5/23/95	Upper Pond			
6815	OR	166	5/23/95	Upper Pond	6/1/95	Upper Pond	170
6816	OR	145	5/23/95	Upper Pond	10/24/95	Upper Pond	170
6817	OR	147	5/23/95	Upper Pond			
6818	OR	150	5/23/95	Upper Pond			
6819	OR	150	5/23/95	Upper Pond	6/8/95	Lower Pond	155
6820	OR	163	5/23/95	Upper Pond			
6821	OR	164	5/23/95	Upper Pond			
6822	OR	170	5/23/95	Upper Pond			
6823	OR	185	5/23/95	Upper Pond	6/15/95	Upper LC	186
					7/10/95	Upper LC	187
					10/24/95	Lower Pond	187
6824	OR	156	5/23/95	Upper Pond			
6825	OR	176	5/23/95	Upper Pond			
6826	OR	162	5/23/95	Upper Pond			
6827	OR	164	5/23/95	Upper Pond	6/8/95	Lower Pond	173
6828	OR	175	5/23/95	Upper Pond			
6829	OR	175	5/23/95	Upper Pond	6/2/95	Lower Pond	173

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6830	OR	174	5/23/95	Upper Pond	6/8/95	Lower Pond	175
6831	OR	166	5/23/95	Upper Pond			
6832	OR	155	5/23/95	Upper Pond			
6833	OR	175	5/23/95	Upper Pond			
6834	OR	151	5/23/95	Upper Pond	6/8/95	Lower Pond	162
6835	OR	168	5/23/95	Upper Pond			
6836	OR	149	5/23/95	Upper Pond	6/1/95	Upper Pond	153
6837	OR	189	5/23/95	Upper Pond	6/1/95	Upper Pond	181
6838	OR	168	5/23/95	Upper Pond			
6839	OR	182	5/23/95	Upper Pond	6/2/95	Lower Pond	180
6840	OR	186	5/23/95	Upper Pond			
6841	OR	164	5/23/95	Upper Pond			
6842	OR	173	5/23/95	Upper Pond			
6843	OR	158	5/23/95	Upper Pond			
6844	OR	162	5/23/95	Upper Pond			
6845	OR	171	5/23/95	Upper Pond			
6846	OR	156	5/23/95	Upper Pond	6/1/95	Upper Pond	156
6847	OR	173	5/23/95	Upper Pond	6/1/95	Upper Pond	172
6848	OR	176	5/23/95	Upper Pond			
6849	OR	161	5/23/95	Upper Pond			
6850	OR	150	5/23/95	Upper Pond			
6851	OR	148	5/23/95	Upper Pond			
6852	OR	161	5/23/95	Upper Pond			
6853	OR	158	5/23/95	Upper Pond			
6854	OR	148	5/23/95	Upper Pond			
6855	OR	175	5/23/95	Upper Pond	6/1/95	Upper Pond	176
6856	OR	150	5/23/95	Upper Pond	6/2/95	Lower Pond	151
					6/8/95	Lower Pond	152
6857	OR	166	5/23/95	Upper Pond	6/2/95	Lower Pond	167
6858	OR	180	5/23/95	Upper Pond			
6859	OR	153	5/23/95	Upper Pond			
6860	OR	146	5/23/95	Upper Pond	6/1/95	Upper Pond	152
6861	OR	165	5/23/95	Upper Pond	6/2/95	Lower Pond	166
					6/8/95	Lower Pond	167
6862	OR	154	5/23/95	Upper Pond	6/1/95	Upper Pond	157
6863	OR	148	5/23/95	Upper Pond	6/8/95	Lower Pond	153
6864	OR	147	5/23/95	Upper Pond			
6865	OR	146	5/23/95	Upper Pond			
6866	OR	159	5/23/95	Upper Pond	9/5/95	Upper Pond	175
6867	OR	148	5/23/95	Upper Pond			
6868	OR	174	5/23/95	Upper Pond			
6869	OR	161	5/23/95	Upper Pond			
6870	OR	146	5/23/95	Upper Pond	6/8/95	Lower Pond	152
6871	OR	169	5/23/95	Upper Pond			
6872	OR	166	5/23/95	Upper Pond			
6873	OR	171	5/23/95	Upper Pond	6/2/95	Lower Pond	171

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6874	OR	168	5/23/95	Upper Pond			
6875	OR	168	5/23/95	Upper Pond	9/5/95	Upper Pond	183
6876	OR	156	5/23/95	Upper Pond	9/5/95	Upper Pond	172
6877	OR	164	5/23/95	Upper Pond	6/1/95	Upper Pond	165
6878	OR	175	5/23/95	Upper Pond			
6879	OR	165	5/23/95	Upper Pond			
6880	OR	160	5/23/95	Upper Pond			
6881	OR	178	5/23/95	Upper Pond			
6882	OR	154	5/23/95	Upper Pond			
6883	OR	163	5/23/95	Upper Pond			
6884	OR	160	5/23/95	Upper Pond			
6885	OR	160	5/23/95	Upper Pond	6/1/95	Upper Pond	163
6886	OR	160	5/23/95	Upper Pond			
6887	OR	150	5/23/95	Upper Pond			
6888	OR	176	5/23/95	Upper Pond			
6889	OR	147	5/23/95	Upper Pond	6/1/95	Upper Pond	148
6890	OR	196	5/23/95	Upper Pond			
6891	OR	156	5/23/95	Upper Pond	6/1/95	Upper Pond	158
6892	OR	179	5/23/95	Upper Pond			
6893	OR	161	5/23/95	Upper Pond	6/1/95	Upper Pond	164
					9/5/95	Upper Pond	177
6894	OR	151	5/23/95	Upper Pond	6/1/95	Upper Pond	155
6895	OR	179	5/23/95	Upper Pond	6/1/95	Upper Pond	179
6896	OR	178	5/23/95	Upper Pond			
6897	OR	164	5/23/95	Upper Pond	6/1/95	Upper Pond	165
6898	OR	150	5/23/95	Upper Pond			
6899	OR	172	5/23/95	Upper Pond			
6900	OR	167	5/23/95	Upper Pond			
6901	OR	157	5/23/95	Upper Pond	6/1/95	Upper Pond	160
6902	OR	168	5/23/95	Upper Pond			
6903	OR	161	5/23/95	Upper Pond			
6904	OR	178	5/23/95	Upper Pond	6/8/95	Lower Pond	179
6905	OR	148	5/23/95	Upper Pond	6/1/95	Upper Pond	150
6906	OR	150	5/23/95	Upper Pond			
6907	OR	150	5/23/95	Upper Pond			
6908	OR	147	5/23/95	Upper Pond			
6909	OR	150	5/23/95	Upper Pond			
6910	OR	156	5/23/95	Upper Pond			
6911	OR	177	5/23/95	Upper Pond			
6912	OR	185	5/23/95	Upper Pond			
6913	OR	150	5/23/95	Upper Pond			
6914	OR	180	5/23/95	Upper Pond	6/1/95	Upper Pond	185
6915	OR	188	5/23/95	Upper Pond	6/1/95	Upper Pond	189
6916	OR	169	5/23/95	Upper Pond	6/1/95	Upper Pond	170
6917	OR	155	5/23/95	Upper Pond			
6918	OR	170	5/23/95	Upper Pond	6/1/95	Upper Pond	169

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6919	OR	161	5/23/95	Upper Pond			
6920	OR	172	5/23/95	Upper Pond	6/1/95	Upper Pond	173
6921	OR	166	5/23/95	Upper Pond			
6922	OR	160	5/23/95	Upper Pond			
6923	OR	149	5/23/95	Upper Pond			
6924	OR	168	5/23/95	Upper Pond	6/1/95	Upper Pond	169
6925	OR	150	5/23/95	Upper Pond			
6926	OR	154	5/23/95	Upper Pond			
6927	OR	157	5/23/95	Upper Pond			
6928	OR	154	5/23/95	Upper Pond			
6929	OR	169	5/23/95	Upper Pond			
6930	OR	148	5/23/95	Upper Pond	6/1/95	Upper Pond	150
6931	OR	170	5/23/95	Upper Pond	6/1/95	Upper Pond	171
6932	OR	164	5/23/95	Upper Pond			
6933	OR	167	5/23/95	Upper Pond	6/1/95	Upper Pond	165
6934	OR	156	5/23/95	Upper Pond	6/1/95	Upper Pond	159
6935	OR	156	5/23/95	Upper Pond			
6936	OR	148	5/23/95	Upper Pond			
6937	OR	157	5/23/95	Upper Pond			
6938	OR	153	5/23/95	Upper Pond	6/1/95	Upper Pond	151
6939	OR	183	5/23/95	Upper Pond			
6940	OR	177	5/23/95	Upper Pond			
6941	OR	155	5/23/95	Upper Pond			
6942	OR	177	5/23/95	Upper Pond	6/8/95	Lower Pond	178
6943	OR	163	5/23/95	Upper Pond	6/1/95	Upper Pond	163
6944	OR	145	5/23/95	Upper Pond			
6945	OR	161	5/23/95	Upper Pond	6/1/95	Upper Pond	165
6946	OR	153	5/23/95	Upper Pond	6/1/95	Upper Pond	153
6947	OR	166	5/23/95	Upper Pond	6/1/95	Upper Pond	165
6948	OR	146	5/23/95	Upper Pond	6/1/95	Upper Pond	146
6949	OR	168	5/23/95	Upper Pond	6/2/95	Lower Pond	169
6950	OR	173	5/23/95	Upper Pond			
6951	OR	158	5/23/95	Upper Pond			
6952	OR	153	5/23/95	Upper Pond	6/1/95	Upper Pond	152
6953	OR	174	5/23/95	Upper Pond			
6954	OR	155	5/23/95	Upper Pond			
6955	OR	155	5/23/95	Upper Pond			
6956	OR	156	5/23/95	Upper Pond			
6957	OR	182	5/23/95	Upper Pond	6/1/95	Upper Pond	182
6958	OR	147	5/23/95	Upper Pond			
6959	OR	157	5/23/95	Upper Pond	6/1/95	Upper Pond	159
6960	OR	163	5/23/95	Upper Pond	6/2/95	Lower Pond	163
6961	OR	174	5/23/95	Upper Pond			
6962	OR	167	5/23/95	Upper Pond	6/1/95	Upper Pond	167
6963	OR	151	5/23/95	Upper Pond			
6964	OR	146	5/23/95	Upper Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6965	OR	189	5/23/95	Upper Pond	6/2/95	Lower Pond	185
6966	OR	152	5/23/95	Upper Pond	6/1/95	Upper Pond	152
6967	OR	187	5/23/95	Upper Pond			
6968	OR	149	5/23/95	Upper Pond			
6969	OR	158	5/23/95	Upper Pond			
6970	OR	147	5/23/95	Upper Pond			
6971	OR	162	5/23/95	Upper Pond	6/1/95	Upper Pond	160
6972	OR	192	5/23/95	Upper Pond			
6973	OR	155	5/23/95	Upper Pond	6/2/95	Lower Pond	168
					6/8/95	Lower Pond	167
6974	OR	168	5/23/95	Upper Pond	6/1/95	Upper Pond	158
6975	OR	172	5/23/95	Upper Pond	6/1/95	Upper Pond	173
6976	OR	192	5/23/95	Upper Pond			
6977	OR	184	5/23/95	Upper Pond			
6978	OR	172	5/23/95	Upper Pond			
6979	OR	159	5/23/95	Upper Pond			
6980	OR	146	5/23/95	Upper Pond			
7000	OR	194	6/2/95	Lower Pond	6/8/95	Lower Pond	196
7001	OR	222	6/2/95	Lower Pond			
7002	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7003	OR	177	6/2/95	Lower Pond	6/8/95	Lower Pond	173
7004	OR	162	6/2/95	Lower Pond			
7005	OR	195	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7006	OR	195	6/2/95	Lower Pond	6/8/95	Lower Pond	192
7007	OR	232	6/2/95	Lower Pond			
7008	OR	161	6/2/95	Lower Pond			
7009	OR	182	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7010	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7011	OR	181	6/2/95	Lower Pond			
7012	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	176
7013	OR	182	6/2/95	Lower Pond			
7014	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7015	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	177
7016	OR	167	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7017	OR	179	6/2/95	Lower Pond			
7018	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	165
					9/5/95	Upper Pond	175
7019	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	175
					8/7/95	Upper LC	175
7020	OR	180	6/2/95	Lower Pond			
7021	OR	202	6/2/95	Lower Pond	6/8/95	Lower Pond	198
7022	OR	200	6/2/95	Lower Pond	6/8/95	Lower Pond	196
7023	OR	194	6/2/95	Lower Pond			
7024	OR	181	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7025	OR	186	6/2/95	Lower Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7026	OR	190	6/2/95	Lower Pond	6/8/95	Lower Pond	189
7027	OR	209	6/2/95	Lower Pond			
7028	OR	213	6/2/95	Lower Pond			
7029	OR	184	6/2/95	Lower Pond	6/8/95	Lower Pond	184
7030	OR	197	6/2/95	Lower Pond	6/8/95	Lower Pond	195
7031	OR	179	6/2/95	Lower Pond			
7032	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7033	OR	169	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7034	OR	182	6/2/95	Lower Pond	6/8/95	Lower Pond	176
					6/15/95	Upper LC	172
7035	OR	173	6/2/95	Lower Pond			
7036	OR	179	6/2/95	Lower Pond			
7037	OR	170	6/2/95	Lower Pond			
7038	OR	173	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7039	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7040	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7041	OR	189	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7042	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7043	OR	187	6/2/95	Lower Pond			
7044	OR	181	6/2/95	Lower Pond			
7045	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7046	OR	190	6/2/95	Lower Pond			
7047	OR	186	6/2/95	Lower Pond			
7048	OR	187	6/2/95	Lower Pond			
7049	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7050	OR	164	6/2/95	Lower Pond			
7051	OR	156	6/2/95	Lower Pond			
7052	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7053	OR	188	6/2/95	Lower Pond	6/8/95	Lower Pond	190
7054	OR	160	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7055	OR	184	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7056	OR	170	6/2/95	Lower Pond			
7057	OR	163	6/2/95	Lower Pond			
7058	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7059	OR	204	6/2/95	Lower Pond	6/8/95	Lower Pond	204
7060	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7061	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7062	OR	181	6/2/95	Lower Pond			
7063	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7064	OR	172	6/2/95	Lower Pond			
7065	OR	158	6/2/95	Lower Pond	6/8/95	Lower Pond	161
7066	OR	158	6/2/95	Lower Pond			
7067	OR	169	6/2/95	Lower Pond			
7068	OR	172	6/2/95	Lower Pond			
7069	OR	176	6/2/95	Lower Pond			
7070	OR	172	6/2/95	Lower Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7071	OR	183	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7072	OR	191	6/2/95	Lower Pond			
7073	OR	190	6/2/95	Lower Pond			
7074	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	190
7075	OR	164	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7076	OR	150	6/2/95	Lower Pond			
7077	OR	174	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7078	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	166
7079	OR	207	6/2/95	Lower Pond	6/8/95	Lower Pond	208
7080	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7081	OR	183	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7082	OR	200	6/2/95	Lower Pond	6/8/95	Lower Pond	200
7083	OR	164	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7084	OR	163	6/2/95	Lower Pond	6/8/95	Lower Pond	161
7085	OR	190	6/2/95	Lower Pond			
7086	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7087	OR	212	6/2/95	Lower Pond			
7088	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	184
7089	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7090	OR	182	6/2/95	Lower Pond	6/8/95	Lower Pond	182
7091	OR	183	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7092	OR	156	6/2/95	Lower Pond	6/8/95	Lower Pond	158
7093	OR	164	6/2/95	Lower Pond			
7094	OR	229	6/2/95	Lower Pond			
7095	OR	186	6/2/95	Lower Pond			
7096	OR	177	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7097	OR	168	6/2/95	Lower Pond	6/8/95	Lower Pond	167
7098	OR	173	6/2/95	Lower Pond			
7099	OR	164	6/2/95	Lower Pond	7/10/95	Upper LC	172
7100	OR	181	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7101	OR	179	6/2/95	Lower Pond			
7102	OR	182	6/2/95	Lower Pond			
7103	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	175
					10/24/95	Upper Pond	188
7104	OR	164	6/2/95	Lower Pond	6/8/95	Lower Pond	164
					6/15/95	Upper LC	161
					7/10/95	Upper LC	167
7105	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7106	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	176
7107	OR	171	6/2/95	Lower Pond	7/10/95	Upper LC	169
7108	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	167
7109	OR	191	6/2/95	Lower Pond	6/8/95	Lower Pond	191
7110	OR	199	6/2/95	Lower Pond			
7111	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7112	OR	195	6/2/95	Lower Pond			
7113	OR	180	6/2/95	Lower Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7114	OR	192	6/2/95	Lower Pond	6/8/95	Lower Pond	188
7115	OR	184	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7116	OR	182	6/2/95	Lower Pond			
7117	OR	187	6/2/95	Lower Pond			
7118	OR	188	6/2/95	Lower Pond			
7119	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	188
7120	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	177
7121	OR	164	6/2/95	Lower Pond	6/8/95	Lower Pond	162
7122	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7123	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7124	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7125	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7126	OR	194	6/2/95	Lower Pond	6/8/95	Lower Pond	195
7127	OR	169	6/2/95	Lower Pond			
7128	OR	164	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7129	OR	194	6/2/95	Lower Pond			
7130	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7131	OR	185	6/2/95	Lower Pond			
7132	OR	173	6/2/95	Lower Pond			
7133	OR	203	6/2/95	Lower Pond			
7134	OR	155	6/2/95	Lower Pond			
7135	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	170
					6/15/95	Upper LC	162
7136	OR	244	6/2/95	Lower Pond			
7137	OR	177	6/2/95	Lower Pond			
7138	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7139	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7140	OR	194	6/2/95	Lower Pond	6/8/95	Lower Pond	191
7141	OR	214	6/2/95	Lower Pond	6/8/95	Lower Pond	214
7142	OR	184	6/2/95	Lower Pond	6/8/95	Lower Pond	187
7143	OR	192	6/2/95	Lower Pond	6/8/95	Lower Pond	193
7144	OR	174	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7145	OR	170	6/2/95	Lower Pond			
7146	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7147	OR	176	6/2/95	Lower Pond			
7148	OR	187	6/2/95	Lower Pond			
7149	OR	196	6/2/95	Lower Pond	6/15/95	Upper LC	196
					7/10/95	Upper LC	204
					8/7/95	Upper LC	207
7150	OR	178	6/2/95	Lower Pond			
7151	OR	171	6/2/95	Lower Pond			
7152	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	189
7153	OR	187	6/2/95	Lower Pond			
7154	OR	186	6/2/95	Lower Pond			
7155	OR	168	6/2/95	Lower Pond			
7156	OR	173	6/2/95	Lower Pond	6/8/95	Lower Pond	177

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7157	OR	203	6/2/95	Lower Pond			
7158	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7159	OR	178	6/2/95	Lower Pond			
7160	OR	188	6/2/95	Lower Pond	6/8/95	Lower Pond	191
7161	OR	169	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7162	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7163	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7164	OR	184	6/2/95	Lower Pond	6/8/95	Lower Pond	187
7165	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7166	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7167	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7168	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7169	OR	178	6/2/95	Lower Pond			
7170	OR	183	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7171	OR	194	6/2/95	Lower Pond			
7172	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7173	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7174	OR	181	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7175	OR	160	6/2/95	Lower Pond			
7176	OR	177	6/2/95	Lower Pond			
7177	OR	169	6/2/95	Lower Pond			
7178	OR	220	6/2/95	Lower Pond			
7179	OR	203	6/2/95	Lower Pond	6/8/95	Lower Pond	205
7180	OR	180	6/2/95	Lower Pond			
7181	OR	196	6/2/95	Lower Pond			
7182	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	173
7183	OR	160	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7184	OR	203	6/2/95	Lower Pond	6/8/95	Lower Pond	205
7185	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7186	OR	192	6/2/95	Lower Pond	6/8/95	Lower Pond	193
7187	OR	161	6/2/95	Lower Pond	6/8/95	Lower Pond	162
7188	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7189	OR	168	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7190	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7191	OR	172	6/2/95	Lower Pond			
7192	OR	167	6/2/95	Lower Pond			
7193	OR	183	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7194	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7195	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7196	OR	175	6/2/95	Lower Pond			
7197	OR	181	6/2/95	Lower Pond	6/8/95	Lower Pond	184
7198	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7199	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7200	OR	177	6/2/95	Lower Pond	6/8/95	Lower Pond	176
7201	OR	195	6/2/95	Lower Pond			
7202	OR	204	6/2/95	Lower Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7203	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7204	OR	179	6/2/95	Lower Pond			
7205	OR	161	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7206	OR	184	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7207	OR	200	6/2/95	Lower Pond	6/8/95	Lower Pond	198
7208	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	188
7209	OR	181	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7210	OR	210	6/2/95	Lower Pond	6/8/95	Lower Pond	205
7211	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	177
7212	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	182
7213	OR	179	6/2/95	Lower Pond			
7214	OR	239	6/2/95	Lower Pond			
7215	OR	181	6/2/95	Lower Pond			
7216	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	173
7217	OR	172	6/2/95	Lower Pond	6/15/95	Upper LC	172
					8/7/95	Upper LC	180
7218	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7219	OR	172	6/2/95	Lower Pond			
7220	OR	170	6/2/95	Lower Pond			
7221	OR	156	6/2/95	Lower Pond	6/15/95	Upper LC	154
7222	OR	177	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7223	OR	191	6/2/95	Lower Pond			
7224	OR	169	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7225	OR	193	6/2/95	Lower Pond			
7226	OR	201	6/2/95	Lower Pond	6/8/95	Lower Pond	199
					6/15/95	Upper LC	200
7227	OR	240	6/2/95	Lower Pond			
7228	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7229	OR	183	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7230	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7231	OR	201	6/2/95	Lower Pond			
7232	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	178
					6/15/95	Upper LC	173
7233	OR	195	6/2/95	Lower Pond	6/8/95	Lower Pond	198
7234	OR	202	6/2/95	Lower Pond			
7235	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7236	OR	198	6/2/95	Lower Pond			
7237	OR	162	6/2/95	Lower Pond			
7238	OR	167	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7239	OR	179	6/2/95	Lower Pond			
7240	OR	174	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7241	OR	192	6/2/95	Lower Pond	6/8/95	Lower Pond	189
7242	OR	195	6/2/95	Lower Pond			
7243	OR	195	6/2/95	Lower Pond	6/8/95	Lower Pond	195
7244	OR	184	6/2/95	Lower Pond			
7245	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	170

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7246	OR	177	6/2/95	Lower Pond			
7247	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7248	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7249	OR	175	6/2/95	Lower Pond			
7250	OR	179	6/2/95	Lower Pond			
7251	OR	185	6/2/95	Lower Pond			
7252	OR	160	6/2/95	Lower Pond	6/8/95	Lower Pond	160
7253	OR	176	6/2/95	Lower Pond			
7254	OR	177	6/2/95	Lower Pond	6/8/95	Lower Pond	177
					8/7/95	Upper LC	183
7255	OR	182	6/2/95	Lower Pond			
7256	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7257	OR	166	6/2/95	Lower Pond			
7258	OR	181	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7259	OR	170	6/2/95	Lower Pond			
7260	OR	170	6/2/95	Lower Pond			
7261	OR	151	6/2/95	Lower Pond			
7262	OR	184	6/2/95	Lower Pond			
7263	OR	165	6/2/95	Lower Pond			
7264	OR	172	6/2/95	Lower Pond			
7265	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7266	OR	161	6/2/95	Lower Pond			
7267	OR	159	6/2/95	Lower Pond			
7268	OR	165	6/2/95	Lower Pond			
7269	OR	164	6/2/95	Lower Pond			
7270	OR	168	6/2/95	Lower Pond			
7271	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7272	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	190
7273	OR	274	6/2/95	Lower Pond	6/8/95	Lower Pond	275
7274	OR	185	6/2/95	Lower Pond	6/15/95	Upper LC	186
					7/10/95	Upper LC	185
7275	OR	163	6/2/95	Lower Pond			
7276	OR	180	6/2/95	Lower Pond			
7277	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7278	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7279	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7280	OR	162	6/2/95	Lower Pond			
7281	OR	176	6/2/95	Lower Pond			
7282	OR	163	6/2/95	Lower Pond	6/8/95	Lower Pond	156
					6/15/95	Upper LC	165
7283	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7284	OR	167	6/2/95	Lower Pond			
7285	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	182
7286	OR	162	6/2/95	Lower Pond	6/8/95	Lower Pond	163
7287	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7288	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	173

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7289	OR	160	6/2/95	Lower Pond	6/8/95	Lower Pond	161
7290	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7291	OR	168	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7292	OR	166	6/2/95	Lower Pond			
7293	OR	167	6/2/95	Lower Pond			
7294	OR	175	6/2/95	Lower Pond			
7295	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	176
7296	OR	172	6/2/95	Lower Pond			
7297	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7298	OR	278	6/2/95	Lower Pond	6/8/95	Lower Pond	281
7299	OR	178	6/2/95	Lower Pond			
7300	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	176
7301	OR	168	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7302	OR	184	6/2/95	Lower Pond			
7303	OR	182	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7304	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7305	OR	166	6/2/95	Lower Pond			
7306	OR	237	6/2/95	Lower Pond			
7307	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7308	OR	197	6/2/95	Lower Pond			
7309	OR	190	6/2/95	Lower Pond			
7310	OR	151	6/2/95	Lower Pond			
7311	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7312	OR	175	6/2/95	Lower Pond			
7313	OR	190	6/2/95	Lower Pond			
7314	OR	196	6/2/95	Lower Pond			
7315	OR	151	6/2/95	Lower Pond			
7316	OR	175	6/2/95	Lower Pond			
7317	OR	194	6/2/95	Lower Pond			
7318	OR	197	6/2/95	Lower Pond			
7319	OR	185	6/2/95	Lower Pond			
7320	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	173
7321	OR	185	6/2/95	Lower Pond			
7322	OR	189	6/2/95	Lower Pond	6/8/95	Lower Pond	192
7323	OR	167	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7324	OR	178	6/2/95	Lower Pond			
7325	OR	191	6/2/95	Lower Pond			
7326	OR	163	6/2/95	Lower Pond			
7327	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	189
7328	OR	154	6/2/95	Lower Pond			
7329	OR	180	6/2/95	Lower Pond			
7330	OR	155	6/2/95	Lower Pond	6/8/95	Lower Pond	155
7331	OR	170	6/2/95	Lower Pond			
7332	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7333	OR	167	6/2/95	Lower Pond	6/8/95	Lower Pond	167
7334	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	172

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7335	OR	187	6/2/95	Lower Pond	6/8/95	Lower Pond	188
7336	OR	177	6/2/95	Lower Pond	6/8/95	Lower Pond	177
7337	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7338	OR	150	6/2/95	Lower Pond	6/8/95	Lower Pond	150
7339	OR	176	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7340	OR	162	6/2/95	Lower Pond	6/8/95	Lower Pond	160
7341	OR	187	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7342	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	166
7343	OR	175	6/2/95	Lower Pond			
7344	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	155
7345	OR	164	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7346	OR	185	6/2/95	Lower Pond			
7347	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7348	OR	188	6/2/95	Lower Pond			
7349	OR	171	6/2/95	Lower Pond			
7350	OR	169	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7351	OR	173	6/2/95	Lower Pond	6/8/95	Lower Pond	173
7352	OR	169	6/2/95	Lower Pond			
7353	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7354	OR	172	6/2/95	Lower Pond			
7355	OR	176	6/2/95	Lower Pond			
7356	OR	173	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7357	OR	161	6/2/95	Lower Pond			
7358	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7359	OR	184	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7360	OR	162	6/2/95	Lower Pond			
7361	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	167
7362	OR	168	6/2/95	Lower Pond			
7363	OR	154	6/2/95	Lower Pond			
7364	OR	172	6/2/95	Lower Pond			
7365	OR	234	6/2/95	Lower Pond			
7366	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7367	OR	160	6/2/95	Lower Pond	6/8/95	Lower Pond	160
7368	OR	183	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7369	OR	160	6/2/95	Lower Pond			
7370	OR	178	6/2/95	Lower Pond			
7371	OR	180	6/2/95	Lower Pond			
7372	OR	171	6/2/95	Lower Pond			
7373	OR	170	6/2/95	Lower Pond	6/15/95	Upper LC	171
7374	OR	168	6/2/95	Lower Pond			
7375	OR	190	6/2/95	Lower Pond			
7376	OR	168	6/2/95	Lower Pond			
7377	OR	181	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7378	OR	177	6/2/95	Lower Pond			
7379	OR	182	6/2/95	Lower Pond			
7380	OR	173	6/2/95	Lower Pond	6/8/95	Lower Pond	175

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7381	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7382	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7383	OR	178	6/2/95	Lower Pond			
7384	OR	191	6/2/95	Lower Pond	7/10/95	Upper LC	190
7385	OR	185	6/2/95	Lower Pond			
7386	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7387	OR	155	6/2/95	Lower Pond			
7388	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7389	OR	162	6/2/95	Lower Pond			
7390	OR	172	6/2/95	Lower Pond			
7391	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	178
					8/7/95	Upper LC	185
7392	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7393	OR	164	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7394	OR	185	6/2/95	Lower Pond			
7395	OR	169	6/2/95	Lower Pond	6/8/95	Lower Pond	166
7396	OR	165	6/2/95	Lower Pond			
7397	OR	179	6/2/95	Lower Pond			
7398	OR	150	6/2/95	Lower Pond	6/8/95	Lower Pond	152
7399	OR	177	6/2/95	Lower Pond			
7400	OR	157	6/2/95	Lower Pond	6/8/95	Lower Pond	155
7401	OR	174	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7402	OR	190	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7403	OR	182	6/2/95	Lower Pond			
7404	OR	160	6/2/95	Lower Pond	6/8/95	Lower Pond	156
7405	OR	152	6/2/95	Lower Pond	6/8/95	Lower Pond	151
					6/15/95	Upper LC	153
7406	OR	185	6/2/95	Lower Pond	6/8/95	Lower Pond	186
7407	OR	167	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7408	OR	167	6/2/95	Lower Pond			
7409	OR	175	6/2/95	Lower Pond			
7410	OR	170	6/2/95	Lower Pond			
7411	OR	175	6/2/95	Lower Pond			
7412	OR	156	6/2/95	Lower Pond			
7413	OR	160	6/2/95	Lower Pond			
7414	OR	168	6/2/95	Lower Pond	6/8/95	Lower Pond	167
7415	OR	175	6/2/95	Lower Pond	7/10/95	Upper LC	175
					8/7/95	Upper LC	175
7416	OR	188	6/2/95	Lower Pond			
7417	OR	175	6/2/95	Lower Pond			
7418	OR	182	6/2/95	Lower Pond			
7419	OR	208	6/2/95	Lower Pond	6/8/95	Lower Pond	206
7420	OR	194	6/2/95	Lower Pond	10/24/95	Lower Pond	197
7421	OR	183	6/2/95	Lower Pond			
7422	OR	166	6/2/95	Lower Pond			
7423	OR	195	6/2/95	Lower Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7424	OR	182	6/2/95	Lower Pond			
7425	OR	163	6/2/95	Lower Pond			
7426	OR	181	6/2/95	Lower Pond			
7427	OR	161	6/2/95	Lower Pond			
7428	OR	184	6/2/95	Lower Pond			
7429	OR	169	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7430	OR	191	6/2/95	Lower Pond	6/8/95	Lower Pond	191
7431	OR	229	6/2/95	Lower Pond			
7432	OR	187	6/2/95	Lower Pond			
7433	OR	178	6/2/95	Lower Pond			
7434	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	165
7435	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	178
7436	OR	155	6/2/95	Lower Pond	6/8/95	Lower Pond	154
7437	OR	162	6/2/95	Lower Pond	6/8/95	Lower Pond	161
7438	OR	154	6/2/95	Lower Pond			
7439	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7440	OR	191	6/2/95	Lower Pond			
7441	OR	182	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7442	OR	182	6/2/95	Lower Pond			
7443	OR	191	6/2/95	Lower Pond	6/8/95	Lower Pond	187
7444	OR	186	6/2/95	Lower Pond			
7445	OR	162	6/2/95	Lower Pond			
7446	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7447	OR	162	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7448	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	177
7449	OR	191	6/2/95	Lower Pond	6/8/95	Lower Pond	188
7450	OR	185	6/2/95	Lower Pond			
7451	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	179
7452	OR	188	6/2/95	Lower Pond	7/10/95	Upper LC	196
					8/7/95	Upper LC	196
7453	OR	168	6/2/95	Lower Pond	6/8/95	Lower Pond	168
7454	OR	161	6/2/95	Lower Pond			
7455	OR	152	6/2/95	Lower Pond			
7456	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7457	OR	175	6/2/95	Lower Pond			
7458	OR	162	6/2/95	Lower Pond	6/8/95	Lower Pond	162
7459	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	167
7460	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	182
7461	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7462	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	176
7463	OR	165	6/2/95	Lower Pond	6/8/95	Lower Pond	162
7464	OR	180	6/2/95	Lower Pond	6/15/95	Upper LC	178
7465	OR	174	6/2/95	Lower Pond			
7466	OR	163	6/2/95	Lower Pond			
7467	OR	185	6/2/95	Lower Pond			
7468	OR	262	6/2/95	Lower Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7469	OR	168	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7470	OR	161	6/2/95	Lower Pond	6/8/95	Lower Pond	159
7471	OR	193	6/2/95	Lower Pond			
7472	OR	179	6/2/95	Lower Pond			
7473	OR	198	6/2/95	Lower Pond	6/15/95	Upper LC	173
7474	OR	195	6/2/95	Lower Pond	6/8/95	Lower Pond	164
7475	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7476	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	152
7477	OR	175	6/2/95	Lower Pond			
7478	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7479	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	175
7480	OR	175	6/2/95	Lower Pond			
7481	OR	168	6/2/95	Lower Pond			
7482	OR	161	6/2/95	Lower Pond			
7483	OR	190	6/2/95	Lower Pond			
7484	OR	168	6/2/95	Lower Pond			
7485	OR	175	6/2/95	Lower Pond			
7486	OR	172	6/2/95	Lower Pond			
7487	OR	171	6/2/95	Lower Pond	6/8/95	Lower Pond	174
7488	OR	179	6/2/95	Lower Pond	6/8/95	Lower Pond	183
7489	OR	167	6/2/95	Lower Pond			
7490	OR	162	6/2/95	Lower Pond			
7491	OR	165	6/2/95	Lower Pond			
7492	OR	244	6/2/95	Lower Pond			
7493	OR	175	6/2/95	Lower Pond	6/8/95	Lower Pond	172
7494	OR	225	6/2/95	Lower Pond			
7495	OR	170	6/2/95	Lower Pond	6/8/95	Lower Pond	170
7496	OR	171	6/2/95	Lower Pond			
7497	OR	158	6/2/95	Lower Pond	6/8/95	Lower Pond	161
7498	OR	163	6/2/95	Lower Pond	6/8/95	Lower Pond	162
7499	OR	170	6/2/95	Lower Pond			
7500	OR	171	6/2/95	Lower Pond	7/10/95	Upper LC	176
7501	OR	180	6/2/95	Lower Pond	6/8/95	Lower Pond	181
7502	OR	155	6/2/95	Lower Pond			
7503	OR	178	6/2/95	Lower Pond	6/8/95	Lower Pond	180
7504	OR	166	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7505	OR	174	6/2/95	Lower Pond			
7506	OR	191	6/2/95	Lower Pond	6/15/95	Upper LC	190
					7/10/95	Upper LC	198
					8/7/95	Upper LC	200
7507	OR	170	6/2/95	Lower Pond			
7508	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	171
7509	OR	176	6/2/95	Lower Pond			
7510	OR	178	6/2/95	Lower Pond			
7511	OR	169	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7512	OR	160	6/2/95	Lower Pond			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7513	OR	160	6/2/95	Lower Pond	6/8/95	Lower Pond	162
7525	OR	186	6/2/95	Lower Pond	6/8/95	Lower Pond	185
7526	OR	168	6/2/95	Lower Pond			
7527	OR	172	6/2/95	Lower Pond	6/8/95	Lower Pond	169
7528	OR	175	6/2/95	Lower Pond			
6160	OR	248	5/10/95	Polar 1			
6161	OR	298	5/10/95	Polar 1			
6162	OR	225	5/10/95	Polar 1	5/18/95	Polar 1	228
6163	OR	242	5/10/95	Polar 1			
6164	OR	172	5/10/95	Polar 1	5/18/95	Polar 1	175
6165	OR	237	5/10/95	Polar 1			
6166	OR	220	5/10/95	Polar 1			
6167	OR	248	5/10/95	Polar 1			
6168	OR	232	5/10/95	Polar 1	5/18/95	Polar 1	232
6169	OR	164	5/10/95	Polar 1			
6170	OR	163	5/10/95	Polar 1			
6171	OR	228	5/10/95	Polar 1			
6172	OR	233	5/10/95	Polar 1			
6173	OR	256	5/10/95	Polar 1			
6174	OR	250	5/10/95	Polar 1			
6175	OR	184	5/10/95	Polar 1			
6176	OR	164	5/10/95	Polar 1			
6177	OR	220	5/10/95	Polar 1	5/18/95	Polar 1	224
6178	OR	181	5/10/95	Polar 1			
6179	OR	160	5/10/95	Polar 1			
6180	OR	191	5/10/95	Polar 1			
6181	OR	248	5/10/95	Polar 1			
6182	OR	224	5/10/95	Polar 1			
6183	OR	194	5/10/95	Polar 1			
6184	OR	206	5/10/95	Polar 1			
6186	OR	225	5/10/95	Polar 1			
6187	OR	240	5/10/95	Polar 1			
6188	OR	226	5/10/95	Polar 1			
6189	OR	220	5/10/95	Polar 1	5/18/95	Polar 1	204
6190	OR	230	5/10/95	Polar 1			
6191	OR	223	5/10/95	Polar 1			
6192	OR	191	5/10/95	Polar 1			
6193	OR	170	5/10/95	Polar 1			
6194	OR	162	5/10/95	Polar 1			
6195	OR	168	5/10/95	Polar 1			
6196	OR	255	5/10/95	Polar 1			
6197	OR	227	5/10/95	Polar 1			
6198	OR	165	5/10/95	Polar 1			
6199	OR	160	5/10/95	Polar 1			
6200	OR	179	5/10/95	Polar 1	5/18/95	Polar 1	185

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6201	OR	168	5/10/95	Polar 1			
6202	OR	180	5/10/95	Polar 1			
6203	OR	252	5/10/95	Polar 1			
6204	OR	218	5/10/95	Polar 1			
6205	OR	183	5/10/95	Polar 1			
6206	OR	187	5/10/95	Polar 1			
6207	OR	179	5/10/95	Polar 1			
6208	OR	195	5/10/95	Polar 1			
6209	OR	167	5/10/95	Polar 1			
6210	OR	220	5/10/95	Polar 1			
6211	OR	205	5/10/95	Polar 1	5/18/95	Polar 1	208
6212	OR	170	5/10/95	Polar 1			
6213	OR	225	5/10/95	Polar 1			
6214	OR	239	5/10/95	Polar 1			
6215	OR	238	5/10/95	Polar 1	5/18/95	Polar 1	234
6216	OR	225	5/10/95	Polar 1			
6217	OR	233	5/10/95	Polar 1	6/2/95	Lower Pond	231
					6/8/95	Lower Pond	232
6218	OR	225	5/10/95	Polar 1			
6219	OR	232	5/10/95	Polar 1			
6220	OR	250	5/10/95	Polar 1			
6221	OR	246	5/10/95	Polar 1			
6222	OR	218	5/10/95	Polar 1	8/8/95	Bear	226
6223	OR	222	5/10/95	Polar 1			
6224	OR	240	5/10/95	Polar 1			
6225	OR	240	5/10/95	Polar 1			
6226	OR	225	5/10/95	Polar 1			
6227	OR	220	5/10/95	Polar 1			
6228	OR	208	5/10/95	Polar 1			
6229	OR	218	5/10/95	Polar 1	5/18/95	Polar 1	225
6230	OR	225	5/10/95	Polar 1			
6231	OR	224	5/10/95	Polar 1			
6232	OR	224	5/10/95	Polar 1			
6233	OR	200	5/10/95	Polar 1			
6234	OR	237	5/10/95	Polar 1			
6235	OR	220	5/10/95	Polar 1			
6236	OR	170	5/10/95	Polar 1			
6237	OR	180	5/10/95	Polar 1	5/18/95	Polar 1	183
6238	OR	188	5/10/95	Polar 1			
6239	OR	221	5/10/95	Polar 1	6/15/95	Upper LC	225
6240	OR	172	5/10/95	Polar 1			
6241	OR	167	5/10/95	Polar 1			
6242	OR	170	5/10/95	Polar 1			
6243	OR	204	5/10/95	Polar 1			
6244	OR	196	5/10/95	Polar 1			
6245	OR	165	5/10/95	Polar 1			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6246	OR	209	5/10/95	Polar 1			
6247	OR	210	5/10/95	Polar 1			
6248	OR	235	5/10/95	Polar 1			
6249	OR	184	5/10/95	Polar 1			
6250	OR	173	5/10/95	Polar 1			
6251	OR	158	5/10/95	Polar 1			
6252	OR	220	5/10/95	Polar 1			
6253	OR	217	5/10/95	Polar 1			
6254	OR	183	5/10/95	Polar 1			
6255	OR	200	5/10/95	Polar 1	5/18/95	Polar 1	201
6256	OR	185	5/10/95	Polar 1			
6257	OR	197	5/10/95	Polar 1	5/18/95	Polar 1	200
6258	OR	227	5/10/95	Polar 1			
6259	OR	187	5/10/95	Polar 1	5/18/95	Polar 1	189
6260	OR	178	5/10/95	Polar 1			
6261	OR	227	5/10/95	Polar 1			
6262	OR	192	5/10/95	Polar 1			
6263	OR	191	5/10/95	Polar 1			
6264	OR	170	5/10/95	Polar 1			
6265	OR	153	5/10/95	Polar 1			
6266	OR	172	5/10/95	Polar 1			
6267	OR	188	5/10/95	Polar 1			
6268	OR	153	5/10/95	Polar 1			
6269	OR	163	5/10/95	Polar 1			
6270	OR	228	5/10/95	Polar 1			
6271	OR	190	5/10/95	Polar 1			
6272	OR	231	5/10/95	Polar 1			
6273	OR	174	5/10/95	Polar 1			
6274	OR	192	5/10/95	Polar 1			
6275	OR	226	5/10/95	Polar 1			
6276	OR	152	5/10/95	Polar 1			
6277	OR	202	5/10/95	Polar 1			
6278	OR	223	5/10/95	Polar 1			
6279	OR	183	5/10/95	Polar 1			
6280	OR	190	5/10/95	Polar 1			
6281	OR	172	5/10/95	Polar 1			
6282	OR	168	5/10/95	Polar 1			
6283	OR	153	5/10/95	Polar 1			
6284	OR	218	5/10/95	Polar 1	5/18/95	Polar 1	215
6285	OR	172	5/10/95	Polar 1			
6286	OR	161	5/10/95	Polar 1			
6287	OR	153	5/10/95	Polar 1			
6288	OR	197	5/10/95	Polar 1			
6289	OR	185	5/10/95	Polar 1			
6290	OR	228	5/10/95	Polar 1			
6291	OR	157	5/10/95	Polar 1			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6292	OR	198	5/10/95	Polar 1	5/18/95	Polar 1	221
6293	OR	183	5/10/95	Polar 1	5/18/95	Polar 1	188
6294	OR	247	5/10/95	Polar 1			
6295	OR	167	5/10/95	Polar 1			
6296	OR	212	5/10/95	Polar 1			
6297	OR	188	5/10/95	Polar 1	5/18/95	Polar 1	191
6298	OR	228	5/10/95	Polar 1			
6299	OR	192	5/10/95	Polar 1	5/18/95	Polar 1	178
6300	OR	230	5/10/95	Polar 1			
6301	OR	185	5/10/95	Polar 1			
6302	OR	188	5/10/95	Polar 1			
6303	OR	170	5/10/95	Polar 1			
6304	OR	161	5/10/95	Polar 1			
6305	OR	238	5/10/95	Polar 1	5/18/95	Polar 2	225
6306	OR	204	5/10/95	Polar 1			
6484	OR	185	5/18/95	Polar 1			
6483	OR	215	5/18/95	Polar 1			
6485	OR	243	5/18/95	Polar 1			
6486	OR	185	5/18/95	Polar 1			
6487	OR	195	5/18/95	Polar 1			
6488	OR	230	5/18/95	Polar 1			
6490	OR	261	5/18/95	Polar 1			
6489	OR	243	5/18/95	Polar 1			
6493	OR	259	5/18/95	Polar 1			
6495	OR	186	5/18/95	Polar 1			
6496	OR	238	5/18/95	Polar 1			
6497	OR	235	5/18/95	Polar 1			
6498	OR	215	5/18/95	Polar 1			
6499	OR	238	5/18/95	Polar 1			
6525	OR	208	5/18/95	Polar 1			
6526	OR	152	5/18/95	Polar 1			
6527	OR	185	5/18/95	Polar 1			
6528	OR	212	5/18/95	Polar 1			
6529	OR	193	5/18/95	Polar 1			
6530	OR	234	5/18/95	Polar 1			
6531	OR	215	5/18/95	Polar 1			
6532	OR	246	5/18/95	Polar 1			
6533	OR	180	5/18/95	Polar 1			
6534	OR	225	5/18/95	Polar 1			
6535	OR	255	5/18/95	Polar 1	6/15/95	Upper LC	180
6536	OR	177	5/18/95	Polar 1			
6537	OR	230	5/18/95	Polar 1			
6538	OR	167	5/18/95	Polar 1			
6539	OR	223	5/18/95	Polar 1			
6540	OR	160	5/18/95	Polar 1			
6541	OR	231	5/18/95	Polar 1			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6542	OR	221	5/18/95	Polar 1			
6543	OR	158	5/18/95	Polar 1			
6544	OR	177	5/18/95	Polar 1			
6545	OR	223	5/18/95	Polar 1			
6546	OR	177	5/18/95	Polar 1			
6547	OR	207	5/18/95	Polar 1			
6548	OR	199	5/18/95	Polar 1			
6549	OR	230	5/18/95	Polar 1			
6556	OR	195	5/18/95	Polar 1			
6557	OR	219	5/18/95	Polar 1			
6558	OR	240	5/18/95	Polar 1			
6559	OR	191	5/18/95	Polar 1			
6560	OR	225	5/18/95	Polar 1			
6561	OR	205	5/18/95	Polar 1			
6562	OR	185	5/18/95	Polar 1			
6563	OR	214	5/18/95	Polar 1			
6564	OR	192	5/18/95	Polar 1			
6565	OR	228	5/18/95	Polar 1			
6566	OR	244	5/18/95	Polar 1			
6567	OR	177	5/18/95	Polar 1			
6568	OR	227	5/18/95	Polar 1			
6569	OR	247	5/18/95	Polar 1			
6570	OR	173	5/18/95	Polar 1			
6571	OR	191	5/18/95	Polar 1			
6572	OR	212	5/18/95	Polar 1			
6573	OR	238	5/18/95	Polar 1			
6574	OR	212	5/18/95	Polar 1			
6575	OR	259	5/18/95	Polar 1			
6576	OR	215	5/18/95	Polar 1			
6577	OR	199	5/18/95	Polar 1			
6578	OR	216	5/18/95	Polar 1			
6579	OR	161	5/18/95	Polar 1			
6580	OR	195	5/18/95	Polar 1			
6581	OR	176	5/18/95	Polar 1			
6582	OR	260	5/18/95	Polar 1			
6583	OR	205	5/18/95	Polar 1			
6584	OR	223	5/18/95	Polar 1			
6307	OR	191	5/10/95	Polar 2			
6308	OR	213	5/10/95	Polar 2			
6309	OR	185	5/10/95	Polar 2			
6310	OR	230	5/10/95	Polar 2			
6311	OR	204	5/10/95	Polar 2			
6312	OR	202	5/10/95	Polar 2			
6313	OR	203	5/10/95	Polar 2	5/18/95	Polar 1	205
6314	OR	217	5/10/95	Polar 2			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6315	OR	225	5/10/95	Polar 2			
6316	OR	202	5/10/95	Polar 2			
6318	OR	196	5/10/95	Polar 2			
6320	OR	225	5/10/95	Polar 2			
6321	OR	188	5/10/95	Polar 2			
6585	OR	276	5/18/95	Polar 2			
6586	OR	173	5/18/95	Polar 2			
6587	OR	232	5/18/95	Polar 2			
6588	OR	236	5/18/95	Polar 2			
6589	OR	185	5/18/95	Polar 2			
6590	OR	212	5/18/95	Polar 2			
6591	OR	155	5/18/95	Polar 2			
6592	OR	181	5/18/95	Polar 2			
6323	OR	211	5/15/95	Bear			
6322	OR	229	5/15/95	Bear			
6324	OR	232	5/15/95	Bear			
6325	OR	188	5/15/95	Bear			
6326	OR	170	5/15/95	Bear			
6327	OR	196	5/15/95	Bear			
6328	OR	228	5/15/95	Bear			
6329	OR	217	5/15/95	Bear			
6330	OR	213	5/15/95	Bear			
6331	OR	275	5/15/95	Bear			
6332	OR	195	5/15/95	Bear			
6333	OR	258	5/15/95	Bear			
6334	OR	238	5/15/95	Bear			
7514	OR	259	6/14/95	Bear			
7515	OR	169	6/14/95	Bear			
7516	OR	154	6/14/95	Bear			
7517	OR	166	6/14/95	Bear			
7518	OR	262	6/14/95	Bear			
7519	OR	223	6/14/95	Bear			
7520	OR	190	6/14/95	Bear			
7521	OR	194	6/14/95	Bear	7/11/95	Bear	197
7522	OR	256	6/14/95	Bear			
7523	OR	192	6/14/95	Bear	8/9/95	Lower Fish	193
7524	OR	168	6/14/95	Bear	7/11/95	Bear	176
7529	OR	298	6/14/95	Bear			
7530	OR	230	6/14/95	Bear			
7531	OR	212	6/14/95	Bear			
7532	OR	173	6/14/95	Bear			
7607	OR	256	7/11/95	Bear	8/8/95	Bear	245
7608	OR	165	7/11/95	Bear			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7609	OR	159	7/11/95	Bear			
7610	OR	234	7/11/95	Bear			
7611	OR	167	7/11/95	Bear			
7612	OR	228	7/11/95	Bear			
7613	OR	186	7/11/95	Bear			
7614	OR	203	7/11/95	Bear	8/8/95	Bear	202
7615	OR	158	7/11/95	Bear			
7616	OR	154	7/11/95	Bear			
7617	OR	213	7/11/95	Bear			
7618	OR	156	7/11/95	Bear			
7619	OR	167	7/11/95	Bear			
7620	OR	166	7/11/95	Bear			
7621	OR	150	7/11/95	Bear	8/8/95	Bear	152
7622	OR	157	7/11/95	Bear			
7624	OR	200	7/11/95	Bear			
7625	OR	175	7/11/95	Bear	8/8/95	Bear	176
7626	OR	190	7/11/95	Bear			
7627	OR	192	7/11/95	Bear	8/8/95	Bear	191
7628	OR	187	7/11/95	Bear			
7629	OR	153	7/11/95	Bear			
7630	OR	172	7/11/95	Bear			
7631	OR	160	7/11/95	Bear			
7632	OR	235	7/11/95	Bear			
7633	OR	165	7/11/95	Bear			
7634	OR	159	7/11/95	Bear	8/8/95	Bear	162
7635	OR	170	7/11/95	Bear			
7636	OR	156	7/11/95	Bear			
7637	OR	175	7/11/95	Bear			
7638	OR	150	7/11/95	Bear	8/8/95	Bear	150
7639	OR	162	7/11/95	Bear	8/8/95	Bear	169
7672	OR	242	8/8/95	Bear			
6981	OR	158	8/8/95	Bear			
6982	OR	150	8/8/95	Bear			
6983	OR	165	8/8/95	Bear			
6984	OR	172	8/8/95	Bear			
6985	OR	158	8/8/95	Bear			
6986	OR	151	8/8/95	Bear			
6987	OR	156	8/8/95	Bear			
6988	OR	153	8/8/95	Bear			
6989	OR	275	8/8/95	Bear			
6990	OR	191	8/8/95	Bear			
6991	OR	188	8/8/95	Bear			
6992	OR	180	8/8/95	Bear			
6993	OR	151	8/8/95	Bear			
6994	OR	172	8/8/95	Bear			

Appendix 9. Continued.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
6995	OR	212	8/8/95	Bear			
6996	OR	173	8/8/95	Bear			
6997	OR	242	8/8/95	Bear			
6998	OR	253	8/8/95	Bear			
6999	OR	241	8/8/95	Bear			
7675	OR	168	8/8/95	Bear			
7676	OR	250	8/8/95	Bear			
7677	OR	163	8/8/95	Bear			
7681	OR	162	8/8/95	Bear			
7682	OR	226	8/8/95	Bear			
7683	OR	175	8/8/95	Bear			
7684	OR	188	8/8/95	Bear			
7685	OR	182	8/8/95	Bear			
7686	OR	160	8/8/95	Bear			
7687	OR	158	8/8/95	Bear			
7688	OR	163	8/8/95	Bear			
6335	OR	252	5/16/95	Lower Fish			
6336	OR	195	5/16/95	Lower Fish			
6337	OR	208	5/16/95	Lower Fish			
6338	OR	168	5/16/95	Lower Fish	7/13/95	Lower Fish	171
					8/9/95	Lower Fish	173
6339	OR	173	5/16/95	Lower Fish			
6340	OR	275	5/16/95	Lower Fish			
6341	OR	190	5/16/95	Lower Fish	6/14/95	Lower Fish	190
6342	OR	151	5/16/95	Lower Fish	8/9/95	Lower Fish	161
7533	OR	217	6/14/95	Lower Fish			
7534	OR	249	6/14/95	Lower Fish			
7535	OR	221	6/14/95	Lower Fish			
7536	OR	179	6/14/95	Lower Fish			
7537	OR	157	6/14/95	Lower Fish			
7538	OR	281	6/14/95	Lower Fish			
7539	OR	259	6/14/95	Lower Fish			
7540	OR	237	6/14/95	Lower Fish			
7541	OR	195	6/14/95	Lower Fish	7/13/95	Lower Fish	202
					8/9/95	Lower Fish	208
7542	OR	270	6/14/95	Lower Fish			
7543	OR	210	6/14/95	Lower Fish	8/9/95	Lower Fish	216
7544	OR	162	6/14/95	Lower Fish			
7640	OR	256	7/13/95	Lower Fish			
7641	OR	253	7/13/95	Lower Fish			
7642	OR	169	7/13/95	Lower Fish			
7643	OR	152	7/13/95	Lower Fish			
7645	OR	161	7/13/95	Lower Fish			

Appendix 9. Concluded.

Tag Number	Color	Length (mm)	Date Captured	Site Captured	Recapture Date	Recapture Site	(mm)
7646	OR	172	7/13/95	Lower Fish			
7647	OR	170	7/13/95	Lower Fish			
7648	OR	150	7/13/95	Lower Fish	8/9/95	Lower Fish	153
7649	OR	150	7/13/95	Lower Fish			
7655	OR	184	7/13/95	Lower Fish			
7656	OR	153	7/13/95	Lower Fish			
7657	OR	164	7/13/95	Lower Fish			
7658	OR	150	7/13/95	Lower Fish			
7659	OR	150	7/13/95	Lower Fish			
7660	OR	168	7/13/95	Lower Fish			
7665	OR	165	7/13/95	Lower Fish			
7666	OR	173	7/13/95	Lower Fish			
7667	OR	164	7/13/95	Lower Fish			
7671	OR	161	7/13/95	Lower Fish	8/9/95	Lower Fish	164
7694	OR	245	8/9/95	Lower Fish			
7695	OR	194	8/9/95	Lower Fish			
7696	OR	197	8/9/95	Lower Fish			
7699	OR	166	8/9/95	Lower Fish			
7700	OR	177	8/9/95	Lower Fish			
7701	OR	150	8/9/95	Lower Fish			
7702	OR	159	8/9/95	Lower Fish			
7703	OR	150	8/9/95	Lower Fish			
7704	OR	152	8/9/95	Lower Fish			
7709	OR	160	8/9/95	Lower Fish			
7710	OR	177	8/9/95	Lower Fish			
7711	OR	172	8/9/95	Lower Fish			
7712	OR	159	8/9/95	Lower Fish			
7713	OR	172	8/9/95	Lower Fish			
7714	OR	159	8/9/95	Lower Fish			
7715	OR	179	8/9/95	Lower Fish			
7719	OR	156	8/9/95	Lower Fish			
7720	OR	166	8/9/95	Lower Fish			
7721	OR	162	8/9/95	Lower Fish			
7722	OR	150	8/9/95	Lower Fish			
7727	OR	255	8/9/95	Lower Fish			
7728	OR	188	8/9/95	Lower Fish			
7729	OR	173	8/9/95	Lower Fish			

Appendix 10. Metals scan on fish from Fish Creek in the proposed Fork Knox gold mine area, 1992.

	Tissue	Al mg/kg	As mg/kg	Be mg/kg	Cd mg/kg
Fish 1	gill	189	2	<0.01	0.08
Fish 2	gill	53.9	1	<0.01	0.09
Fish 3	gill	268	2	<0.01	0.09
Fish 1	kidney	15.9	2	<0.01	1.26
Fish 2	kidney	9.39	1	<0.01	0.73
Fish 3	kidney	15	2	<0.01	0.89
Fish 1	liver	12.1	1	<0.01	0.87
Fish 2	liver	5.37	1	<0.01	0.61
Fish 3	liver	8.15	1	<0.01	0.26
Fish 1	muscle	6.33	1	<0.01	0.03
Fish 2	muscle	6.4	1	<0.01	<0.02
Fish 3	muscle	5.77	1	<0.01	<0.02

Appendix 10. Continued.

	Tissue	Cr mg/kg	Cu mg/kg	Pb mg/kg	Hg mg/kg	Ni mg/kg
Fish 1	gill	1.61	2.29	0.75		2.7
Fish 2	gill	1.15	5.83	0.17		1.1
Fish 3	gill	1.81	2.74	1.08		2.1
Fish 1	kidney	2.53	6.13	0.12		1.6
Fish 2	kidney	1.26	3.43	0.09		1
Fish 3	kidney	1.3	4.55	0.09		2
Fish 1	liver	1.19	9.44	0.1		1.3
Fish 2	liver	1.18	6.06	0.09		1
Fish 3	liver	1.21	4.94	0.04		0.3
Fish 1	muscle	1.32	1.01	0.14	0.35	0.7
Fish 2	muscle	1.25	1.24	0.06	0.37	0.5
Fish 3	muscle	1.18	1.1	0.06	0.27	0.4

Appendix 10. Concluded.

	Tissue	Ag mg/kg	V mg/kg	Zn mg/kg	Ti mg/kg	% Solids
Fish 1	gill	<0.02	1.17	77	10.6	17.1
Fish 2	gill	<0.02	0.62	72	3.7	28.9
Fish 3	gill	<0.02	1.25	80	14.5	16.1
Fish 1	kidney	0.18	6.08	80	1.8	10.6
Fish 2	kidney	0.08	4.76	75	1.9	9.3
Fish 3	kidney	0.08	3.77	82	2.3	9.45
Fish 1	liver	0.13	0.83	86	1.3	10.6
Fish 2	liver	0.03	0.85	80	1.9	13.4
Fish 3	liver	<0.02	0.55	55	1.1	21.9
Fish 1	muscle	<0.02	0.28	23	6.5	21.7
Fish 2	muscle	<0.02	0.25	22	1.2	20.3
Fish 3	muscle	0.02	0.26	20	1.3	22.4

Appendix 11. Metals concentrations in whole body round whitefish and Arctic grayling, 1992 and 1993.

Fish Creek at Fairbanks Creek

Species	Length mm	Weight grams	Al mg/Kg	As mg/Kg	Cd mg/Kg	Pb mg/Kg	Hg mg/Kg	% Solids
RWF	184	57.5	152.0	2.1	0.05	0.11	0.13	22.2
RWF	176	50.0	62.6	1.9	0.03	0.07	0.04	26
RWF	172	50.0	147.0	2	0.07	0.1	0.08	16.4
RWF	180	57.5	45.0	1.7	0.03	0.05	0.06	26
RWF	146	35.0	105.0	2.1	0.05	0.08	0.04	26.5
RWF	162	36.0	71.0	1.8	0.03	0.1	0.14	23.7
RWF	152	39.0	225.0	3.7	0.06	0.56	0.05	25.9
RWF	150	33.0	65.3	1.7	0.03	0.07	0.07	25.5
RWF	192	60.5	134.0	3.7	0.05	0.16	0.07	23
RWF	184	55.0	77.1	2	0.05	0.09	0.04	23.1
RWF	180	53.5	186.0	2	0.04	0.11	0.06	24.9
RWF	175	51.0	119.0	2	0.08	0.15	0.08	25.2
AG	126	21.0	38.2	1.4	0.06	0.48	0.14	26.6
AG	116	17.5	82.0	1.3	0.04	0.13	0.14	28
AG	127	20.5	118.0	2.4	0.07	0.15	0.15	24.9
AG	114	15.0	217.0	2.6	0.07	0.15	0.14	20.3
AG	113	14.5	127.0	1.8	0.06	0.15	0.1	24.6
AG	145	31.5	54.3	2.1	0.05	0.08	0.08	30.5
AG	142	28.5	198.0	2.1	0.1	0.24	0.26	21.7
AG	200	77.5	145.0	2.8	0.05	0.23	0.04	28.5
AG	202	78.0	84.6	1.6	0.05	0.14	0.16	26.5
AG	195	87.0	115.0	2.2	0.08	0.13	0.04	25.4
AG	156	38.5	76.7	1.9	0.09	0.15	0.05	24.3
AG	140	29.5	81.2	2	0.05	0.08	0.14	23
median	159	38.75	110	2	0.05	0.13	0.08	25.05
maximum	202	87	225	3.7	0.1	0.56	0.26	30.5
minimum	113	14.5	38.2	1.3	0.03	0.05	0.04	16.4
count	24	24	24	24	24	24	24	24

Appendix 11. Concluded.

Last Chance Creek Ponds

Species	Length mm	Weight grams	Al mg/Kg	As mg/Kg	Cd mg/Kg	Pb mg/Kg	Hg mg/Kg	% Solids
AG	175	53.4	47.5	<1	0.09	0.15	0.15	24.6
AG	172	50.2	10.8	<1	0.07	0.04	0.24	25.8
AG	171	48.0	73.3	<1	0.08	0.09	0.21	25
AG	155	36.0	18.8	<1	0.06	0.09	0.19	23.8
AG	168	46.3	15.0	<1	0.07	0.07	0.25	25.7
AG	158	39.0	11.4	<1	0.07	0.05	0.23	24.3
AG	168	43.8	8.6	<1	0.07	0.03	0.23	24
AG	170	50.5	127.0	<1	0.09	0.12	0.19	25
AG	171	54.8	168.0	<1	0.09	0.22	0.19	26.8
AG	171	49.6	67.3	<1	0.09	0.08	0.21	25.2
AG	165	45.0	15.2	<1	0.08	0.17	0.19	23.9
AG	156	38.8	18.2	<1	0.06	0.04	0.2	25
AG	169	42.8	20.7	<1	0.08	0.05	0.23	23.1
AG	175	54.8	28.6	<1	0.07	0.07	0.29	25.2
AG	176	53.4	14.7	<1	0.09	0.07	0.27	22.9
AG	152	34.0	38.0	<1	0.15	0.06	0.18	23.4
AG	155	37.9	56.6	<1	0.06	0.12	0.19	23
AG	179	55.0	51.6	<1	0.09	0.07	0.21	24
AG	164	40.6	17.4	<1	0.10	0.47	0.23	23.2
AG	172	52.0	157.0	<1	0.06	0.15	0.13	24.1
AG	158	38.8	20.2	<1	0.08	0.05	0.2	23.3
AG	174	47.0	38.1	<1	0.06	0.07	0.19	22.3
AG	178	55.0	2.2	<1	0.04	0.04	0.23	22.5
AG	162	43.8	10.8	<1	0.07	0.04	0.28	24.9
median	169.5	46.65	20.45	1	0.075	0.07	0.21	24.05
maximum	179	55	168	1	0.15	0.47	0.29	26.8
minimum	152	34	2.2	1	0.04	0.03	0.13	22.3
count	24	24	24	24	24	24	24	

Appendix 12. Arctic grayling from Last Chance Creek Ponds, sampled for lead. October 1995

Sample Number	Fork Length mm	Lead mg/kg	Percent Solids
1	188	0.39	21.6
2	192	0.14	20.6
3	185	0.55	20.5
4	186	0.27	20.5
5	180	0.1	22.9
6	176	0.21	21
7	180	0.38	21.2
8	184	0.14	21
9	170	0.18	19
10	170	0.11	19.3
11	178	0.13	22
12	173	0.08	20.2
13	180	0.16	20.3
14	177	0.12	21
15	185	0.18	22.9
16	184	0.12	21
17	187	0.26	19.3
18	183	0.13	21.4
19	183	0.09	20.6
20	197	0.4	18.3
21	167	0.13	19.6
22	183	0.16	17
23	190	0.1	21.5
24	154	1.04	18.7
mean	180.5	0.232	20.475
standard deviation	9.1	0.210	1.394
Median	183	0.15	
Maximum	197	1.04	
Minimum	154	0.08	

Appendix 13. Aquatic invertebrates in Fish Creek upstream of Fairbanks Creek, June 17, 1992.

	Sample Number									
Sample Number	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Baetidae		3	1		1	1	1		1	1
Heptagenidae							1			
Siphlonuridae	1					1		2		2
Plecoptera										
Leuctradidae							1			
Perlodidae				1	1				1	
Diptera										
Chironomidae L	1	1						1		
Chironomidae P					2					
Tipulidae									1	
Miscellaneous										
Nematoda		1				5	3	2		3
Total Invertebrates	2	5	1	1	4	7	6	5	3	6
Total Taxa	2	3	1	1	3	3	4	3	3	3

Appendix 14. Aquatic invertebrates collected in Fish Creek, July 1992.

	Sample Number									
Sample Number	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Heptagenidae	2		1	2	2	2		3	4	2
Plecoptera										
Perlodidae				1				2	1	
Diptera										
Chironomidae L	1			1						
Simulidae				1					1	
Miscellaneous										
Nematoda		4	5	2	2	2	2	6	2	4
Total Invertebrates	3	4	6	7	4	4	2	11	8	6
Total Taxa	2	1	2	5	2	2	1	3	4	2

Appendix 15. Aquatic invertebrates collected in Fish Creek, August 24, 1992.

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Baetidae	3	3	14	2	7	6	5	4	2	1
Heptagenidae			1				1		1	1
Siphlonuridae						1				
Plecoptera										
Leuctradae						1				
Perlodidae	7	8	3	2	5	1	1	2	5	1
Nemouridae		4	2					5		
Diptera										
Chironomidae L	74	33	22	5	5	18	4	20	6	6
Chironomidae P	4	7	1	1		1		1		
Tipulidae	1	3	1		1	4		1	2	3
Simulidae		1	1							
Miscellaneous										
Nematoda	1		2		3	5	5	15	6	15
Collembola										
Daphnia	4	3	2		5			5		2
Oligichaeta								1		
Trichoptera										
Phryganeidae		1		1		1			1	
Total Invertebrates	94	63	49	11	26	38	16	54	23	29
Total Taxa	7	9	10	5	6	9	5	9	7	7

Appendix 16. Aquatic invertebrates collected in Fish Creek, June 1993.

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Baetidae			2		1		1		1	
Heptagenidae	2	2					1	1	1	
Plecoptera										
Perlodidae		1	2		2	1	3	2	3	
Nemouridae				1						
Diptera										
Chironomidae L2	212	395	382	192	407	505	383	297	326	
Tipulidae										
Simulidae	3	4	46		16	13	5		6	
Total Invertebrates	217	402	432	193	426	519	393	300	337	0
Total Taxa	4	4	4	2	4	3	5	3	5	0

Appendix 17. Aquatic invertebrates collected in Bear Creek, June 18, 1992.

	Sample Number									
Sample Number	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Baetidae	7	13	23	11	6	8	15	14	20	6
Heptagenidae	14	12	4	8	8	5	19	22	28	7
Siphlonuridae	1	3	1	2			1	4	6	
Ephemerellidae	1									
Plecoptera										
Leuctradae							1			
Perlodidae		1		2	3		1	1	3	1
Nemouridae			1	1	1			1		
Diptera										
Chironomidae L	3	4	9	1	7	7	9	8	8	2
Chironomidae P						1				
Tipulidae	1	7	1		1	1		3	9	
Simulidae			1	1	1					
Miscellaneous										
Nematoda				1			1	1	3	
Snail										1
Total Invertebrates	27	40	40	27	27	22	47	54	77	17
Total Taxa	6	6	7	8	7	4	7	8	7	5

Appendix 18. Aquatic invertebrates collected in Bear Creek, July 1992.

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Baetidae	6	11	34	2	8	20	18	14	23	29
Heptagenidae	41	21	35	16	22	28	17	23	30	25
Ephemerellidae						1	1			
Plecoptera										
Perlodidae	2				2					
Nemouridae	3		2	1			8	1	2	5
Diptera										
Chironomidae L	13	23	46	8	12	18	35	25	35	32
Chironomidae P		1		1						
Tipulidae							2	1		
Simulidae	2	8	18	1	5	1	8	12	29	12
Miscellaneous										
Nematoda	1					1		1		
Total Invertebrates	68	64	135	29	49	69	89	77	119	103
Total Taxa	7	4	5	5	5	4	7	7	5	5

Appendix 19. Aquatic invertebrates collected in Bear Creek, August 25, 1992.

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Baetidae				2			1	1		
Heptagenidae	11	24	7	17	1	5	23	19	9	
Siphlonuridae	1	2						2		
Ephemerellidae		1								
Plecoptera										
Leuctradae			1	1						
Perlodidae	1	2		1		1	4	1		
Nemouridae	10	17	3	14	1	12	24	15		8
Diptera										
Chironomidae L	52	21	14	53	23	66	47	27	15	20
Tipulidae	4	3	6	8	1	8	8	4	2	4
Simulidae		2	3	9	1		1	2	2	
Dixidae			1	1		2	1			1
Miscellaneous										
Nematoda	2									
Oligichaeta							1			
Trichoptera										
Phryganeidae								1		
Total Invertebrates	81	72	35	106	27	94	110	72	28	33
Total Taxa	7	8	7	9	5	6	9	9	4	4

Appendix 20. Aquatic invertebrates collected in Bear Creek, August 1993.

Sample Number	1	2	3	4	5	6	7	8	9	10
Ephemeroptera										
Baetidae				2						
Heptagenidae								2	3	
Ephemerellidae					1	1				1
Plecoptera										
Perlodidae	10	1	1	9	7	1	3	8	8	10
Nemouridae	19	5	19	18	45	17	47	37	14	12
Diptera										
Chironomidae L	47	54	157	135	100	123	130	139	92	118
Tipulidae	2		3	14	3	28	10	18	7	20
Simulidae				1						
Psychodidae	6	2	2	2	2	2	1	5	3	3
Trichoptera										
Limnephilidae			1	1		1		1		6
Total Invertebrates	84	62	183	183	158	172	191	210	128	169
Total Taxa	5	4	6	9	6	4	5	7	7	6