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PEACE/WILLISTON FISH & WILDLIFE COMPENSATION PROGRAM

Biologists intensify efforts to save popular game fish in Williston Reservoir watershed

Biologists are breaking new ground in their efforts to save a gallant fighting fish in the Williston Reservoir watershed in northern British Columbia.

Beloved by anglers and local residents, the Arctic grayling, a silvery gray salmonid-shaped fish with a large dorsal fin speckled with fluorescent-orange spots, is prized because of its fighting qualities and willingness to accept artificial dry flies.

Due to declining numbers within the Williston watershed, the fish has been "red listed" which means that within the Williston Reservoir watershed the species is vulnerable to extinction.

"A program is needed to conserve and rehabilitate Arctic grayling populations and habitat in the watershed," said Arne Langston, a biologist with the Peace/Williston Fish and Wildlife Compensation Program. "This project was, in part initiated as a result of public concern and support from local industry."

The Ministry of Environment, Lands and Parks, (MELP) Fisheries Branch has instituted a catch and release only fishing regulation for grayling in the Williston watershed, and the Habitat section of the Ministry of Environment, Lands and Parks closely monitors any industrial activities proposed near water bodies supporting Arctic grayling populations. Local industry has been supportive of this program and has avoided work in sensitive areas.

In 1992 the Peace/Williston Fish and Wildlife Compensation Program commissioned an extensive and thorough review of management and enhancement options for Arctic grayling with special emphasis on the Williston watershed. Using the results of the review, BC Hydro and MELP fish biology experts formulated a plan of

action which resulted in studies of the fish's life cycle, spawning habits and habitat requirements being initiated in 1996/7.

In this program three distinct but complementary projects aim to generate an understanding of grayling biology.

One of the projects, conducted in partnership with Forest Renewal B.C. and local industry in the Table and Anzac river systems, is to collect information about the fish's life history, habitat needs and to identify enhancement opportunities.

A second project, also in partnership with Forest Renewal B.C., and local industry examines the timing of migrations to spawning, summer rearing, and wintering habitat of adult grayling. The project makes use of radio tracking devices which allow monitoring of the migrations of tagged grayling. The final project is an examination of the genetic structure of the various grayling populations within the watershed to determine if there are many genetically unique stocks or a common stock in the watershed.

This information is critical to future research and management strategies.

Biologists hope the three major grayling projects will provide sufficient information so that they will be in a position to develop a workplan to ensure the survival of the Arctic grayling populations.

Proud angler poses with this Arctic grayling prior to releasing it back into the Osilinka River

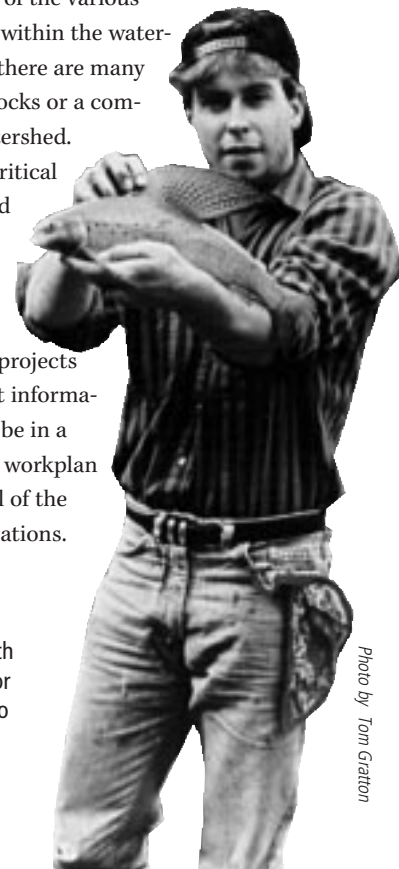


Photo by Tom Gratton

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Natureline

Natureline is published to inform community leaders, interest groups, and the public about current projects and environmental initiatives being undertaken by the Peace/Williston Fish & Wildlife Compensation Program.

The program is a joint BC Hydro and BC Environment initiative designed to enhance and protect fish and wildlife within the Williston Reservoir and Peace Canyon watersheds in north-central British Columbia.

In 1988, a \$10 million fund was established to support research and enhancement projects for fish and wildlife in the Williston Reservoir watershed.

A further \$1 million was added to fund fisheries projects in the Peace Canyon watershed between the WAC Bennett and the Peace Canyon dams. The annual interest from this \$11 million fund is managed to maintain the program in perpetuity.

This issue of Natureline focuses on the many fisheries projects being undertaken and includes an update on wildlife activities. We invite you to forward any questions and comments on the Peace/Williston Fish and Wildlife Compensation Program to Brian Blackman, Senior Fisheries Biologist or Mari Wood, Senior Wildlife Biologist at:

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Photo by Albert Gratian



The Mackenzie Scouts helped stock Lost Lake with 2,500 brook trout fingerlings.

Community groups rally behind compensation enhancement projects

Local community groups made some big contributions to fish enhancement efforts of the Peace/Williston Fish and Wildlife Compensation Program in 1997/98.

The Chetwynd Rod and Gun Club, the Mackenzie Fish & Game Association, the Mackenzie Nature Observatory, the Rocky Mountain Riders Association (snowmobile club), Mackenzie Senior Secondary School and several other groups all volunteered time and effort to the 1997/98 program.

“Public involvement in the PFWWCP is a key factor in the program’s success,” said fish biologist Arne Langston. “Without the efforts of the volunteers, the program wouldn’t be anywhere near as effective and successful as it has been.”

The Chetwynd Rod and Gun club members played a big role in transplanting rainbow trout to Simpson Lake. Club members carried wild adult rainbow trout captured from Williston Reservoir down a one kilometre trail to Simpson Lake where the trout are expected to build a self-sustaining population.

Members of Mackenzie Scouts, Mackenzie Fish and Game Association, Mackenzie Nature Observatory, Mackenzie Nordiques (cross country ski club), and Mackenzie residents all helped by carrying brook trout fry (four centimetres long) into Lost Lake, a small lake near Mackenzie.

Members of the Nature Observatory, the Rocky Mountain Riders Association and Mackenzie Senior Secondary School students assisted in the creation of spawning habitat on the inlet of Dina Lake #3 by placing spawning gravel, consolidating the stream channels and creating cover for fish. Four school groups in Mackenzie and one in Hudson’s Hope also participated in a curriculum-based project to learn more about fish. Each group raised 50 kokanee from egg to fingerling stage in the classroom and released them into Mugaha Creek in June.

In previous years community groups worked on wildlife enhancement as well as fish projects.

Radio-collar being attached to anesthetized fisher for subsequent monitoring.





Donna Creek Forestry/Biodiversity Project

The objective of this long-term cooperative project between PFWF-CP and Slocan Forest Products Mackenzie Group (formerly Fletcher Challenge Canada Ltd.), was to develop and test alternative forest harvesting techniques designed to benefit cavity-dependent birds and mammals. The project was initiated in 1991 with the harvesting of three experimental cutblocks. 1996/97

marked the second consecutive year of breeding bird surveys and nest searches. Vegetation assessments were conducted over the summers in addition to evaluations of blow-down rates in retained tree patches and physical attributes of 3 m. high stumps. The data will be analyzed, and a final summary document of the major findings will be produced in 1998. 1996/97 marked the last year of data collection for this phase of the project. Monitoring of cavity nester use of the blocks will resume again in approximately ten years.

Wildlife Projects: An update of 1996/97 and 1997/98 activities

Fisher Habitat Use

In 1996/97 an inventory project of fishers was initiated to enable biologists to better understand the ecology and population dynamics of this medium-sized carnivore in the sub-boreal forest. A detailed working plan for the five-year project was drafted, and a permanent field camp was established at Mesilinka, on the west side of the Williston Reservoir. Ten fishers were live captured and radio-collared on trap lines established and monitored over the winter of 1996/97, another five individuals were captured in 1997/98.

Monitoring of these radio-collared fishers has been conducted by ground surveys and fixed-wing aircraft to determine habitat use, resting and maternal den site selection, and juvenile dispersal. This project also relies on funding contributed by Forest Renewal B.C.



Photo by Bill Harrower

Neilson Lake Wetlands Enhancement

Enhancement of the Neilson Lake wetland just north of Prince George commenced in 1994/95 with the drafting of plans for a water control structure that would stabilize water levels. A steel weir was constructed the next year, and floating islands and nestboxes for nesting waterfowl were installed. In 1996/97, the final year of this project, an excavator was used to dig a 400 m. long ditch in the marsh to increase the feeding and nesting sites for waterfowl, and provide travel corridors for aquatic furbearers. A wildlife viewing/interpretive sign detailing the enhancements and featuring a drawing of the area by Ken Ferris, was erected at the site in the summer of 1997. To reach the Neilson Lake wetlands area, drive 45 km north from Prince George on Hwy 97, turn west onto Tallus Road and follow the signs 1-1/2 km to the site.

Photo by Mari Wood



Radio-collared female elk with newborn calf near Ingenika River.

Ingenika River Elk Transplant

In February 1996, 50 Rocky Mountain elk were transplanted to the Ingenika River area at the north end of the Williston Reservoir, from the east side of the Rocky Mountains near Chetwynd. 1996/97 marked the first year of monitoring of ten radio-collared adult female elk. One tracking flight was conducted per season to monitor habitat use, movements, dispersal and mortality of the collared females. To date, six of the ten collared females are still residing in the area, and have been observed together with the resident elk. Two females were predated on by wolves in the first year following the transplant, while a third died of unknown but natural causes. Another collared female was last located 80 kilometres north of the release site in the summer of 1996, and may have left the area. If the transplant is successful, the potential to increase elk populations in other areas of the Williston watershed will be explored.



Photo by Fraser Corbould

Level ditching channels created in marsh area at Neilson Lake.



Photo by Daniela Imhoff

Biologists set up a mobile surgical station for implanting radio transmitter tags into Arctic grayling.

Omineca Mountains Caribou Study

A study of woodland caribou residing on the west side of the Williston Reservoir was initiated in 1991 to determine the seasonal habitat use, seasonal movements, population dynamics, and ecology of these caribou. The first three years (Phase 1) involved monthly tracking of radio-collared caribou in the Chase and Wolverine Herds. In the latter three years (Phase 2), monitoring focused on the winter and spring habitat use of caribou in the smaller Wolverine Herd. In 1996/97, the last year of the six year study, aerial fixed-wing monitoring of radio-collared caribou in the Wolverine Herd continued weekly during the spring, calving and winter periods. Data from the first two years of the study was published in the scientific journal *Rangifer*, and preliminary results from the study were presented to the Mackenzie Forest District Land and Resource Management Planning (LRMP) table. Two final reports on the results of Phase 1 and Phase 2, will be produced in 1998.



Fish Projects: An update of our 1996/97 and 1997/98 activities

The Table River Inventory

The goal of the Table River project is to gather life history information on Arctic grayling and to identify enhancement opportunities.

Detailed surveys of adult Arctic grayling habitat utilization were carried out to determine preferred habitat. Information obtained from research into the distribution and habitat utilization of Arctic grayling fry has been incorporated into habitat protection plans to preserve this critical habitat. It is anticipated that an extensive restoration project and continued habitat utilization work will be carried out in this watershed in conjunction with Forest Renewal B.C. and The Pas Lumber Co. Ltd.

The Arctic Grayling Radio Telemetry

In late August and early September 1996, radio transmitters were surgically implanted into 25 Arctic grayling in the Table River and 30 fish in the Anzac River to determine the spawning areas in order that these areas may be documented and protected. Six telemetry flights were conducted from September 1996 to March 1997 to track fish movement. The majority of the Anzac and Table River fish spent the winter in the Parsnip River. Some fish moved downstream as far as the reservoir. There were no concentrations of tagged fish at a single site and a number of fish moved short distances during the winter.

Biologists track tagged grayling movements with radio receiver equipment.

Arctic grayling genetic study

Tissue samples were taken for genetic analysis from Arctic grayling captured in the Mesilinka, Anzac, Table and Nation rivers. Additional grayling tissue samples were also collected from the lower Peace River, from sites in Alaska and northern B.C. Initial analysis did not detect any genetic variation within Williston watershed stocks but there have been detectable differences between Williston and outside stocks.

Dina Creek Enhancement

Dina Creek is the site of a spawning habitat improvement project. Minor maintenance was required at Dina Creek this year and approximately 400 rainbow trout were observed spawning in the enhanced section of the stream. A project sign has been installed at Dina Creek, which provides program information and acknowledges the volunteer groups that participated in the project.

Photo by Arne Langston





Photo by Arne Langston

Mackenzie Secondary school students (and teacher) create spawning habitat for rainbow trout in Dina Lake #3.

Dina Lake #3 Spawning Habitat Improvement

A popular fishery has developed through the stocking of rainbow trout into Dina Lake #3. However, the small inlet stream feeding the lake lacked suitable spawning habitat and, as a result, there was no natural reproduction: Potentially the fish could become spawnbound. A spawning habitat improvement project was initiated. The Mackenzie Rocky Mountain Riders snowmobile club carried 150 bags of spawning gravel to the stream during the winter. The Fish and Game Association, the Mackenzie Nature Observatory and biology students from Mackenzie assisted staff in the installation of gravel in Dina Creek #3. Further gravel transport is planned for this winter. Dina Creek #3 is a small lake in the Dina Lakes chain, 30 km north of Mackenzie.

Gething Creek Bull Trout Transplant

The goal of the project is to transplant adult bull trout returning to Gething Creek to the stream above an impassable falls. This provides

access to new spawning and rearing habitats and will potentially establish a resident population that can contribute to the Dinosaur Reservoir fishery. Fish were successfully transplanted in the summers of 1994, 1995, and 1997. One more year of bull trout transplants is planned to ensure sufficient fish for a viable population.

Fish Stocking Program

Stocking was performed by tanker trucks, helicopters, and volunteers carrying the hatchery-supplied fish into specific small lakes. Over the course of the summer of 1997, approximately 85,000 rainbow trout were released into sixteen lakes; 55,000 brook trout were released into five lakes and 404,000 kokanee were released into four rivers.

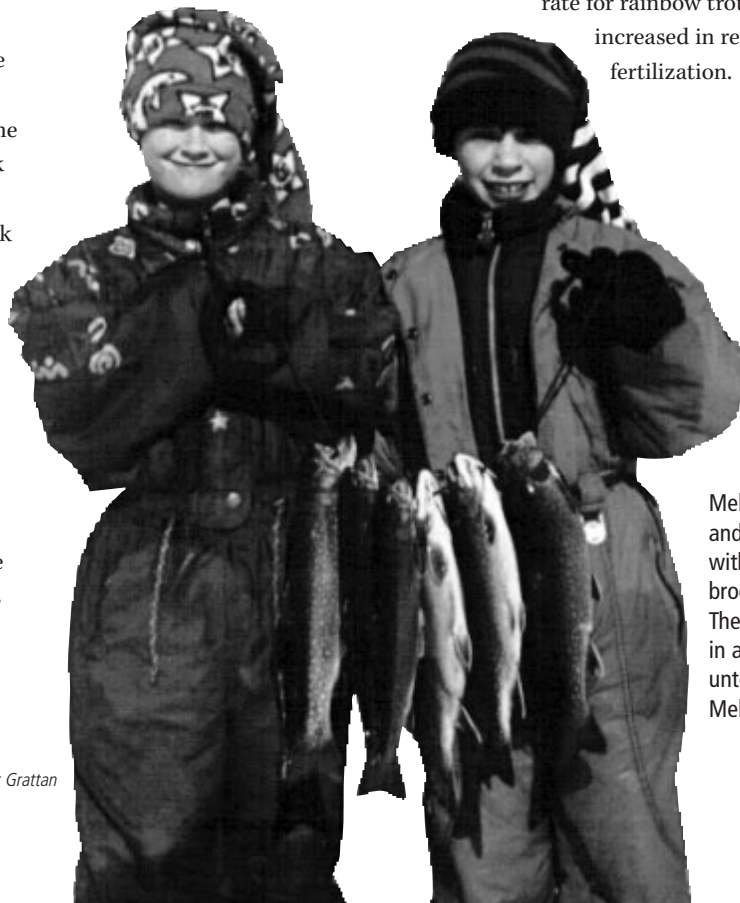
Mackenzie Schools Kokanee Rearing

In a tri-party partnership, students at four Mackenzie schools are involved in an educational program to incubate and raise kokanee. This

project is being carried out in conjunction with the local school district, Department of Fisheries and Oceans, and the Mackenzie Fish and Game Association and the Mackenzie Nature Observatory. Tanks and incubators were set up, permits acquired and eyed eggs delivered to three elementary schools and one high school. Donations from local businesses, industry, and the Mackenzie Nature Observatory provided for the purchase and repair of required equipment. A similar project was initiated in the fall of 1997 with the Hudson's Hope School.

Mesilinka River Fertilization

Results are encouraging from the fertilization of the Mesilinka River in 1995, 1996, and 1997 with low-level inorganic fertilization as a means to increase growth rates and fish numbers in this cold water system. Preliminary results suggest rainbow trout and mountain whitefish numbers have increased two-fold and five-fold respectively. The growth rate for rainbow trout has also increased in response to fertilization.



Melissa Grattan (left) and Kaleena Wilson with their catch of brook trout at Lost Lake. These fish were carried in as fingerlings by volunteers (including Melissa) in 1995.

Photo by Albert Grattan

Simpson Lake Rainbow Trout Transplant

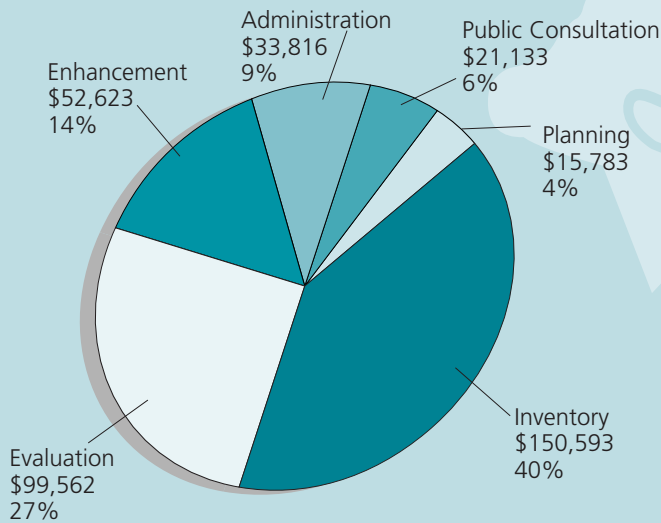
With assistance from the Chetwynd Rod and Gun Club and the Conservation Officer Service from Chetwynd, wild rainbow trout were planted into barren Simpson Lake to eventually create a self-perpetuating population and a recreational fishery.

In July, sixty-two rainbow trout were captured at the WAC Bennett Dam and moved to Simpson Lake. The club members transported the fish to the release site on the lake using small all-terrain vehicles (ATVs and Argo), and a small boat. Access to the lake is limited to a rough, one-kilometre trail.

Windy Point Lake Upwelling Station

Windy Point Lake Upwelling Station operated successfully and no major repairs were required. A formal assessment of the number of fish using the upwelling station occurred and use did not appear to be high. In future, sterile fish stocks will be stocked into Windy Point Lake to eliminate spawn bound fish.

Wildlife projects for 1996/97



Budget information for 1997/98 was not available at the time of printing but will be provided on request by calling (250) 561-4892.

Fish projects for 1996/97

