



Where there's a **WEIR** there's a way

► by Nyree Sharp

The history of the weir on the Beaverlodge River (near Grande Prairie) goes back to 1981, when the weir was established to withdraw drinking water for the town of Beaverlodge.

A weir is a barrier across the width of a river; it is used to hold the water in a reservoir. It has a slope on the downstream side where water flows over once the reservoir is full.

Although the Beaverlodge weir secured drinking water, it was observed that fish were having difficulty moving upstream which kept them from their spawning grounds. Likewise, the weir was also limiting them from returning to their wintering grounds.

One species affected by this is the Arctic grayling, a *Species of Special Concern* in Alberta and an indicator of good watershed health. The Beaverlodge River once recorded the largest run of Arctic grayling in Alberta. In 1981, numbers began to decline and they have not been found there since 1994.

Various techniques were implemented to try to facilitate passage over the weir. Provincial Fish and Wildlife staff first moved fish using nets and buckets. Fish ladders were later installed, and initially worked well. However, maintenance was challenging and the fish ladders enabling fish passage soon became a seasonal barrier—fish could not navigate past the weir at lower flows and generally later in summer. A longer-term solution was needed.

Allowing fish to travel to their spawning grounds is one part of the larger fish habitat issue within the Redwillow River watershed, of which the Beaverlodge River is a part. Land use in the watershed has reduced water retention and subsurface recharge, resulting in flows greater and earlier than normal, and allowed cattle in waterbodies, leading to erosion and pollution issues. ACA has been working with landowners in this and other watersheds to improve riparian health. Examples include moving cattle away from streams by providing alternate watering sources and then fencing them out, as well as planting trees to reduce erosion and stabilize stream banks.

In 2013, the Redwillow Watershed Restoration Project Team was formed, spearheaded by the Mighty Peace Watershed Alliance. The alliance brought together a number of partners, including ACA, Alberta Environment and Sustainable Resource Development (now Alberta Environment and Parks [AEP]), the County of Grande Prairie, the Town of Beaverlodge, Agroforestry and Woodlot Extension Society, West County Watershed Society, and Cows and Fish. This collaboration blends several different perspectives, increases opportunities for funding, and allows for coordination of a number of important efforts. Partners working together is the best approach to safeguarding a range of interests, values, and uses of the landscape.

One of the team's first tasks was to complete a restoration plan for 2015–2040, the goal of which is to restore fish habitat in the Redwillow watershed. Part of this goal is the improvement of fish passage and habitat connectivity. The Beaverlodge River has

been identified as a “priority drainage” by both AEP and ACA. “Therefore,” says Lenore Seward, a biologist with ACA in Peace River, “the completion of the fish passage at the Beaverlodge weir was a big milestone for the team, connecting fish to their historical spawning grounds.”

In order to avoid any changes to the weir itself and protect the municipal drinking water, a natural rock passage design was used. The channel was sculpted so that it narrows at the level of the weir to sustain a passable depth at low flows, and two riffle sections (a rocky part of the river) were established so that fish could move up and down the height of the weir. This is a low-maintenance approach that is designed to accommodate multiple fish species at a range of flow levels. The fish passage construction was finished in September 2018, and for the next five years there will be a monitoring plan that includes sonar videography upstream of the weir to document fish successfully swimming through the passage.

Adam Norris, Watershed Coordinator with the Mighty Peace Water Alliance, notes that the establishment of the fish passage is one piece of the puzzle. Land use issues in the watershed

have resulted in deterioration in water quality—low dissolved oxygen, high water temperatures—to the point that Arctic grayling would not be supported. So while the establishment of the fish passage is an exciting first step, watershed improvement is an ongoing endeavour, one which the Redwillow Watershed Restoration Team is committed to work on into the foreseeable future. 🏞️

photos:
top: ACA, Garret McKen
middle: ACA, John Hallet
bottom: ACA, Nikita Lebedynski
opposite page: ACA, Garret McKen



The completion of the fish passage at the Beaverlodge weir was a big milestone for the team, connecting fish to their historical spawning grounds.

~ Lenore Seward

See the next page for an illustration of the fish passage at the Beaverlodge River.

Fish Passages at the Beaverlodge River Weir

SPAWNING GROUNDS

Weir

Town of Beaverlodge Pumphouse

Former site of fish ladder

Riffle Fish Passage

FLOW OF BEAVERLODGE RIVER

Healthy Riparian Areas

Watershed Planning and Advisory Councils

The Mighty Peace Watershed Alliance is one of 11 Watershed Planning and Advisory Councils (WPACs) established under the Government of Alberta's Water for Life Strategy.

This strategy has three main goals:

- healthy aquatic ecosystems
- reliable, quality water supplies for a sustainable economy
- safe, secure drinking water

The WPACs, as partners in this strategy, support multi-stakeholder collaboration and community engagement at the watershed level, in the areas of education and outreach, environmental stewardship, watershed evaluation and reporting, and watershed management planning.

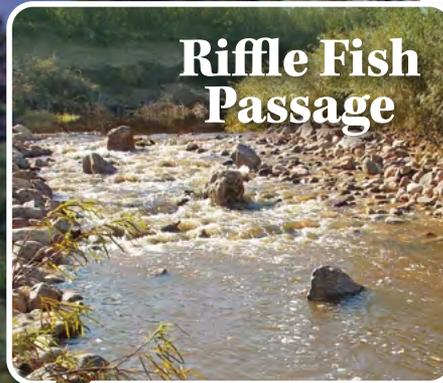
WPACs, representing the major river basins of Alberta are:

- Athabasca Watershed Council
- Battle River Watershed Alliance
- Bow River Basin Council
- Lesser Slave Watershed Council
- LICA-Beaver River Watershed
- Mighty Peace Watershed Alliance
- Milk River Watershed Council Canada
- North Saskatchewan Watershed Alliance
- Oldman Watershed Council
- Red Deer River Watershed Alliance
- South East Alberta Watershed Alliance

They are independent, not-for-profit organizations that bring a variety of activities and approaches to the management of watersheds. They work to achieve consensus on land and water management strategies among key stakeholders, including various levels of government, industrial sectors,

conservation groups, aboriginal communities, academia, and the public. This strengthens collaborative action and shared ownership in the management of Alberta's major watersheds.

photos:
fish ladder: ACA, Lenore Seward;
riffles: ACA, Garret McKen; willow stakes:
County of Grande Prairie, Kolby Peterson;
background: ACA, Nikita Lebedynski



Riffle Fish Passage

Water level maintained using raised riffle passages that help fish swim upstream during low flow to reach spawning grounds



Willow stakes planted to stabilize river bank and reduce erosion

Weak Riparian Areas