

Monitoring Efforts to Recover Athabasca Rainbows in Apetowun Creek: Year Two



By Phillip Meintzer, *AWA Conservation Specialist*

The day started before dawn, waking to the sound of my alarm at 5:30 AM in a hotel bed in Hinton Alberta on a dark September morning. I was in Hinton to visit the site of the Obed Mountain coal mine disaster – a tailings pond failure which saw 670,000 cubic metres of coal wastewater tear down the mountainside on October 31st, 2013. It destroyed much of Apetowun Creek and its neighbouring vegetation in the process. I was visiting as a follow-up trip for Alberta Wilderness Association (AWA), as we had visited the site during the summer of 2020, just over a year prior to monitor the rehabilitation efforts at Apetowun Creek following the legal settlement against Prairie Mines and Royalty who pleaded guilty in 2017. The restoration efforts are being led by a team from Hatfield Consultants and I met with two of their team members in the hotel lobby at 6:00 AM.

Joanna Skrajny and Ian Urquhart conducted our 2020 site visit. They received a tour of the Obed mine site that included

observations of the dewatering and reconstruction along the length of Apetowun Creek, as well as electrofishing, tagging, and fin-clipping of rainbow trout along the waterway. The electrofishing efforts hoped to catch pure strain Athabasca rainbow trout (ART) – a genetically distinct subpopulation of rainbows native to Alberta, with the goal of establishing a population of 100 individuals (ideally 50 breeding pairs) in an upper segment of Apetowun Creek to aid in their recovery. As of 2019, Athabasca rainbow trout are listed as Endangered under the *Species at Risk Act* (SARA). In September 2020, Fisheries and Oceans Canada (DFO) finally released their Recovery Strategy for this distinct subpopulation of rainbow trout in Alberta. The Recovery Strategy identified hybridization with species of non-native trout as a major risk to Athabasca rainbow recovery. Therefore, the Apetowun Creek restoration efforts seek to provide these trout with a habitat to call their own in the upper reaches of the creek, segregated from other trout through the

use of an impassable barrier. Rainbow trout were collected in 2020, tagged for identification in future surveys, and fin clips were sampled for genetic analysis to determine which tagged fish correspond to true pure strain Athabasca rainbow trout. The goal of my follow-up visit was to check in on the reclamation efforts along the creek, to observe subsequent electrofishing for the recapture of those pure strain individuals caught in 2020, and to witness the relocation to their new private residence.

We departed our hotel in Hinton shortly after 6:15, coffee in hand, heading east for 24 kilometres, before turning at Obed Mountain Road which would take us downhill and then back uphill another 10 kilometres to reach the mine site and parking area near the summit of Obed Mountain. The drive was dark and heavy with fog, but the roads were empty and it made for a swift trip from Hinton to the turn off for the mine. I hadn't anticipated the need for a vehicle with off road capabilities, which made traversing Obed Mountain Road in my rent-



Dave Evans and Alex Kamprath electrofishing Apetowun Creek...and part of the day's catch PHOTO: © P. MEINTZER

al Camry a bit of a thrill. Wet, slippery sand would be the only way to describe the road quality that morning and I was concerned I wouldn't even make it to the site as my tires started spinning out as the Toyota crawled up the mountain at five kilometres per hour – but I got there in the end. The sun was beginning to rise in a vibrant pink as the Hatfield duo (Dave Evans and Alex Kamprath – a former peer of mine during our undergraduate days) prepared their electrofishing gear and packed up their truck and “side-by-side” – an off road vehicle used to navigate the restoration area and carry their equipment between locations. Dave and Alex gave me a thorough safety walk-through for our planned activities as well as more general information for safety at the mine before we departed for the staging area where we would begin our fishing.

After a quick drive along a gravel resource road, we arrived at the staging area for the morning's activities. At a small pond known as Sediment Trap 2B, the three of us donned our waders while enjoying the company of a beaver which was navigating the pond and slapping its tail on the surface of the water. Dave and Alex picked a section of the creek known as APC 9 which they had hoped would lead to a better catch of tagged pure strain ART than their previous efforts had yielded, and we headed off downstream so that we could work our way upstream and end our sweep back at the staging area for fish processing. Prior to my arrival, the two of them had caught 34 of the 100 tagged individuals intended for

capture and relocation and they hoped that this new segment of creek and my presence might bring good luck to their day.

Coming from a background in marine fisheries, most of my previous experience was at-sea on commercial fishing boats and not in waders in shallow freshwater streams. This meant it was my first experience with electrofishing – a process by which fish get stunned by a quick shock that immobilizes them for anywhere from 10-seconds to one minute depending on their size/maturity and the distance from the source of the shock. Alex and Dave explained to me that the electrofisher is typically set anywhere between 200-250V, and that there's no guarantee that the fisher will stun all fish in a given vicinity during a single sweep. Some fish can avoid the stun or the stun just might not reach all fish in a given area. As our electrofishing was taking place in a moving stream, I quickly learned that to be an effective electrofisher you need to move quickly, especially if you're the person in charge of netting the fish. Typically, one person will be in charge of stunning, while another uses a net to catch any individuals that float to the surface while incapacitated. Moving quickly is essential otherwise even stunned fish can get away from you as they drift downstream with the current. On this day, Dave was in charge of wearing the electrofishing equipment while Alex was on netting duty. I followed along the banks of the stream with a cooler for the safe storage and transportation of any caught fish and to keep an eye out for

predators or ungulates we might encounter along the way. Electrofishing began at 8:34 AM and we started our travels upstream.

Over the course of two hours, we traversed the length of APC 9 from our starting point and back to the staging area, covering a distance of roughly 350 metres of the creek and catching 28 fish in total – a good haul by Alex and Dave's standards for the length of time we spent fishing. All 28 of those fish ended up in the cooler which I was responsible for safekeeping during our travels back to the truck for processing. My safekeeping during transit role made me nervous. It felt like far too great of a responsibility to shoulder for such an important recovery process – any individual lost to my mistreatment would only put this species further at risk to extirpation. Upon our return to the truck and side-by-side, all of the caught fish were placed into a much larger cooler, with fresh stream water and multiple aerators to ensure ample oxygenation for the fish inside. On such a calm morning, the woods around the staging area were alive with the buzz of aerators as processing was about to begin.

Processing consisted of a series of measurements including fork-length, weight, and maturity code (estimated from both length and weight), which were all recorded in a logbook along with species. Species was determined visually for any non-rainbow trout captured – such as brook trout, bull trout, or sculpins. But all rainbow trout had to be scanned for the presence of a PIT tag which were inserted into the rainbows caught



Dave and Alex preparing to take the vital statistics of...this Athabasca Rainbow Trout PHOTO: © P. MEINTZER

during the previous summer's electrofishing. Scanning for PIT tags requires a specially designed reader, shaped like a wand with a loop at the end - that somewhat resembles a high-tech version of a child's bubble toy. The reader is shaped to allow users to pass any fish through the loop to check for the presence of PIT tags. If a tag is present, the wand gives off an audible beep. All rainbow trout captured in 2020 were subsequently tagged, however not every tagged fish was guaranteed to be a pure strain ART. Following genetic analysis, tag IDs were assigned a percentage of pure strain DNA, which was recorded in a spreadsheet, which Alex would refer to as she processed each fish. A beep would signal to Alex that she needed to reference her database, where she could determine whether a fish was truly pure strain and should be kept for relocation in the upper portion of the creek or released back into the stream it was taken from initially. Despite our successful haul of fish, only two of the 28 fish were guaranteed pure strain Athabasca rainbow trout - bringing the yearly total to 36 of the 100 needed for even a slim chance at recovery according to Dave.

Once all 28 fish were processed and sorted into their respective coolers, Dave released the non-ART back into the stream and then we departed for an upper reach

of Apetowun Creek to release our two pure strain Athabascas into their new home. This gave me the opportunity to observe the reclamation efforts at another part of the watershed - a stretch known as APC 5. I had seen photos of this section of the creek from our previous visit in 2020, so it was encouraging to see just how much of the vegetation had already started to regrow along the length of the banks. Dave commented that he was impressed by the amount of regrowth he was seeing along the whole length of the reconstruction area. But APC 5 in particular stood out for him as he had visited earlier in the summer and it wasn't nearly as grown over then as it was during my visit. Dave released our two Athabasca rainbow trout at a bend in the creek under the cover of a reconstructed bank and checked to ensure that both fish seemed to be in good condition after their difficult morning of unwillingly participating in human exploits. Now all we can do is wait and hope that, by providing these fish with their own habitat - away from the threats of hybridization and competition with other species, they will have a better shot at recovery.

One of the many concerns with the recovery of Athabasca rainbow trout as well as other at-risk fish species is that severely

depleted populations (relative to historical abundances) are known to have extreme difficulties recovering - as seen with the collapse of Atlantic cod in eastern Canada (1). The goal of transplanting and segregating 100 ART into the upper reaches of Apetowun Creek might help avoid the hybridization issue with introduced trout but it's no guarantee this population of fish will grow substantially or ever reach historical numbers - especially if other threats aren't managed appropriately. The cumulative effects of industrial development on Alberta's landscape harms our populations of native fish, especially our three species of native trout (ART, Bull Trout, and Westslope Cutthroat Trout) classified by SARA as either Threatened or Endangered. Logging, fossil-fuel energy exploitation, and the linear footprint associated with these industries (e.g., roads or seismic lines) have significant impacts on the recovery of these imperiled fish species even without disaster events like the Obed spill. Even if these reclamation efforts at Apetowun Creek are successful, the bigger issue of fish recovery in our province still needs to be addressed in a meaningful way to ensure that all of this effort at Apetowun doesn't go to waste. 🍷

Robert Frost "A Winter Eden"

A winter garden in an alder swamp,
Where conies now come out to sun and romp,
As near a paradise as it can be
And not melt snow or start a dormant tree.

It lifts existence on a plane of snow
One level higher than the earth below,
One level nearer heaven overhead,
And last year's berries shining scarlet red.

It lifts a gaunt luxuriating beast
Where he can stretch and hold his highest feat

On some wild apple tree's young tender bark,
What well may prove the year's high girdle mark.

So near to paradise all pairing ends:
Here loveless birds now flock as winter friends,
Content with bud-inspecting. They presume
To say which buds are leaf and which are bloom.

A feather-hammer gives a double knock.
This Eden day is done at two o'clock.
An hour of winter day might seem too short
To make it worth life's while to wake and sport