Issue No. 2 | Summer 2013

FWCP NEWS

WHAT'S HAPPENING ACROSS BRITISH COLUMBIA

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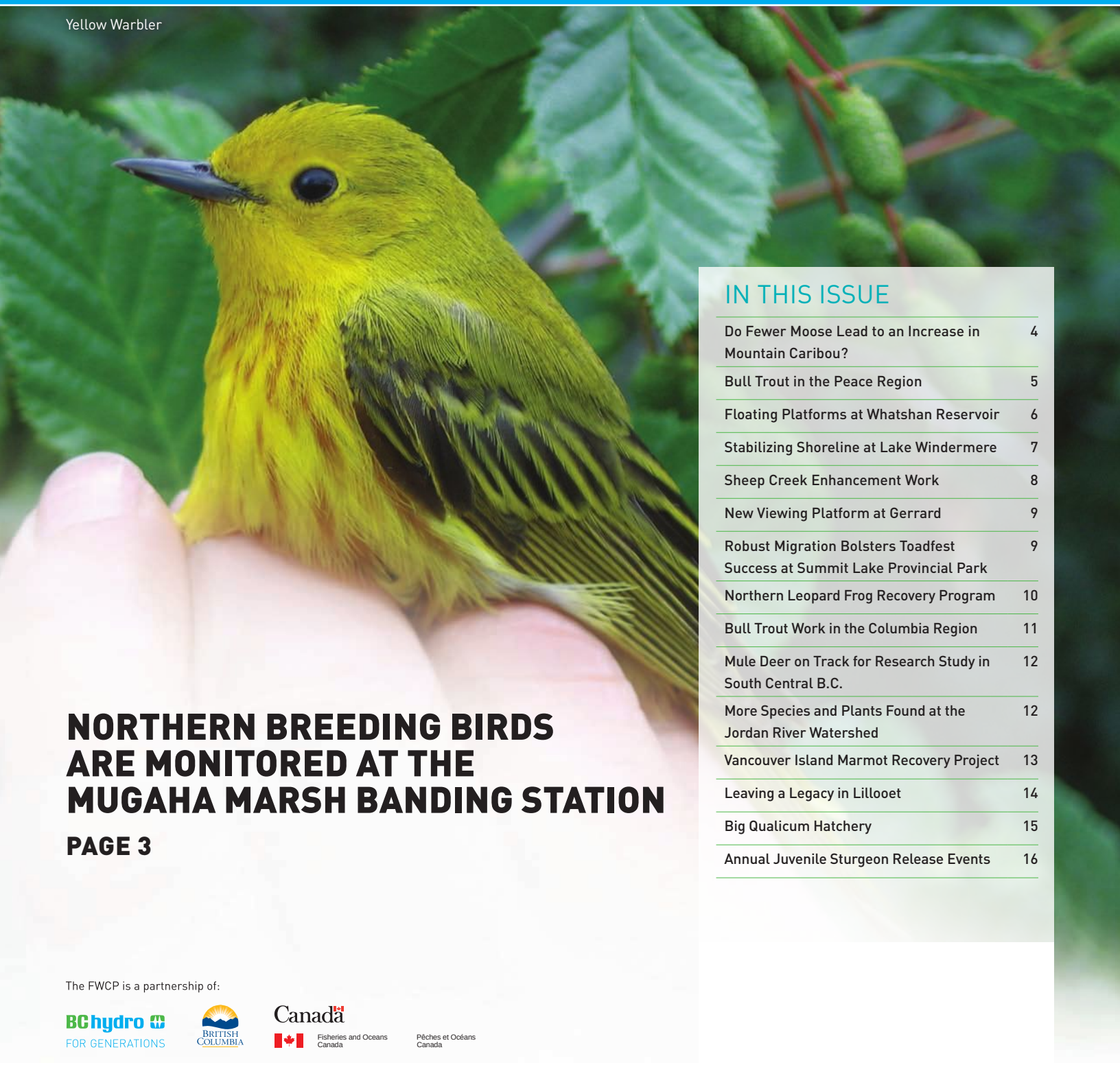

Yellow Warbler

NORTHERN BREEDING BIRDS ARE MONITORED AT THE MUGAHA MARSH BANDING STATION

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The FWCP is a partnership of:

BC hydro FOR GENERATIONS

BRITISH COLUMBIA

Canada

Fisheries and Oceans Canada

Pêches et Océans Canada

3 REGIONS AND 1 VISION

The Fish and Wildlife Compensation Program operates in three distinct regions of British Columbia: Coastal, Columbia and Peace. Each region has an independent board, technical committee, and a full-time program manager who work with dedicated community and First Nations partners and agencies to deliver regional priorities.

The regions come together to align common activities and are governed by one vision of thriving fish and wildlife populations with a working agenda to protect, enhance and conserve fish, wildlife and their habitats.

The regions are working together to:

- streamline and standardize application forms for new projects;
- establish a single provincial governance document;
- standardize the format of Watershed/Basin and Action Plans; and,
- provide you with one website: fwcp.ca.

FWCP REGIONS IN THE PROVINCE

FWCP UPDATE

STRATEGIC PLANNING

PEACE REGION – In October 2012, a strategic planning process was initiated to create Basin and Action Plans that identify priorities for species and habitats in the Williston and Dinosaur basins. The target is to have working Action Plans by September 2013 to support the acceptance of project proposals by the 'project intake' date of November 1, 2013.

COLUMBIA REGION – The Steering Committee (now known as the Board) has undertaken extensive stakeholder and First Nations engagement to seek input on a new delivery model and governance structure for the program and its associated conservation and enhancement work. The new model was finalized on November 1, 2012 and was implemented by April 1, 2013. The model aims to strengthen the program's regional independence and decision-making, while retaining strong links with the program partners.

COASTAL REGION – All applications are now measured against new Watershed and Action Plans. The overall vision and common principles that drive the FWCP provide a foundation for determining strategic priorities at the watershed level (Watershed Plans) which are developed into actions and projects.

NEW FACES

COASTAL REGION – Helen Davis was appointed as a Public Representative on the Coastal Board in July 2012. An outdoor enthusiast and advocate for the natural environment, Helen is a practicing wildlife biologist. She's worked closely with the North Okanagan Parks and Natural Area Trust and North Okanagan Naturalist Club and has an extensive network with provincial and local governments and First Nations.

COLUMBIA REGION – Two Public and one First Nation Representatives were appointed to the Steering Committee in 2012.

Dave White from the East Kootenay is past president of both the East Kootenay Wildlife Association and BC Wildlife Federation, past chair of the East Kootenay Conservation Program and the current president of the Canal Wilderness Club. Dave is also on the executive of the Columbia Wetlands Stewardship Partnership.

Biologist Rick Morley was nominated by the West Arm Outdoors Club, Nelson District Rod & Gun Club, Trail Wildlife Association, and West Kootenay Outdoorsmen. He has had more than 29 years of service with the provincial government including a dozen as the Kootenay Regional Fish, Wildlife and Habitat manager and is a founding member of the B.C. Professional Biologist's Association.

James Pepper joins the committee as a First Nation Representative. He's a natural resource manager for the Okanagan Nation Alliance having worked in this field for over 17 years. James is a registered professional biologist who has worked on large fisheries related projects, broad community engagement initiatives, wildlife and vegetation projects, traditional and local ecological knowledge projects and numerous cultural research activities throughout B.C.

10 SPECIES EXCEED ALL TIME BANDING HIGHS FOR A SEASON

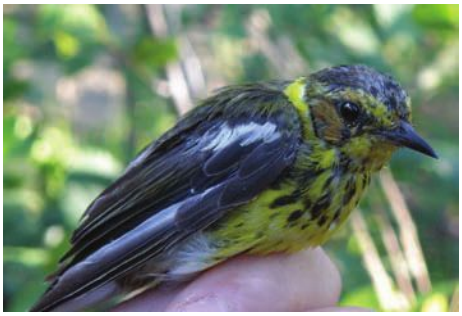
2012 was the 18th season for banding activities at the Mugaha Marsh Banding Station and it proved to be one of the best with 10 species exceeding their previous banding highs. During standard banding, 3688 birds of 58 species were banded, above the annual average of 2500 birds.

Located 15 kilometers northwest of Mackenzie, the Mugaha Marsh Banding Station was established in 1995 by the Canadian Wildlife Service and Mackenzie Nature Observatory and is part of the Canadian Migration Monitoring Network that is collecting data on the population trends of northern breeding birds. It is funded by the FWCP, Canadian Wildlife Service, and other community supporters.

"By banding the small songbirds we're able to monitor changes in the populations that migrate through the area and use the habitat," explained Vi Lambie, from the Mackenzie Nature Observatory. "It's very important to maintain the riparian habitat at the marsh which birds use as a stopover sight during migration. It would be wonderful to find a species of willow or other shrub that can withstand the annual changes in the water levels that happen as Williston Reservoir nears full pond."

Many of the migrating species monitored use shrubby habitats which can be influenced by changing reservoir levels during migration and breeding. The ten most common bird species banded at the station are:

- Ruby-crowned Kinglet
- American Redstart
- Northern Waterthrush
- Pine Siskin
- Orange-crowned Warbler
- Yellow-rumped Warbler
- Common Yellowthroat
- Dark-eyed Junco
- Yellow Warbler
- Swainson's Thrush



Cape May Warbler

Northern Waterthrush

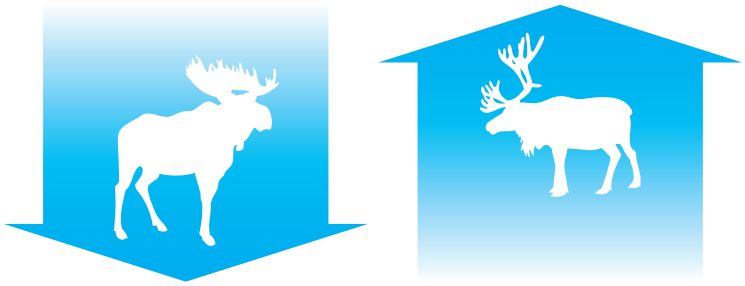
Yellow-rumped Warbler

MUGAHA BANDING STATION IS RUN PRIMARILY BY VOLUNTEERS

The FWCP has supported the Mugaha Marsh bird banding project for many years because of its intrinsic value both locally and regionally, and because of the passionate, in-kind support from its volunteers," said Dan Bouillon, FWCP-Peace program manager.

Volunteers are a vital component to any program and this one is no exception. Every year volunteers take care of many roles: advertising for and hiring of banders, doing maintenance at the site, setting up the lab and accommodations, assisting at the station during banding and washing the bird bags. If you're interested in volunteering for summer 2013, please contact Vi Lambie at **250 997 6876** or by email at **jlambie@telus.net**.

Bander-in-charge Rinchen Boardman with visitor Aquinnah McLaughlin. *Photo taken by Maeve McLaughlin.*



DO FEWER MOOSE LEAD TO AN INCREASE IN MOUNTAIN CARIBOU?

That was the question researchers and biologists asked back in 2006 in hope they would find a way to increase the numbers of Mountain Caribou in the Parsnip River area in central British Columbia.

The Parsnip Caribou Recovery Project, initiated by the Ministry of Environment and supported through funding from the FWCP, began by doubling the number of Limited Entry Hunting permits for Moose, which continue to be maintained at higher than pre-2006 levels, with the expectation that hunters would reduce Moose density.

"By liberalizing Moose hunting regulations we are examining whether hunters will reduce Moose numbers and decrease the Moose population densities, thus supporting a smaller Wolf population and reducing the predation impacts on Caribou," explained Doug Heard from the Ministry of Forests, Lands and Natural Resource Operations. To evaluate the effectiveness of this approach, Moose, Caribou and Wolf populations have been monitored ever since.

"What we know now from the analysis of results over the 2005 to 2011 period is that the Moose population had a 66% reduction, but Wolf numbers did not appear to change," continued Heard. "Unfortunately we also discovered that there were about the same number of Caribou in the Parsnip herd in 2012 as in 2002."

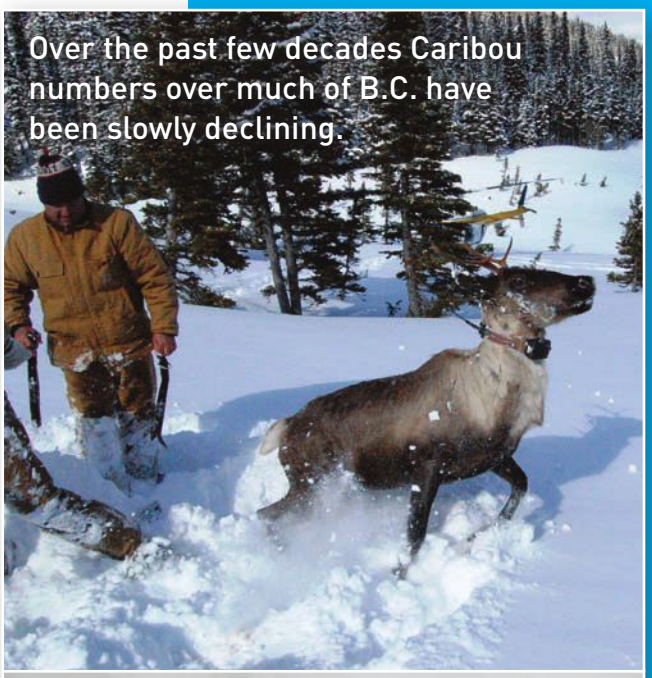
Why then, in spite of a 66% reduction in Moose numbers, did Parsnip Herd Caribou numbers not increase as hypothesized? Possible explanations are:

1. A time lag in Wolf numerical response.
2. The reduction in Moose numbers was insufficient to affect the numerical response of Wolves.
3. As Wolf numbers declined Wolves also increased their predation on Caribou, particularly calves.
4. Caribou survival and recruitment was more closely related to other factors (e.g., Bear predation), than to Moose/Wolf abundance.

The Parsnip Caribou Recovery Project will continue to monitor changes in Caribou numbers.

Moun·tain Car·i·bou
[moun-tn kar-*uh*-boo]

Mountain Caribou (*Rangifer tarandus caribou*) are Blue-listed across their range and the likely cause of their decline is predation. In the Parsnip study area, Mountain Caribou select for high-elevation habitats, while Moose (*Alces alces*) densities are highest in valley bottoms and along the Parsnip River plateau. Wolves (*Canis lupus*) spend most of their time in these valley bottoms, but occasionally make forays to high-elevation areas where Caribou are present.



Over the past few decades Caribou numbers over much of B.C. have been slowly declining.

HOW IS THE BULL TROUT SPECIES DOING?

INSIGHT INTO A DECADE OF MONITORING AND RESEARCH

Williston Reservoir is the largest body of Freshwater in British Columbia... by far. But what impact did the creation of Williston Reservoir have on Bull Trout? Where are the important populations and what is their status? Are they declining in numbers? Increasing? Where do they spawn? What do they eat? Are they benefiting from the increasing number of Kokanee in the reservoir? Is increasing Lake Trout abundance impacting Bull Trout populations?

These are just a few of the questions biologists are thinking about when it comes to this beloved large sport fish. Bull Trout (*Salvelinus confluentus*) can reach over 10 kg in the right environment and Williston Reservoir appears to be one of those environments. If you know where and when to fish, the fishing is good!

Biologists working on projects for the FWCP have worked for years to study the ecology and population dynamics of Bull Trout in the watershed. "Bull Trout are a Blue-listed species under the Conservation Data Centre designation and so we have considered it a priority species of interest," explained Dan Bouillon, the FWCP program manager in the Peace region. Blue-listing indicates a species of special concern that is at risk of becoming threatened or endangered because of characteristics that make them particularly sensitive to human activities or natural events.

To survey abundance, biologists access the remote alpine headwaters of important Bull Trout spawning streams by helicopter and then walk up to 10 km of stream to identify all Bull Trout redds (nests constructed from small and large gravel on the stream bottom to protect eggs). Using hand held global positioning systems, biologists can enumerate and mark the location of each specific redd.

Since 1990, research has focused on four areas where Bull Trout spawn, which will be used to determine changes occurring in the population of Bull Trout in Williston Reservoir.

The data collected to date has provided valuable information on relative abundance and variation in numbers and ecological characteristics. Trends in abundance are less clear because of variation in abundance, but each additional year of data improves our understanding. Future analysis of length and size at maturity could provide insight into reservoir productivity.

FWCP study results have also enabled program partners in the Ministry of Forests, Lands and Natural Resource Operations, to refine fishing regulations and management practises to benefit both the species and enhance fishing opportunities.

FLOATING PLATFORMS: SIGNS OF SUCCESS SURFACE

Initial results from an innovative project to install five floating platforms (islands) in Whatshan Reservoir, southwest of Nakusp, in 2011 to help Loons create nesting habitats, are pointing to early signs of success.

In the summer of 2012, despite water levels being unusually low due to archaeological assessment work on Whatshan Reservoir, one platform was used by a breeding pair of Loons. In 2013, with water levels back to normal, two of the platforms had Loon nests on them. There are now three pairs using platforms with one pair who have already hatched two young.

Common Loon (*Gavia immer*) nest success - defined by one or more juveniles seen in late July or August - in Whatshan Reservoir is low. Loons face a couple of major challenges in this region; first the creation of the reservoirs has removed some of their historical nesting habitat; and second, if the Loons do find suitable nesting habitat within the reservoirs, rising water levels can destroy the nest.

From 2006 to 2010, only between zero and 50 per cent of Loon nests in Whatshan Reservoir were successful each year. This is below the Canadian average of greater than 50 per cent.

"Loons cannot walk on land," explained local wildlife biologist Irene Manley. "Therefore they must nest on the shoreline, typically within a couple of feet from the water. Should there be any significant increase in water levels – as is often the case in the reservoirs - the nests or eggs run the risk of being submerged."

Mandy Kellner of Kingbird Biological Consultants came forward with the idea of installing specially constructed floating platforms. "It's simple," said Kellner. "If rising water levels contribute to the high rate of nest failure, let's install something that rises with the water."

Whatshan Reservoir is a good location to give the artificial platforms a trial test, given its twisting shoreline and numerous sheltered bays. The platforms, each about the size of a double mattress, are comprised of interwoven fibres that allow plants and roots to grow through it, creating islands of habitat that can benefit both fish and waterfowl. They are injected with foam to provide buoyancy and cabled in place to the bottom of the Reservoir.

"These platforms were built in California, but we plant them with native sedges and grasses," added Kellner. "While floating Loon platforms are not new, they are traditionally built with cedar and need to be removed from the water on a regular basis to dry out. These do not, and are expected to last about 10 years. I believe it may be the first time they have been tested in British Columbia."

Of the five territorial pairs present during 2012, only one pair was successful in hatching a single chick. With only one in five pairs producing young the nest success was 20 per cent. This successful nest was on an old dock used in previous years as a nest site.

"We are really pleased that these floating platforms have helped yield young birds already, especially so early on in the season," said Kellner. "The platforms have already survived two winters intact, and the planted vegetation is doing well, so we are very optimistic there will be more good news in the future."

RESTORATION SURVIVES FLOOD WATERS – MOSTLY INTACT

In the spring of 2012, Lake Windermere Ambassadors worked in collaboration with the District of Invermere with the support of the FWCP, to stabilize a section of shoreline at Kinsmen Beach on Lake Windermere, in the East Kootenay. The construction, landscaping, and planting of vegetation all went according to plan, but a twenty-year high flood the same spring created a set-back for the work by removing many of the newly-added plants and trees.

"The climate conditions last year were unfortunate," said Lake Windermere Ambassadors program coordinator Kirsten Harma. "Given a few years to grow, the plants could have developed a strong root system, and helped stabilize the soil, but we lost most of them and a portion of the new soil with the flood conditions."

The entire site was restored using natural, untreated materials. Large rocks donated from PP Planscape, a local contractor, acted as a partial retaining wall on the steep eroding bank, and protection for exposed cottonwood tree roots. Canfor donated logs to create a terrace along the steep bank and prevent further erosion. A rocky swale (depression) was created to slow and filter water runoff from a nearby parking area and to help reduce bank erosion.

The final step last May was the planting of native plants and trees to help stabilize the soils. These included yarrow, saskatoon, cut-leaved anemone, kinnikinnick, prairie sagewort, red-osier dogwood, black hawthorn, silverberry, choke cherry, golden currant and willow. Scores of community members volunteered their time on planting day, including Grade 8 students from David Thompson Secondary School.

While the unusually high water in June removed much of the added soil and planted vegetation, the rock wall foundation, gravel and logs remained in place.

"This is great news," commented Harma. "The foundation of the work, literally speaking, is still intact, and we already have plans to replace the plants that were swept away. In fact, the timing of our restoration work was fortuitous because, without it, we might have seen much more severe erosion take place, including the possibility of losing some big cottonwoods."

With additional funding provided in 2013, the Kinsmen Beach Restoration Project will continue to prevent erosion, restore native riparian habitat for fish and wildlife, increase recreational opportunities for fishing and wildlife viewing and provide environmental education opportunities.

Grade 8 students from David Thompson Secondary School in Invermere help plant native plants and trees to help stabilize the soils along the shore of Lake Windermere.

Photos courtesy of Lake Windermere Ambassadors.

ENHANCING A STREAM, ONE DROP AT A TIME

Small changes can lead to big results. This scenario is being played out in Sheep Creek, a beautiful stream cascading through the South Selkirk Mountains near Salmo, where small amounts of liquid nutrients are added – one drop at a time – to its fast-flowing waters in order to increase fish production.

"The objective of the project is to help the creek's ecosystem, and particularly Rainbow Trout and Bull Trout - the latter of which is Blue-listed, or of special concern, in the province," said fisheries biologist Steve Arndt. "It is also one of the species targeted for support by our organization."

The Sheep Creek enhancement work is spearheaded by the Salmo Watershed Streamkeepers Society (SWSS).

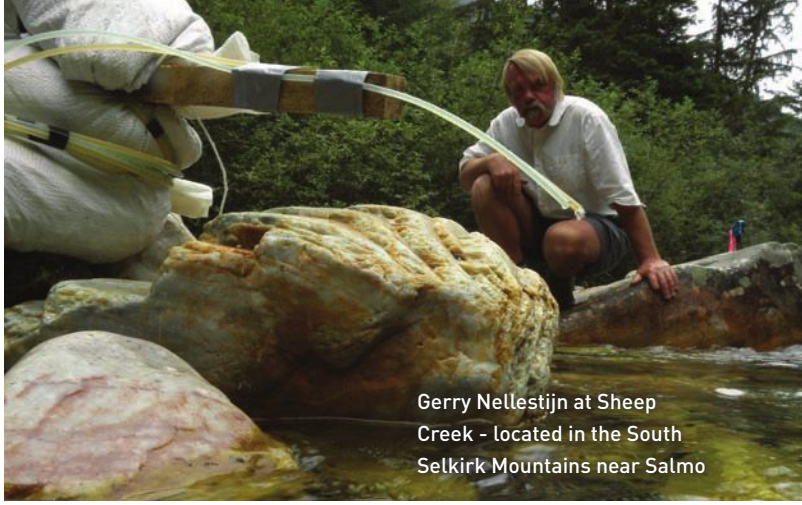
"Basically we are mimicking replacing nutrient losses due to the demise of salmon in the watershed," explained project leader and SWSS coordinator Gerry Nellestijn. "But of course there may be other reasons why fewer nutrients are entering the system, such as mining and logging."

Nutrient additions have occurred in the past in Sheep Creek, with support from BC Hydro but, after a three year hiatus, the Society is once again adding nutrients, this time with support of the FWCP.

The initial years of nutrient additions allowed BC Hydro, their consultants and their partner organization the SWSS, to collect valuable baseline data, and compare results. Those results speak for themselves; during the years of nutrient additions, or directly afterwards:

- Total invertebrate (aquatic bugs that fish eat) biomass (total weight) increased two-fold in the treatment stream, while remaining unchanged in a nearby control stream.

Storage tanks for the liquid nitrogen and phosphorus.



Gerry Nellestijn at Sheep Creek - located in the South Selkirk Mountains near Salmo

- Average mean length and weight increased significantly for all age classes of salmonids, with increases in weight ranging from 13 per cent for age 2+ Bull Trout, to 84 per cent for age 0+ Rainbow Trout.
- Salmonid and total fish biomass in the treatment stream increased by 58 per cent and 47 per cent, respectively.
- The abundances of slimy sculpin and longnose dace increased six-fold and two-fold, respectively.

"It's a food chain scenario," added Nellestijn. "This project feeds algae of various kinds, which provide grazing for the invertebrates that are the main food source for Rainbow Trout and juvenile Bull Trout. Fish need food as much as they need good habitat. Both are required for healthy fish production. "

Given the site's remote location, solar panels provide the power requirements for the project. They charge batteries that operate precision pumps, working around the clock, that release specific amounts of liquid phosphorous and nitrogen from nearby storage tanks. The panels, batteries, pumps and storage tanks are provided by the SWSS after previously being donated to them by BC Hydro.

The set-up sounds relatively straightforward, but a great deal of preparation and monitoring is integral to its successful operation. Years of data collection on creek flows have occurred, the batteries and pumps are inspected on a regular basis, and the pumps are routinely calibrated to ensure just the right amounts are being added. Too little and it is ineffective, too much and there is the risk of producing unwanted algae blooms.

"We use organic agricultural-grade fertilizer and the amount we use, no pun intended, is just a drop in a bucket," said Nellestijn. "The supplier once told me that the amount that we use during the five months of operation is similar to what would typically be spread on a relatively small agricultural field in a matter of minutes."

With additional funding for 2013, fertilizer will again be applied to Sheep Creek at a single release point about 11 km from the stream mouth during the summer and extending into October.

NEW VIEWING PLATFORM AT GERRARD CONSTRUCTED IN TIME FOR 2012 RECORD RUN

A new Gerrard Rainbow Trout viewing platform on the Lardeau River was finished in the spring of 2012 in time to welcome visitors to see a record run of spawning fish. With more than 1,000 Gerrards recorded as the daily peak count, it was the highest run since records began in the early 1960s. This was followed by another strong run in 2013.

The platform, located about 42 kilometers northwest of Meadow Creek, was built with the support of a range of funders, including the FWCP, by the Friends of Lardeau River.

"We were especially pleased that the new platform was ready in time to coincide with yet another record run," said Grant Trower with the Friends of the Lardeau River and public representative on the FWCP-Columbia board. "We hope that it will help people connect with this amazing fish, and increase awareness of this important spawning site. We feel extremely proud of the end result and I hope the supporting partners also feel proud of what we have achieved together; we could not have done it without their help."

Those partners included B.C. Parks, the Ministry of Forests Lands and Natural Resource Operations, Fish & Wildlife Compensation Program, Columbia Power Corporation, Columbia Basin Trust, Habitat Conservation Trust Foundation, and FortisBC.

The 2012 daily peak count (occurring on May 9) of 1,068 spawning Gerrard Rainbow Trout was the highest observed since annual daily counts began in 1961. In 2013 a peak daily count of 750 fish occurred on April 26.

"Observing the record run from last year, and another strong run this year, is extremely rewarding," said FWCP-Columbia program manager Trevor Oussoren. "We know that these fish benefit from the highly successful Kootenay Lake Nutrient Restoration Program that is coordinated by the Province and funded, in large part, by our organization. We are hoping to see this Gerrard population continue to do well in the years ahead. It's a success story for fish conservation, and for providing positive recreational and economic spin-offs for the area."

ROBUST MIGRATION BOLSTERS TOADFEST SUCCESS

Perfect weather, a high number of Western Toadlets, and lots of people, all helped to produce a successful Toadfest at Summit Lake Provincial Park south of Nakusp in August 2012.

Over 500 people helped carry toadlets cross the road and enjoyed the on-site activities last year. While the goal was primarily educational, to raise awareness about the importance of this breeding site for Western Toads, an estimated 14,750 toadlets were safely moved across Highway 6.

"We were extremely pleased with the turn-out, and the enthusiasm from those attending to help, and learn about, the toadlets," said organizer and FWCP-Columbia communications coordinator, Angus Glass. The event was put on by B.C. Parks, Ministry of Environment, Ministry of Transportation and Infrastructure, Columbia Basin Trust, Yellowhead Bridge and Construction and the FWCP.

Toadfest is an outreach component of the Western Toad Project, now in its fourth year. The research and monitoring work, supported in part by the FWCP, develops and recommends long-term solutions to the high toad mortality on the road.

"So far, we have recorded over 100 recapture events from 950 adult toads which have been permanently marked with PIT tags since 2011," said researcher Jakob Dulisse. "It appears that 2012 was a good breeding year."

"While the Western Toad population is still healthy at Summit Lake, we want to do everything we can to keep it that way," added Glass. "They are an important part of the ecosystem, but in North America we have seen their numbers decline significantly, and this province is now the center for Western Toad distribution in the world. Helping people connect with nature in this fashion will help with long term conservation of the western toad which is listed federally as a species of Special Concern."

TOADFEST 2013: tentative dates are August 27 and 28, but check **fwcp.ca** later this summer for confirmation.

THE NUMBERS (AND FROGS) KEEP JUMPING

RECORD NUMBER OF EGG MASSES FOUND FOR ENDANGERED NORTHERN LEOPARD FROG

2012 and 2013 have been banner years for the endangered Northern Leopard Frog. Last year biologists located a total of 22 egg masses within the wetland complex of the Creston Valley Wildlife Management Area (CVWMA), and this year the count is 21. These are the highest counts since records began in 1996.

"Typically we only find between six and nine egg masses each year, which really gives an idea of the fragility of the population in this province," said biologist and project leader, Barb Houston. "So to find more than 20 in each of the last couple of years is incredible, while the population is still highly endangered these findings are encouraging."

In addition to the egg mass findings, Vancouver Aquarium successfully bred Northern Leopard Frogs from the captive assurance colony for the first time in B.C. (see sidebar for details).

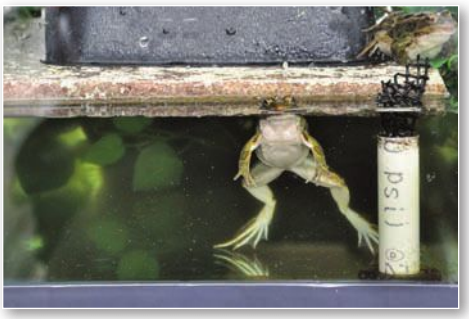
The Northern Leopard Frog (*Lithobates pipiens*) is Endangered federally, and Red-listed provincially. There is only one remaining population of Northern Leopard Frogs in all of British Columbia and it is at the CVWMA. In addition, there is one small reintroduced population at Bummers Flats Conservation area north of Cranbrook that was started as part of the captive rearing program when tadpoles and juvenile frogs raised from eggs collected at CVWMA were released in 2003 and 2005.

"We had to find a way to augment the population of Northern Leopard Frogs at the Bummers Flats site without compromising the viability of the source population at CVWMA," said chair of the Northern Leopard Frog (NLF) Recovery Team, Purnima Govindarajulu with the Ministry of Environment. "The Team set a threshold of egg masses before eggs could be collected from CVWMA for release at Bummers Flats – and that minimum threshold has been exceeded these last three years."

Each egg mass contains between 1,000 and 4,000 eggs. Once an egg mass is found, it is enclosed in a fine mesh cage to protect it from predators. Only a portion of each egg mass is used for translocation and those eggs or tadpoles that were moved to the East Kootenay are again protected by a mesh cage until the tadpoles are a couple of weeks old.

In 2013, approximately 9,000 tadpoles were transferred to Bummers Flats, making a total of 21,500 moved during the last three years. Juvenile and adult Northern Leopard Frogs were also found in satellite sites within migration distance of the release site.

The NLF Recovery Team guides the research and reintroduction activities to support the future survival of this federally-listed Endangered species. The team is made up of representatives from the FWCP, the Ministry of Environment, CVWMA, First Nations, Ministry of Forests, Lands and Natural Resource Operations, Environment Canada, Calgary Zoo and independent consultants. The FWCP has been supporting the NLF recovery effort since the late 1990s.



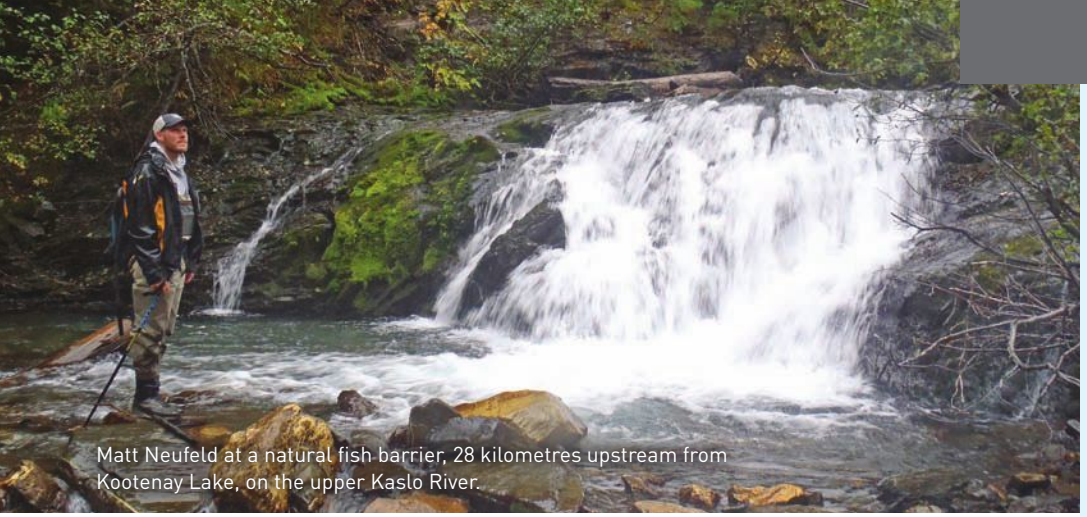
All photos: Barb Houston

Northern Leopard frog at the Vancouver Aquarium.

VANCOUVER AQUARIUM CAPTIVE ASSURANCE COLONY UPDATE

For the first time in its history, the Vancouver Aquarium has successfully bred frogs from the Rocky Mountain population of Northern Leopard Frogs in captivity. Approximately 2,000 tadpoles hatched in the aquarium, and were released in the Columbia Marshes by biologists of the Northern Leopard Frog Recovery Team. So for the first time in decades, there are once again Northern Leopard Frogs in the Columbia Marshes!

While not on view to the public, the Northern Leopard Frog captive assurance colony at the aquarium builds and maintains a back-up population should the frogs disappear from the wetlands of British Columbia. Since 2009, FWCP biologists have provided Vancouver Aquarium with about 50 Northern Leopard Frog tadpoles each year.



Matt Neufeld at a natural fish barrier, 28 kilometres upstream from Kootenay Lake, on the upper Kaslo River.

Photo credit: Redfish Consulting Ltd

UP THE CREEK WITHOUT A PADDLE

BULL TROUT WORK: ANYTHING BUT COMFORTABLE

The tough and remote terrain that field crews have to traverse is challenging to say the least. They work in all kinds of weather, in all conditions and all year round.

In the fall of 2011, approximately 260 kilometres of streams around Kootenay Lake were walked as part of a comprehensive assessment of Bull Trout spawning. Crews were there to establish a first lake-wide index of spawning Bull Trout distribution and abundance in Kootenay Lake tributaries. And it was no easy feat.

Given the strength and ability of Bull Trout to battle upstream to spawn, and the need for cold-rearing temperatures, much of that habitat is located in the upper reaches of each creek drainage. The crews, under the direction of Redfish Consulting Ltd., were typically dropped off at a point in the drainage above which adfluvial (migrating between lakes and streams) Bull Trout are unable to spawn. Usually this is a large natural barrier that blocks fish passage such as a waterfall. The crews then made their own way down each creek counting the number of redds (gravel mounds where eggs are deposited) and looking for Bull Trout spawning adults.

"The field crews did a great job accessing the streams under difficult circumstances," said fisheries biologist Steve Arndt. "In some cases, a helicopter dropped them off at remote locations near the upper limit of spawning. They then proceeded to navigate their way downstream on foot through difficult terrain, sometimes having to camp overnight." Food caches were dropped off at pre-determined locations in the watershed to cut down on the amount of gear they carried.

Nineteen index tributaries and sub-tributaries in the Kootenay Lake watershed below Duncan Dam were surveyed as part of the assessment. Data from a tributary (Westfall River) that flows into Duncan Reservoir was used in collaboration with a BC Hydro study with similar objectives. In addition to the number of redds recorded to estimate spawner escapement, data from resistivity counters (see sidebar) at select locations was also used to help determine a population estimate.

Overall, a total of 1,711 redds were enumerated within the 19 tributaries below Duncan Dam. Using an expansion factor (see sidebar) of between 1.9 to 2.4 Bull Trout per redd (depending on the tributary) based on the resistivity counts, and adding the estimated number of fish transferred through Duncan Dam, the estimate of Kootenay Lake Bull Trout spawner escapement for 2011 was in the range of 3,750 to 4,600 adults, which points to a healthy and robust population for Kootenay Lake.

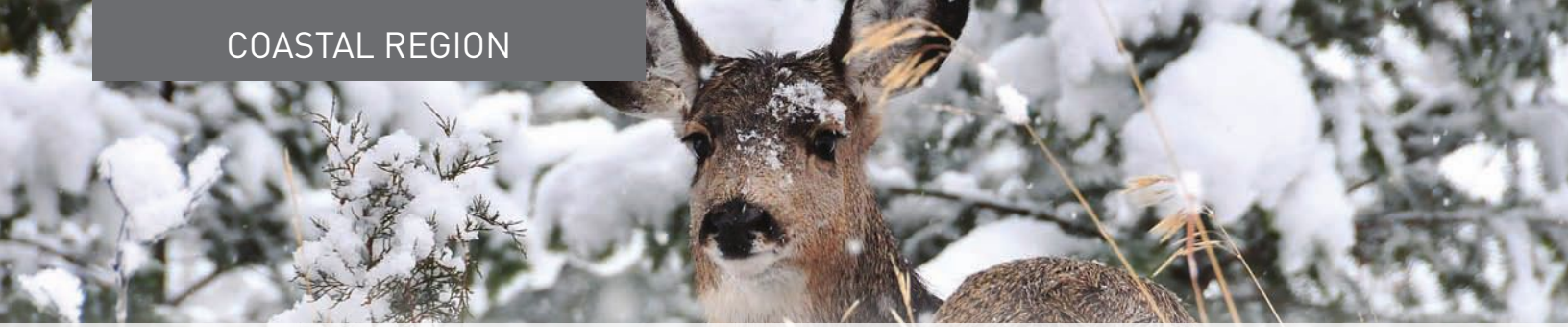
"We have a couple of major compensation projects in in the Kootenay Lake watershed: the Nutrient Restoration Program and Meadow Creek Spawning Channel," added Arndt. "Both are intended to help piscivorous (fish-eating) fish including Bull Trout, so it's important that we gather this baseline data. We hope to repeat this work every three to four years to help evaluate the results of these compensation projects. This also provides valuable information to help the province with its Bull Trout management."

WHAT IS A RESISTIVITY COUNTER?

A resistivity counter is an in-stream or in-river electronic device, that the fish have to pass over, measuring the difference in resistivity. Fish have a lower resistivity than water, therefore when a fish passes over the electrodes, the change in resistivity is measured and the approximate fish size, and direction of travel, can be calculated.

WHAT IS AN EXPANSION FACTOR?

Expansion factors for redd counts can be obtained when counts of both redds and adults are available for a given stream. Adult counts are usually made with weirs (a fence connected to a trap) or resistivity counters. The ratio of redds to adults is then derived, and this can be used to estimate the number of adults in years (and similar habitats) when redds are counted and adults are not.



TRACKING MULE DEER FOR RESEARCH STUDY

In recent years, both the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) and the St'at'imc First Nation have become concerned with the status of the Mule Deer population west of the Fraser in southcentral B.C.

"While causes for the decline are not known, research on the Mule Deer population began in 2007 in order to gather information that could be applied to deer management in the area," explained Chris Procter, a wildlife biologist for MFLNRO.

Led by MFLNRO, a second phase of the project was initiated during April and May 2011 when nine Mule Deer bucks were captured and collared through a commonly used free-range chemical technique that safely immobilized them. Collared deer were monitored throughout the year to assess survival status and approximate distribution. Information was collected on their migration routes, residency patterns, seasonal ranges and daily buck habitat use during post hunting periods.

All radio-collars were retrieved in the spring of 2012 when the deer returned to their low elevation spring ranges. Preliminary analyses suggest that seven of nine bucks (78%) migrated from their winter/spring ranges to distant summer ranges. Most migrated in a general westerly direction and summered in the vicinity of Goldbridge and lower reaches of several drainages in the area. One buck displayed an elevational migration to the south of Carpenter Lake and another was considered to be a resident in the general area of capture.

Research continued through 2012. Results will inform deer population and habitat management for the species in the area.

MORE SPECIES AND PLANTS FOUND AT WETLANDS IN THE JORDAN RIVER WATERSHED

Monitoring continues at the wetland habitat built in the fall of 2009 at the Jordan River watershed on southern Vancouver Island, where LGL Limited designed and built a proof-of-concept wetland in the drawdown zone of Diversion Reservoir with support from the FWCP.

The implemented design included a two-tiered wetland system that resulted in the creation of two ponds. An unintended benefit of this project was the creation of an additional 1,322 m^2 of ephemeral wetland habitat in the upland borrow areas, bringing the total area of habitat created to 8,672 m^2.

Multiple species of wildlife and plants have taken well to the new habitat and in 2011 plant surveys revealed that 37 species of aquatic and terrestrial plants were documented within or around the periphery of the wetlands.

Seven species of pond-breeding amphibians have also been noted using the site. Pacific Chorus Frogs, Northwestern Salamanders, and Red-legged Frogs in all life stages (egg masses, juveniles and adults) were all noted in the wetland along with juvenile and adult Rough-skinned Newts, Long-toed Salamanders and two species of Garter Snake.

In addition, 17 species of waterfowl and songbirds were documented on site, mammal tracks and scat were observed around the edge of the wetland, and at least two species of bats were foraging over the created wetland.

The wetland continues to function as anticipated and it is likely that as the wetland matures and the area is revegetated, even more species of wildlife will use the newly created habitat.

MARMOTS REACH A MILESTONE!

Last summer, a 3-year old wild-born male at the Mt. Washington colony was the first documented Marmot to successfully disperse from Mt. Washington to a historic colony site with a resident female present.

As the only surviving colony north of Alberni Inlet, successful dispersals to find potential mates were highly improbable. So this natural, successful dispersal represents a significant milestone for the Marmots outside of the southern core.

The male Marmot trekked approximately 8 kms southwest, to a previously extinct colony located at Sunrise Lake, in Strathcona Park, where a 2-year old resident, captive-born female was located. The female Marmot was released at Sunrise Lake in 2010 and is the only known Marmot remaining at that site.

"We've been quite successful, from a low of 30 animals in the wild in 2003 up to 350 to 400 in the wild today. We're getting closer to our goal of 600 Marmots in the wild, but the real key is improving their distribution," said Viki Jackson, Executive Director of the Vancouver Island Marmot Recovery Foundation (VIMRF). "We're pretty much there in the southern Nanaimo Lakes region, but the other regions within their historic range are just getting started. We've made great strides; we've seen captive Marmots breed in the wild and also their offspring, so by any measure, we've been successful."

The summer of 2012 was also the first year that the VIMRF was able to augment the releases of captive-born Marmots. With funding from the FWCP and other partners, this was done with a few trans-located wild yearlings from the boon of pups born last year, as well as "pre-conditioned" captive-born Marmots that were pre-released at the Mt. Washington colony in 2011 to help them get over that first year hibernation hump. These new animal management techniques hope to improve the first year survival of the newly released Marmots who face the harsh conditions of the Strathcona Park region.

"We're happy to see that there are a few wild Marmots to help rebuild the other regions. Other species recoveries have shown that using wild animals generally produces better survival results," added Jackson. "Previously there weren't enough Marmots remaining in the wild to safely attempt this strategy. It's a testament to the recovery program that there are enough animals in the wild that a few can be safely removed and relocated to help struggling colonies get started."

The focus of the recovery efforts over the next few years will be to analyze the survival and reproduction data to make sure they're doing well enough to sustain themselves and to continue to improve the distribution of the Marmot colonies within their historical range.

Formed in 1998, the VIMRF is a registered public charity working to save the endangered Vancouver Island Marmot from extinction. Major partners working on the program include the FWCP, the Province of B.C., Island Timberlands, TimberWest, Calgary and Toronto Zoos, Mountain View Conservation, Mt. Washington Alpine Resort and the public. Visit **Marmots.org** to learn more.

COMOX VALLEY VISITOR'S CENTRE FEATURES RAREST MARMOT IN THE WORLD!

If you've never seen a Vancouver Island Marmot here's your chance.

The Visitor's Centre features a life-sized Marmot burrow the kids can climb into to get an "up close and personal" view of what it's like to live like a Marmot. There is also a video on the recovery program and a real taxidermy Vancouver Island Marmot.

Location:

Vancouver Island Visitor Centre
Exit 117 on the Inland Island Highway
3607 Small Road, Cumberland, Vancouver Island

LEAVING A LEGACY IN LILLOOET

THE POWERHOUSE FORESHORE RESTORATION PROJECT LEAVES MORE THAN A HEALTHY HABITAT

For the last seven years, the community of Lillooet has embraced the Powerhouse Foreshore Restoration Project. A project that began with the goal to create a more diverse and healthy habitat for wildlife where the Seton and Fraser Rivers join together has become more than that. Not only is the habitat benefiting, but so is the community of Lillooet.

The project has involved volunteers and students in various field trips, educational days and restoration activities, employed up to 14 people during the restoration season, constructed a trail system on the old roads in the area that has brought many visitors to the site, and established a native plant nursery where plants are now for sale for other restoration projects.

> "This project has provided the opportunity to honour our cultural heritage while looking towards the future by building capacity in using both traditional and scientific methods to care for the land."
>
> *Chief Michelle Edwards*
> *of the Cayoose Creek community*

"These activities are the legacy of this project and will continue to provide employment into the future," said Kim North of the Lillooet Naturalist Society who has worked in conjunction with the Cayoose Creek St'at'imc community for the last seven years on this multi-year habitat restoration project. "The project receives numerous support letters every year and the community of Lillooet has become engaged in stewardship activities where the importance of healthy and functioning wildlife habitat is understood and appreciated."

In its fifth year of field work, the Powerhouse Foreshore Restoration Project made the removal of invasive plant species a high priority and freshly cleared land was replanted with native trees, shrubs, herbs and grasses that have been propagated in the nursery established for the restoration project. The native plant nursery has raised over 20,000 new plants since it was established in 2008 and volunteers and crew have planted out over 11,000 native plant species into the restoration site and other areas in the community. The project provides an opportunity for community capacity building for ongoing restoration projects within the territory. Both plants and educational materials developed for the nursery have also provided inspiration to residents who have begun to use native plants in their own gardens.

With increased vegetation came increased usage of the area by wildlife. Wildlife monitoring was incorporated early in the restoration project and has seen the list of birds that use the site grow to over 45 species and the list of bats to five species. The Blue-listed Yellow-bellied Racer is now frequenting the site and five baby racers were observed this past year. In addition, the riparian area near the Fraser River has been identified as a Wildlife Habitat Area for the Red-listed Western Screech Owl and Lewis Woodpecker.

The group has also been working to deactivate old roadbeds and direct traffic down a single roadway leading to the Fraser River. Work has been done to complex the site by mounding, placing coarse woody debris, rock piles and standing snags which add structure and additional wildlife habitats. Odin Scholz, restorationist, said, "Where once there was a barren, gravelly and weedy area, we now see native grasses blowing in the breeze and increased wildlife use."

Trails at the restoration site have been developed to provide routes for the public to use, while at the same time protecting critical habitat. "We have seen a recreational increase in public use of the site and this increase is expected to continue," added Kim. "It's been important to provide a functioning trail that the public will use and discourage foot traffic in key wildlife areas by planting out the old roadbeds."

"The results of the work carried out over the last five years has exceeded our expectations," said Patrice Rother program manager of the FWCP. "The aim of the restoration project was to create a more diverse and healthy habitat for wildlife, but it's grown to include a stewardship ethic within Lillooet promoting an understanding of the local watersheds, salmon and native plants."

BIG QUALICUM HATCHERY

OFFERS A COST EFFECTIVE AND LOW RISK STRATEGY TO IMPROVE SALMON PRODUCTIVITY

Tanks filled with water

Installation of shade cloth tank covers

While most of us would enjoy a summer swim in water at temperatures reaching 24°C, it's not so for the summer-run Chinook salmon swimming into the hatchery located on Puntledge River.

The adults held at the Fisheries and Oceans Canada Puntledge Hatchery facilities during the summer have become at risk of experiencing high pre-spawn mortality due to water quality problems. Both facilities rely on surface water from the Puntledge River, which typically exceeds temperatures of 20°C every summer and can often reach 24°C for extended periods during warm summers. These warm temperatures can induce stress and disease problems resulting in high mortalities.

Chinook adult survival at the hatchery has improved over the last six years as a result of changes in broodstock selection and holding procedures.

With these warm temperatures and despite over 50 years of considerable effort to rebuild this population to pre-hydro expansion levels, summer Chinook returns remain well below target escapements. The stock has been identified as a regional priority by Fisheries and Oceans Canada.

Puntledge summer-run Chinook are genetically distinct from Puntledge fall-run Chinook and have been classified as part of the 'East Vancouver Island – Georgia Strait – summer' conservation unit under Canada's Policy for Conservation of Wild Pacific Salmon (WSP).

Looking at new ways to rebuild the population, the FWCP and the Comox Valley Project Watershed Society, working alongside the hatchery, have initiated a plan to transport all summer Chinook Broodstock to other Fisheries and Oceans Canada hatcheries that have cooler water supplies.

For the last seven years, up to 300 summer Chinook that arrive at the lower hatchery between mid-June and mid-July, when water temperatures are below 18°C, are transported to Rosewall Hatchery. Broodstock taken to Rosewall are held in recirculated pumped groundwater at a temperature of 8-10°C where they consistently experience greater than 95% survival to the spawning stage.

Fisheries and Oceans Canada identified an alternative cool water supply at Big Qualicum Hatchery, 50 km south of Courtenay. This Fisheries and Oceans Canada hatchery facility operates on a deep water gravity fed water supply from Horne Lake that can provide water temperatures around 15°C throughout the summer months.

In July 2011, two new 9 m (30 ft.) diameter holding tanks were installed at Big Qualicum Hatchery that allow up to 500 Puntledge River summer Chinook Broodstock to be moved there. The installation was completed in August 2011 and one of the tanks was immediately loaded with 75 summer Chinook from Puntledge River.

The project will result in greater survival (>95%) of summer Chinook hatchery Broodstock, increased fry releases, and ultimately, an increased rate of recovery of this unique stock.

MAKING A SPLASH AT THE ANNUAL STURGEON RELEASES

Sturgeon have remained largely unchanged for 175 million years.

What's prehistoric looking, can grow to the length of a canoe and live for over 100 years? If you answered "sturgeon" you'd be right. And once again the annual Sturgeon releases took place in Trail, Castlegar, Creston and Revelstoke this past May.

Each year, juvenile Sturgeon are raised in a conservation fish-culture program and released into the wild with the help of the public and students. The program represents a critical component to the recovery of the Sturgeon population.

The juvenile Sturgeon are raised by the Freshwater Fisheries Society of BC in their Bull River Hatchery through a program funded by BC Hydro and the FWCP. They are produced from wild adults, caught in the Columbia River.

"There has been virtually no natural recruitment – that is to say the survival through the egg, larvae and into the juvenile stage – for more than three decades in the Columbia River," said Trevor Oussoren, manager of the FWCP in the Columbia region.

Though this program is a stop-gap measure, it is a critical one in the conservation effort that is working towards implementing habitat restoration measures that should provide conditions for fish to successfully reproduce in the wild. It is a critical program in order to avoid this population from becoming extinct.

Approximately 4,000 ten month-old juvenile White Sturgeon were released into various locations of the Columbia River between Castlegar and Trail in May, with about 1,500 released at the main release site below Hugh Keenleyside Dam.

"Juvenile Sturgeon are doing well. For every 1,000 fish released, approximately 180 survive to age 12," said Gerry Nellestijn, chair of the Community Working Group of the Upper Columbia White Sturgeon Recovery Initiative (UCWSRI). "These events are a great way to really reach out, touch and help an endangered species – quite literally. By getting the community, particularly the younger generations, involved and increasing awareness, we feel there are much better chances for the survival of this population."

The Initiative is a partnership of more than 20 stakeholders from government, First Nations, industry, community and environmental organizations. Funding support for the release event is from BC Hydro, FortisBC, Teck and the FWCP.

To find out more about the Upper Columbia White Sturgeon Recovery Initiative visit **uppercolumbiasturgeon.org**.

We would appreciate your feedback. Let us know if you have any questions or comments about the newsletter or program.

STAYING CONNECTED

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Burnaby, BC V3N 4X8

Coastal Region: **604 528 2024**
Columbia Region: **250 365 4551**
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FISH AND WILDLIFE COMPENSATION PROGRAM

The FWCP is a partnership of:

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