



FWCP
Fish & Wildlife
COMPENSATION PROGRAM

NEWS

2017 ANNUAL NEWSLETTER

fwcp.ca

RESTORING KOKANEE IN THE COLUMBIA REGION

PAGE 10-11

INSIDE

COASTAL REGION

Rare Owls and Reproduction	4
First Wildlife Project in Wahleach	5
Using eDNA to Detect Tailed Frogs	7

COLUMBIA REGION

Hot Year for Prescribed Burns	8
Heron Breeding Sightings Still Wanted	9
Improving Access for Kokanee in Arrow	10

PEACE REGION

Investigating Mercury in Williston Reservoir	12
Conserving Arctic Grayling	13
Preparing for Whitenose Syndrome in B.C.	14



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Canada

Pêches et Océans
Canada



The FWCP is a partnership of BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations and Public Stakeholders, to conserve and enhance fish and wildlife impacted by BC Hydro dams.

MANAGER'S NOTE

Thanks for picking up our annual newsletter. Every issue highlights some of the conservation and enhancement projects we've funded through our annual intake of grants, long-term agreements with diverse partners, and projects our Boards have directed to address regional fish or wildlife priorities.

For example, in our Coastal Region, we are supporting the use of environmental DNA to do Coastal Tailed-Frog inventories and the findings and application are significant. In our Columbia Region projects are underway that address specific priorities selected by our Board including wetland and riparian restoration, and projects in the North Columbia. And in our Peace Region, First Nations participation in projects is a priority, such as being part of a region-wide effort to collect data on mercury in fish. We have projects happening in each of our regions to help endangered caribou in B.C. – a priority species for us and many of you. Learn more about our projects at fwcp.ca.

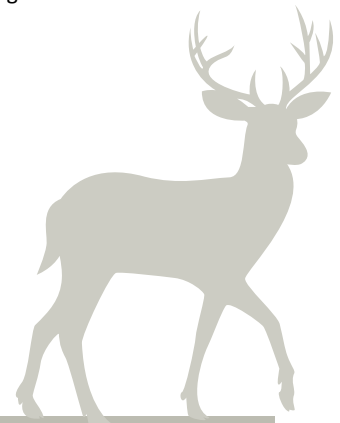
In the last year, we have continued to grow the FWCP and strengthen the way we do business. Our new online grant management system is simplifying our grant process for applicants and our team. We concluded a Review of Perceptions and Opportunities for Improvement. Based on results from that review we're stepping up our outreach and focusing more on results, and providing more details on how we review and evaluate grant applications. We launched a small Community Engagement Grant to support local groups and we've approved 19 requests. We held our third tri-region meeting and focused on board development and emerging priorities including White Nose Syndrome, that could influence how we work across regions. Several new public representatives joined our Coastal, Columbia and Peace Region Boards in the last year and we're grateful for the expertise they bring to our work.

As of November 2016, Chelsea Coady is our new Peace Region Manager. She takes over from Dan Bouillon who moved to the West Kootenay. Julie Fournier is our new Coastal Region Manager. She takes over from me and I will now focus on my role as Program Manager with oversight and coordination for each of our three regions.

If you have any questions about the FWCP, or how you can apply for a grant, please ask.



Trevor Oussoren
Program Manager



HOW ARE GRANT APPLICATIONS EVALUATED?

Each grant application goes through a three-stage review and evaluation process prior to final Board decisions.

Stage 1 Program Office Review

Each of our Regional Managers, together with our Business Coordinator, reviews grant applications to ensure they are complete and align with our regional conservation priorities and action plans.

Stage 2 Review by Regional Technical Committees

Fish and wildlife technical committees in each of our regions review each grant application for technical merit. In our Peace Region, our First Nations Working Group also reviews each grant application. Board members receive the results of these reviews and use this information to assist Board members in their review during Stage 3.

Stage 3 Review by Regional Board Members

Each regional Board reviews all grant applications for projects proposed in their region and makes the final decisions on projects and budget allocation in each region.

What We Look For?

When our technical committees review grant applications, they're looking for:

1. Alignment with Action Plan priorities;
2. Technical merit;
3. Deliverables and project outcomes; and
4. Team qualifications and past experience;

When our regional Boards review grant applications, they're looking for:

5. Alignment with any regional priorities;
6. Community support and involvement;
7. Cost-effectiveness; and
8. First Nations support and involvement.

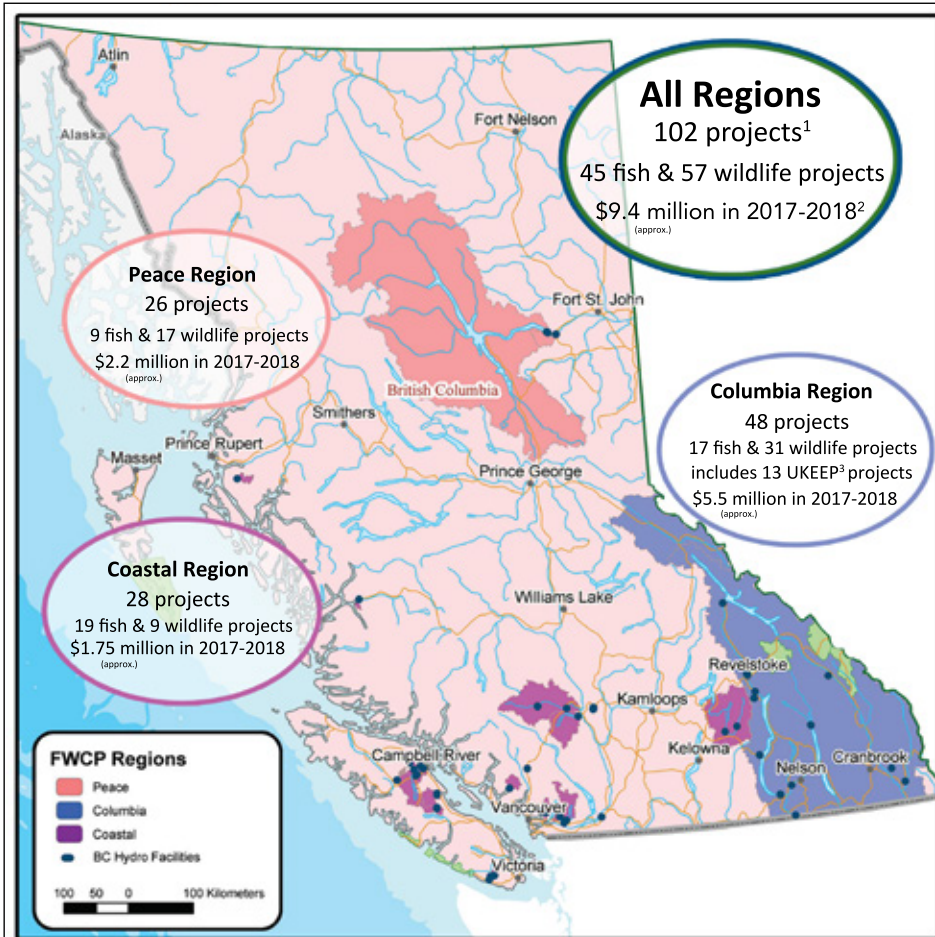
First Nation Working Group Review

Our Peace Region's FNWG review of grant applications is looking for:

1. Effective involvement of First Nations prior to submission of the grant application (i.e. through the mandatory Notice of Intent process in our Peace Region only);
2. Partnership, training or participation opportunities for First Nations; and
3. Recognition and inclusion of cultural values and traditional knowledge.

Front cover photo: Kokanee by Ben Meunier

102 PROJECTS BEING FUNDED THIS YEAR



The Fish & Wildlife Compensation Program is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations and Public Stakeholders to conserve and enhance fish and wildlife impacted by BC Hydro dams.

1) Project values include approved budgets for delivery of projects (i.e. project values to not include FWCP administration or operations budget). See project list at fwcp.ca for more information about projects approved for 2017 - 2018.

2) The total number of projects approved includes budgets approved for future work this fiscal year to be further defined by the regional Boards.

3) The Upper Kootenay Ecosystem Enhancement Plan (UKEEP) was jointly announced by Columbia Basin Trust (the Trust) and FWCP in May 2013, along with \$3 million in funding from the Trust.

Board Members from All Three Regions Meet



Board members from our Coastal, Columbia and Peace Regions met in 2016. This tri-region meeting takes place every two years and is an important part of our strengthening our team and learning from each other.

Our three regional Boards approved more than \$9.4 million for 102 fish and wildlife projects to be implemented – from 1st April 2017 to 31st March 2018. The projects will be delivered by First Nations, stewardship groups, consultants, and government agencies. Each project addresses one or more of our conservation priorities – including species of interest – identified in our action plans.

Coastal Region: 28 Projects

Salmon species – including Sockeye, Chum, Chinook, Pink, Kokanee and Coho – will be the focus of several projects approved by our Coastal Region Board. Bobcats, turtles, herons, bats, wolverines, amphibians and other species will benefit from the 28 projects and \$1.75 million. Several projects focus on endangered species including Vancouver Island Marmots, Spotted Owls and Whitebark Pine trees.

Columbia Region: 48 Projects

Caribou, Bull Trout, Kokanee, Gerrard Rainbow Trout, Grizzly Bears, wetland species, at-risk reptiles, waterfowl, and other species will benefit from the 48 fish and wildlife projects approved for approximately \$5.5 million. Thirteen of the approved projects will be delivered through the Upper Kootenay Ecosystem Enhancement Plan (UKEEP), funded by Columbia Basin Trust.

Peace Region: 26 Projects

Caribou, bats, migratory birds, moose, Bull Trout, Arctic Grayling, and wetland and riparian species will benefit from the 26 projects approved by our Peace Region Board, for approximately \$2.2 million. Work will continue on our multi-year project to gather data on mercury levels in fish in the Williston and Dinosaur reservoirs, and to investigate limiting factors affecting moose.

Rare Owls on Cusp of Increasing Reproduction?

Southern Interior – Bridge-Seton Watershed—The Northern Spotted Owl is Canada's most endangered bird. It is estimated there are only 30 individuals left in the country and more than half of those reside at the Northern Spotted Owl (NSO) Breeding Program's facility in Langley. The goal of the Program, which is celebrating its 10th anniversary in 2017, is simple: to make sure that the bird does not become extinct north of the 49th parallel. Due to the fact that the owl's old-growth habitat has been impacted by the creation of reservoirs, we are currently helping to fund this important work.

While it has been a steep learning curve for the Program and relatively few adults have been raised from chicks born at the centre (six to-date), it is anticipated there will be a significant "bump" in numbers in the near future. This is because many of the Program's female owls will soon be reaching eight years of age, when they typically start to create bonds and reproduce.

Five out of the Program's seven female owls are currently under the age of eight, so there is an expectation that as more females reach this age, more pairs will be bond and more chicks will be produced.

In 2016, although there was just one Spotted Owl chick produced, an important milestone for the Program was achieved. Eight-year old Shania laid two eggs and with one chick successfully hatching, it marked the first second-generation chick to hatch in captivity. Shania, herself, was the first chick to be hatched in captivity in 2008.

The NSO Breeding Program is using some very unusual techniques to improve their knowledge base and increase success. It is breeding a few Barred Owls – an invasive owl that competes with Northern Spotted Owls for habitat – because the two species are very closely related. Two Barred Owl pairs that were moved from known Spotted Owl territory to the centre, are now providing some extremely valuable information about raising owl chicks.

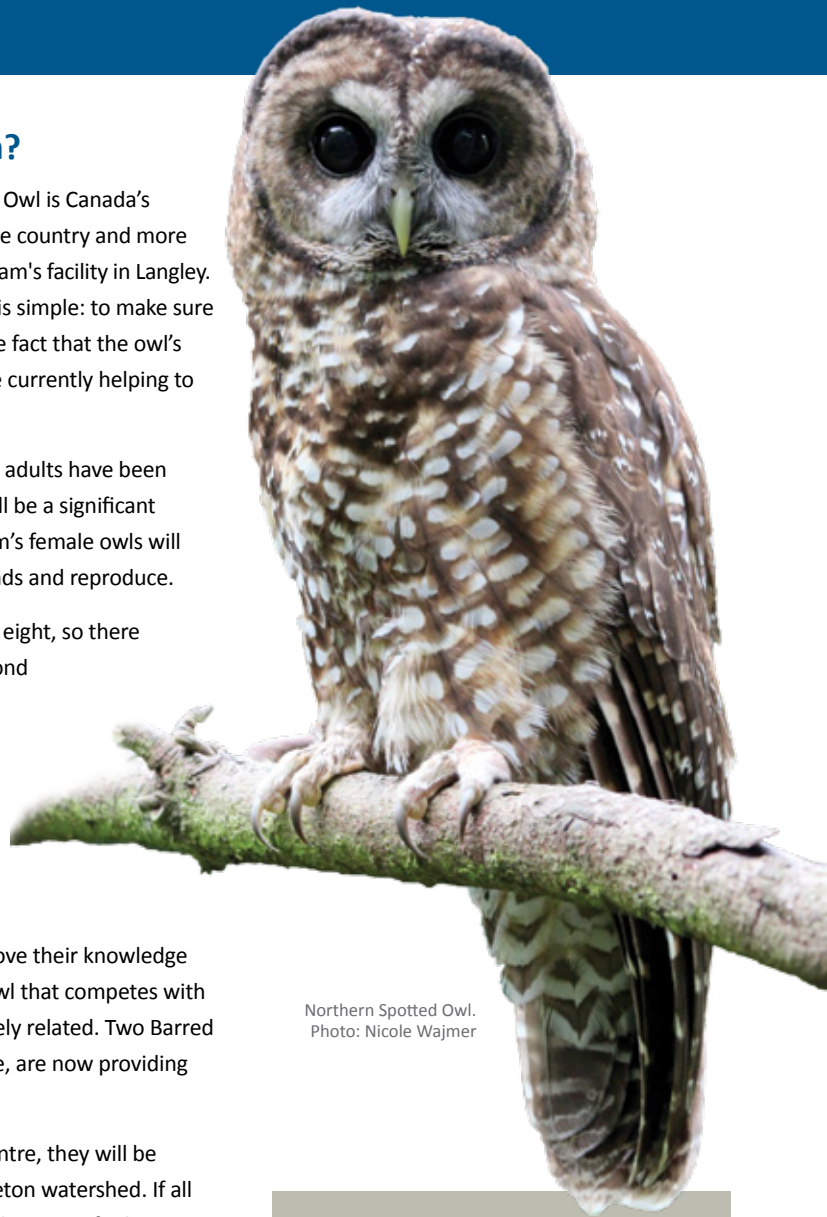
It is anticipated that as more Spotted Owls are successfully raised at the centre, they will be introduced into the wild into protected habitat, starting off in the Bridge-Seton watershed. If all goes well, the first could be released as early as 2018, with the long-term objective of releasing between 10 and 20 each year.

In the meantime, we are hatching some plans with the NSO Breeding Program to live-stream video images during the 2017 breeding season. Watch this space – and the fwcp.ca website!

Coquitlam Watershed Roundtable Busy

Coquitlam – The Coquitlam River Watershed Roundtable created a Watershed Plan for the Lower Coquitlam River with over 60 local partners. A recurring theme in the planning and creation of this Watershed Plan was the recognition of the important linkages between ecosystem health and human well-being.

As part of the implementation stage of the Plan, the Roundtable conducts outreach and education in the Coquitlam River watershed. FWCP provided funding support through our Community Engagement Grant for the Roundtable to participate in two community events in fall 2016. These were the Rivers and Trails Festival in Port Coquitlam, followed by the Salmon Come Home Festival in Coquitlam. If you want to get involved in the Roundtable, "swim on" over to their website at: coquitlamriverwatershed.ca.



Northern Spotted Owl.
Photo: Nicole Wajmer

We plan to launch a live-streaming web cam, at the Northern Spotted Owl Breeding Program, in spring 2017. Check out fwcp.ca

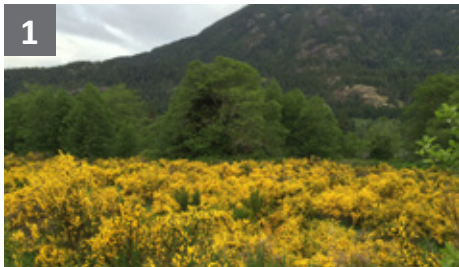


Coquitlam River Watershed Roundtable at the Rivers and Trails Festival, fall 2016.

Broom “Swept” Up Near Sayward

Sayward – More than 700 native trees and shrubs were recently planted on a conservation property on Vancouver Island in a two-hectare area, once overrun with invasive Scotch Broom. Native aquatic plants were also planted with the goal of restoring adjacent wetland and riparian habitat.

The work was spearheaded by The Vancouver Island Conservation Land Management Program on a new conservation property in the Salmon River Estuary Conservation Area, near Sayward. This conservation area was purchased by The Nature Trust of British Columbia, with FWCP funding support in 2015, to help address impacts from BC Hydro dams in the Campbell River watershed.



The land with invasive broom in May 2016 (1) is cleared in September (2), and then replanted with native species by members of the Vancouver Island Conservation Land Management Program, like Shawn Lukas (3). Photos: Karen Barry

First FWCP Wildlife Project in Wahleach

Fraser Valley – While FWCP has funded several fish projects in Wahleach Lake watershed, the project assessing riparian habitats and species-at-risk, led by Quercus Ecological and the South Coast Bat Conservation Society (SCBats), is the first one on the wildlife side. This project is extremely important in collecting baseline data on a wide range of species and habitats, and has already documented eight species-at-risk.

Wahleach Lake – or Jones Lake as it is more commonly known – is nestled in the Skagit Range halfway between Chilliwack and Hope, south of Highway #1. The construction of the dam in 1952 raised the water levels in the existing lake, and resulted in a loss of approximately three hectares of riparian and wetland habitat.

SCBats has partnered with a number of specialists in different fields, in order to take a holistic approach to assessing the ecosystem. The team included four field biologists and 10 volunteers, was very busy during 2016. The actions completed include:

- Amphibian surveys;
- Avian breeding point survey and bioacoustics monitoring;
- Harlequin Duck stream survey;
- Bat acoustic surveys and mist netting;
- Nest surveys for large waterbirds and raptors; and
- Camera trap surveys for large mammals.

In addition, a long-term bat monitoring station has been established, wetland classification and stream assessment surveys completed, and habitat mapping conducted.

The eight confirmed species-at-risk are the Band-tailed Pigeon, Olive-sided Flycatcher, Great Blue Heron, Coastal Tailed Frog, Western Toad, Northern Red-legged Frog, Mountain Beaver, and Little Brown Myotis.

The team has already shared the findings through presentations to community groups and outreach at environmental events.

Next steps for the project involve data analysis and modeling species distributions in the watershed. The team is also actively seeking information on known bat summer roosts and hibernacula locations in the Lower Mainland, and can be reached at info.scbats@gmail.com.



Black Bear backscratch, caught on a trail-cam in the Wahleach. Photo: Quercus Ecological.



1

Sky-high Savings for Fish Habitat Work

Campbell River — The BC Conservation Foundation has installed an innovative “skyline” bucket and cable system to drop washed spawning gravel into Elk Falls Canyon, Campbell River. This replaced the previous method of using a heavy-load helicopter, and reduced costs by nearly two-thirds.

The new skyline system, funded by the FWCP and the Campbell River Salmon Foundation, was installed in spring 2016 and used for the first time that summer. It is designed so that the cable, bucket and winch can be removed for the rest of the year when the gravel drops are not taking place.

The project has been extremely successful. About twice as much gravel – 320 tonnes – can be dropped compared to using the helicopter. Good for the FWCP, as we are the primary funder of the gravel drops and, more importantly, good for the Pink, Coho, Chum, Chinook and Steelhead Trout that will benefit from improved spawning habitat.



2

Washed spawning gravel is loaded and then dropped into Elk Falls Canyon. Photos: BCCF

Caribou: One is the Loneliest Number

Enderby — Cast your eyes below. This is the last Woodland Mountain Caribou in the South Monashee Herd. In March 2016, the Splatins Nation, surveyed the herd east of Enderby.

Following an extensive search, flying transects aboard a Bell Ranger helicopter, the crew found tracks in the snow that eventually led them to this individual. The sex of the caribou is undetermined since they did not want to fly too close. They concluded that he – or she – is the sole remaining Caribou of the South Monashees, and that the herd is now functionally extirpated – or locally extinct.



Likely the last Woodland Mountain Caribou of the South Monashees. Photo: Splatins Nation

Coho and Chum Using New Spawning Habitat



Chum Salmon using new habitat in November 2016. Photo: FVWC

Lower Mainland –

Stave River Watershed — River main-stems are important, but the off-channel habitat (smaller tributaries that are frequently spring- or groundwater-fed) is typically responsible for the river system’s ecological integrity. That is why the Fraser Valley Watersheds Coalition, with funding support from the FWCP, DFO and others, has been restoring this type of habitat in the Lower Stave Tidal Estuary River watershed, near Mission, for years.

They have chalked up impressive outcomes between 2015 and 2016: nearly 50,000 m² of instream rearing, 750 m² of spawning habitat created or restored; and more than 20,000 native plants covering an area of 4,000 m² planted. Already, Coho and Chum salmonids are using the rearing habitat, and both species have been seen in the new spawning channels.

The new, deep side-channels have been excavated to help reduce the encroachment of invasive canary grass, and community and student volunteers have been replanting the area with two-dozen species of native sedges, trees and shrubs.

The area has an extensive history of First Nations use and the project would not be possible without their participation. Kwantlen First Nation and local archeology consultants provided advice on the location of constructing the channels, and were on site should any significant cultural artifacts be encountered.

The restoration work is vital if the Lower Stave River is to remain one of the most productive salmon habitats in the province, and home to the second largest Chum Salmon population in the Fraser River watershed.

Our First eDNA Project Detects Coastal Tailed Frog

Lillooet – Most of us have seen TV shows where detectives use a spray or swab to detect a critical piece of DNA evidence needed to solve a crime. Sometimes it's hard to believe. But here in B.C., there are a growing number of biologists using forensic science in the field that's worthy of a TV show – maybe even an Emmy. This new science is quickly changing the way we conduct inventories for aquatic species and some call it unprecedented.

"Using environmental DNA to detect the presence of a species is revolutionizing how we do inventories," say Jared Hobbs, a leading practitioner of environmental DNA (eDNA) in BC, and the project manager of our first project using eDNA.

In 2015-16, Jared received an FWCP grant to determine the presence of at-risk Coastal Tailed Frogs in the Bridge and Seton River watersheds (within our Coastal Region). Amphibian habitat was flooded by reservoir creation and this species is an FWCP priority in this watershed.

Four previous inventories conducted between 2000 and 2013 at 262 sites, detected the blue-listed Tailed Frog at 13 sites in the watershed. These inventories used conventional time-constrained search methods.

"Typical methods take a lot of time and money, and rely on biologists walking up creeks and streams looking for physical evidence of a species," says Jared.

In 2015-16, Jared and his team returned to the same sites in the Bridge and Seton River watersheds to repeat the inventory using eDNA techniques. This time, Jared took water samples from the same drainages (Cayoosh, Bridge, Seton, Anderson, Carpenter and Downtown lakes) and analysed the water for environmental DNA. Sampling sites were selected to ensure many of the sites from 2000-2013 were inventoried again.

Using eDNA techniques, Jared confirmed the presence of this federally-endangered frog in 33 of the 69 sites his team sampled: that's almost three times more findings than in four separate inventories, done in a fraction of the time and at a much lower cost.

	# of Sites	# of Detections	Detection Rate %
Time Constrained Samples 2000-2013	262	13	4.9%
eDNA Samples 2015-16	69	33	50.7%

"We identified 31 new occurrence records within five days of field sampling, and confirmed a more widespread distribution at a previously unconfirmed site with an apparently isolated meta-population in a drainage," says Hobbs, adding that this approach replaces past search methods that rely on physical evidence. The results from this project improve the understanding of this species' distribution and will be used to develop a long-term monitoring program.

"Using eDNA, we can complete an inventory for 1/10th of what it cost in the past and we just need trace amounts of DNA from the target species for analysis by our University of Victoria lab," say Jared, adding that the sampling method has other immediate benefits because it does not risk introducing pathogens, invasives or contaminants. Despite the less-intensive collection methods, Jared stresses the need for the usual field precautions to protect sample integrity.

This Coastal Tailed-frog was a "guinea pig" in our first project using eDNA to detect the presence of this provincially blue-listed frog. Photo: Jared Hobbs



Biologist Jared Hobbs is an early adopter of eDNA methods.
Photo: Ben Shoneville

This non-lethal detection method is being used more widely as qualified professionals adopt this new technology that relies on analyzing samples of water, air or soil instead of searching for visual confirmation of a species.

Looking ahead, Jared can see nothing but potential for eDNA. Next opportunity: airborne eDNA to help detect a soil fungus that negatively affects bats could help plan for and respond to White Nose Syndrome in locations where surveillance for the causal fungus is logistically challenging the old-fashioned way.

A final report on the eDNA work to assess Coastal Tailed Frogs will be posted on fwcp.ca.

What is eDNA?

DNA (deoxyribonucleic acid) is the hereditary material in organisms that contains biological instructions for building and maintaining organisms. Environmental or eDNA refers to nuclear or mitochondrial DNA released from an organism into the environment through feces, mucous, gametes, carcasses, and shed skin and hair. eDNA can be detected in cellular form and can be extracted from bulk samples of soil, water and air. In aquatic environments eDNA has been demonstrated to last 3-21 days depending on conditions. A sample of water, soil or air can thus reveal the presence of eDNA of an organism.



Hot Year for Prescribed Burns - About 1,200 ha Treated

East and West Kootenay – While it was a relatively quiet year for catastrophic wildfires in the province in 2016, it was a busy and successful one for prescribed burning in the Kootenay Region. The main reasons are:

- good burning “windows” in the spring and fall, some followed by heavy precipitation;
- fire crews being available and not tackling uncontrolled wildfires elsewhere; and
- all the detailed planning was complete, with the various partners ready to jump into action at short notice.

Rarely do all these factors fall into place, resulting in controlled burns being postponed or occurring in marginal burning conditions, and unable to meet all the burn objectives. This was not the case with these burns.

There were a total of six burns delivered by the B.C. Wildfire Service, with support from the FWCP, Habitat Conservation Trust Foundation (HCTF), Ministry of Forests, Lands and Natural Resource Operations (FLNRO) and BC Parks. These controlled burns not only improve wildlife habitat but also help to reduce the risk of intense wildfires by removing ladder fuels and fine fuels on the forest floor.

It was anticipated that four prescribed burns in the East Kootenay (two east of Wasa, and two in the Galton Range) would consume a total of approximately 1,000 hectares, but the conditions were so good that closer to 1,200 hectares were successfully treated. All four were high elevation burns that will increase available forage, and will help maintain open sightlines and migration corridors, which are key habitat components for species like Mule Deer and Rocky Mountain Bighorn Sheep.

“We try to focus our attention not on the total area treated, but rather on meeting specific objectives,” says Larry Ingham with FLNRO. “This means being more selective on priority habitats, and maximizing the number of species that will benefit from this work.”



Burn at Greywolf Creek near Castlegar.
Photo: B.C. Wildfire Service

One of the keys of the successful burns in the East Kootenay was due to Allana Oestreich, habitat biologist with FLNRO, who relocated a mobile weather station into the Galton Range over the summer. This action provided timely data about environmental conditions, and resulted in the partners mobilising quickly, and burning earlier than ever before.

In the West Kootenay, the burns were smaller but no less important. First there was a spring burn of 45 hectares near Tulip Creek in Syringa Provincial Park, and then a fall burn of 55 hectares burned at Sunshine Creek, also north-west of Castlegar.



After the burn, Bighorn sheep take advantage of the new foraging opportunities. Photo: Ross Clarke

“Rarely do all these factors fall into place...”

“Due to decades of successful forest fire suppression in the West Kootenay, we have seen a significant ingrowth of conifers, thereby reducing open-forest habitat and small patches of open grassland,” says wildlife biologist Ross Clarke. “The goal of this ecosystem restoration work is to reintroduce the natural fire cycle back into the landscape, to restore and improve the overall biodiversity in the area.”

Species directly benefiting from this work include Rocky Mountain Bighorn Sheep, Mule Deer, Elk, White-tailed Deer, Columbia Ground Squirrel, Northern Alligator Lizard, Western Skink, and the Rubber Boa.

Typically, there is a significant amount of work leading up to these burns: from forest harvesting, to slashing and piling, with the final objective being a prescribed burn. And it is the BC Wildfire Service that has stepped forward to take on the responsibility of preparing, and implementing, the burn plans.

“This partnership with the Ministry, and specifically with the B.C. Wildfire Service, is invaluable” says FWCP Columbia Region Manager, Crystal Klym. “I would specifically like to thank Jonathan Fox, Andre Chalibi, Mike Morrow, Robyn Canty, and all their crews, for making these burns so successful. We also know that there are significant risks with this work, and the support of District Managers to enact fast decision-making is also a critical element.”



1

Heron Breeding Updated and Sightings Still Wanted

Columbia Basin – Preliminary results from the 2016 breeding season are in, but the public is encouraged to report their heron sightings throughout 2017, especially in the North Columbia portion of the region, where very few records are available.

The Great Blue Heron monitoring is being undertaken by Marlene Machmer of Pandion Ecological Research Ltd., with funding from the FWCP and Columbia Basin Trust, as well as support from the Ministry of the Forests, Lands and Natural Resource Operations, and many volunteers across the Basin.

In the 2016 breeding season, a total of 14 active heron rookeries (four in the West Kootenay and 10 in the East) with 193 nests were found in the FWCP Columbia Region. Of these 14 sites, at least five (supporting 52 active nests) were abandoned and all of their nests failed. Four of the five breeding site failures could be directly attributed to harassment and predation by American Crows, Common Ravens and/or Bald Eagles. Human disturbance was likely a contributing factor at the remaining site.

Of the total 193 active heron nests found, 114 nests (59.1 per cent) were successful. Success is defined by one or more fledglings being of a size and level of development deemed adequate for fledging. These results suggest relatively low levels of heron nest activity and breeding success, consistent with a similar monitoring study carried out five years ago.

The locations of herons in the FWCP Columbia Region will continue to be monitored throughout the winter, spring and summer months of 2017, and public reporting continues to be very important to the success of this project.

When reporting sightings, it is helpful to distinguish between juvenile and adult herons, if possible. Juveniles are a duller gray-brown color, with a striped neck and dark crown that lack definition. They transition to a uniform blue-gray color, with conspicuous white neck plumes, and a defined white and black crown as adults.



2



3



4

Juvenile heron in flight and foraging (#1 and #2), adult heron (#3 and #4)

Partnerships Tackle Heavily Impacted Land

Creston – Since 2013, Masse Environmental Consulting Ltd., has been partnering with the Lower Kootenay Indian Band of the Ktunaxa Nation, with funding from both Columbia Basin Trust and FWCP, to build capacity and restore functional riparian and wetland habitat along Indian Creek, near Creston. The project is located within traditional hunting, fishing and gathering areas utilized by the Lower Kootenay Band.

The area has been heavily impacted by flood control structures, agriculture, and grazing, which has resulted in significant changes to the natural riparian and wetland ecosystems. These impacts have led to a profusion of invasive weeds, increased bank instability, exposed soils, and a reduction of native plant species diversity.

Thanks to our contributions, a great deal of action has been ongoing to restore the ecosystem. As part of a multi-phased project, site assessments and restoration prescriptions have been completed. To-date, seven hectares of land has been fenced to exclude cattle; a rare plant survey undertaken; disturbed soils have been planted with sedges and shrubs; coarse woody debris introduced; and riparian areas planted with native species such as Black Cottonwood, willow, rose, Saskatoon, hawthorn and Red Osier Dogwood (among others). An ongoing monitoring and maintenance program is in place to gather data to inform future phases of this project, as well as other restoration opportunities in the region.



Restoring riparian habitat near Creston. Photo: Masse Consulting

To report your heron sightings, visit:
fwcp.ca/wanted-breeding-heron-sightings
 or contact biologist Marlene Machmer
 at mmachmer@netidea.com or
 250-505-9978.



New Approach to Accessing Fish Habitat

Arrow Lakes Reservoir – Improving Kokanee access to spawning and rearing habitat in Deer Creek, 30 kilometres north west of Castlegar, is one of the goals for the Okanagan Nation Alliance (ONA). They are trying to achieve this by designing and placing fish structures in the drawdown zone where Deer Creek discharges into Arrow Lakes Reservoir. This is the first time such work has been attempted in the drawdown zone of a tributary to Arrow Lakes Reservoir.

When the reservoir levels drop, a significant portion of Deer Creek is left exposed (i.e. the drawdown zone) with little or no coverage for migrating fish. The physical nature of the creek also changes with falling reservoir levels: there is a fanning-out, or braiding, of the stream and the resulting shallower waters leave the fish susceptible to predation from bears, herons, and ospreys, and adds stress to their critically important journey.

First, ONA biologists got inspiration for structure designs by observing remnant, stable structures such as old stumps and rock-filled log cribbings in the drawdown zone of other Arrow Lakes tributaries. Then, over two phases in 2015 and 2016, they constructed and strategically placed 20 structures over the first 200 metres as the creek enters the drawdown zone. Structures included: riprap or boulder structures to protect the banks and stabilize important habitat features; a weir to focus the flow and create a pool for resting Kokanee during spawning migration; boulder-rootwad and boulder-log combinations to provide hiding spots; and even a “boulder garden” to provide current breaks to allow fish to hold, rest and hide.

The ONA took a novel approach of pinning wood with rock by using up to twice as many boulders as usual to keep the structures in place. The placement of the structures was sensitive to both high flows during the freshet, and low flows in August and September when Kokanee migrate into tributaries to spawn.

Monitoring to-date shows that the structures built in 2015 (Phase I) survived freshet flows and partial reservoir filling. All wood elements remained locked in place, and did not shift or float away. During spawning the Kokanee clearly preferred the constructed habitat over the remaining wide, shallow and exposed portions of the creek in the drawdown zone. And in 2016, the ONA even observed Kokanee spawning within the cover provided by the constructed habitat.

Provincial biologists will monitor Kokanee counts for the years to come, and if Deer Creek counts increase while neighboring stream counts remain consistent, the ONA can be confident that their rehabilitation efforts have succeeded in fulfilling their goals.



Structures were installed in the drawdown zone of Deer Creek to improve access and provide protection for Kokanee.
Photo: ONA

Volunteers Busy at Bridge Creek

Revelstoke – Volunteers with the Revelstoke Rod and Gun Club worked within the fish window in August 2016 to restore Kokanee spawning habitat at Bridge Creek. Years of neglect have resulted in silt-filled habitat and few Kokanee venturing into the Creek—less than 100 per year in the last five years.



Removing silt improves Kokanee habitat. Photo: Angus Glass

The work was not an easy task. First, volunteers had to clear years of accumulated garbage, and then scarify (clean) the existing gravel by hand, using rakes. Heavy equipment was used to place rocks and large woody debris to provide shelter and rearing habitat for the Kokanee. The Club was also successful in the request to have Canadian Pacific Railway clean their culverts upstream of the channel, adding to the overall improvement of channel conditions.

The Kokanee spawners did not arrive until October 11 and, again, were few in number for the spawning season – a little over 20. It is early days, however, and when more Kokanee do return, future egg-to-fry survival should be improved by the quality habitat that the Club, with funding support from the FWCP, has ensured is there for their use.



Floating habitat for loons created near Bush Arm, Kinbasket Reservoir.
Photo: Mandy Kellner

Island Life for Loons

North Columbia – Build it and they will come. That is the thinking behind the provision of floating nest platforms for Common Loons. It has already worked in practice in Whatshan Reservoir so now wildlife biologist Mandy Kellner of Kingbird Biological Consultants Ltd., is expanding the idea to the North Columbia region, with funding from the FWCP.

Common Loons are large piscivorous birds that favour shoreline nesting immediately adjacent to the water. As a result they are susceptible to human development and recreation, and have been facing increasing threats due to habitat loss. Equally important is that the nests are at risk of drowning due to fluctuating reservoir levels, which can significantly impact overall nest success.

This year, Kellner installed three anchored floating platforms: one each in Staubert Lake (between Trout Lake and Galena Bay), Blackwater Lake (near Golden), and one in an unnamed lake in the east end of Bush Arm on Kinbasket Lake.

Kellner has found that previous Loon platforms are typically used within two years of installation, lead to improved nest success, and allow for earlier hatch dates compared to shore nests. The structures also offer shelter for other wildlife (including fish), reduce predation, and can also be strategically placed where there will be less risk of human disturbance.

All three platforms have been installed in known Loon territories, planted with local vegetation, and will be monitored to gauge their success.



Photo: Angus Glass

Update on Kokanee Spawning Numbers 2016

West Kootenay – Kokanee numbers in Kootenay Lake appear to be heading in the right direction. The number of returning adults in fall 2016 at Meadow Creek Spawning Channel (funded by FWCP) was 11,087 (in 2015 the total in the channel was 5,679). The average number of eggs per female was 778, compared to the ten-year average of 333 (2006 to 2015). The Ministry of Forests, Lands and Natural Resource Operations also planted 6.7 million eyed eggs (1.38 million were collected from Hill Creek Spawning Channel) into Meadow Creek in an attempt to further bolster Kokanee numbers in Kootenay Lake.

For Hill Creek Spawning Channel, the fish were also a good size: average eggs per female were 283, which compares to the 10-year average (2006 to 2015) of 276. A total of 70,039 adults were counted at Hill Creek (41,344 in the channel) and 8,384 of those were taken for the eyed egg plant at Meadow Creek Spawning Channel.

New for the FWCP website: all the spawning channel numbers, and lots of other information about Kokanee and the Nutrient Restoration Program, including historical results from the last ten years, can be found at fwcp.ca/supporting-kokanee/

Kokanee Inventory Project Underway



Kokanee in Norbury Creek. Photo: Ben Meunier

East Kootenay – The Upper Kootenay Ecosystem Enhancement Plan (UKEEP) is a joint partnership between FWCP and Columbia Basin Trust. Priority actions in the Plan can be “open,” where proponents can submit grant applications to deliver the work, or “directed,” where the UKEEP sub-committee identifies specific projects and proponents. The Kootenay Kokanee Enumeration Project, being delivered by VAST Resource Solutions, is one of two directed UKEEP projects for 2016-2017.

The goal of the project is to identify population changes over time, which would help inform management decisions around Kokanee in Kootenay Reservoir.

Several Kokanee die-off events were reported in late-summer 2015, following a severe drought in the region that led to extreme low water levels, and high water temperatures, in the tributaries. As a possible result of these die-offs, perhaps, the total Kokanee spawner count in fall 2016 in six of the reservoir’s index tributaries was relatively low: just under 85,500 (compared to an average count of 216,700 since 1996). The two tributaries that comprised the bulk of this total were Lussier River and Kootenay River side-channels, with approximately 48,000 and 26,500, respectively.

Investigating Mercury Levels in Williston Reservoir

The first full year of data collection in our three-year investigation of mercury concentrations in fish from the Williston Reservoir and key tributaries is complete. Data from more than 250 fish samples collected in 2016 will be analyzed and an interim report is expected in 2017. When complete, this project will provide new and updated information about mercury concentrations in fish, over a range of sizes and locations in Williston Reservoir, relative to fish caught in other nearby waterbodies.

“We know that mercury levels in fish caught in the reservoir and its tributaries is a priority concern for local First Nations and others,” says FWCP Program Manager, Trevor Oussoren. “Our goal is to improve the understanding of mercury in fish in all parts of the reservoir system, and to provide this information to agencies responsible for advising the public on fish consumption, so that they have enough information to consider in developing any potential revised fish tissue mercury public advisories.”

Mercury in Reservoirs

When new reservoirs are created the amount of naturally occurring methylmercury in the flooded soil increases. Over time, this can lead to an increase in the amount of methylmercury that occurs in all fish. These higher concentrations can remain elevated for up to 20 years before there is a return to baseline. All fish in all lakes and reservoirs contain mercury, but reservoir creation can increase the level of mercury in fish tissue and, at high enough concentrations and consumption rates, may cause harm to animals or people that consume those fish.



Cheryl Chingee of McLeod Lake Indian Band and Randy Baker from Azimuth Consulting Partnership during a training session that taught local First Nations how to collect fish samples as part of our mercury investigations in Williston Reservoir. Photo: Azimuth Consulting

Opportunistic sampling occurred in 2015. In 2016, the focus was on collecting fish from Parsnip Reach and nearby reference lakes. The target species are Lake Trout, Bull Trout, Whitefish and Kokanee, although other species were also sampled. More than 250 samples were collected from the target areas, as well as Finlay Reach.

The consultants hired to do the mercury sampling and analysis – Azimuth Consulting Group Partnership – worked with Chu Cho Environmental, the Ministry of Environment, and EDI Environmental Dynamics Inc., as well as local First Nations to collect fish tissue samples.

“We want this study to be conclusive and represent the fish people eat,” says Oussoren. “To achieve this, we’re collecting fish from representative species, sizes and locations to satisfy the statistical and scientific design for this kind of research. We want to collect samples from species and locations that are meaningful to First Nations citizens, who have historically relied on fish as an important part of their diet.”

As part of this project, 11 citizens from six First Nations were trained in 2016, and learned how to sample correctly. These community champions were charged with collecting fish samples from their communities and gathering information about fish consumption patterns, to better understand the importance of fish in their diet.

All fish samples will be analyzed for mercury concentrations by an internationally accredited laboratory and the results will be included in a 2017 Interim Data report.

In summer 2016, sample collection focused on Whitefish, Kokanee, Bull Trout and Lake Trout, and other species opportunistically caught in the Parsnip and Finlay Reaches of the Williston Reservoir. In spring 2017, fish sampling will resume and focus on Dinosaur Reservoir and Williston Reservoir’s Peace Reach, as well as filling data gaps from other areas. First Nations engagement, and involvement in the sampling, will continue to be sought.

Learn more about our mercury work at fwcp.ca/mercury-data-collection-underway-in-2016.

FOCUS ON LEARNING

Conserving Arctic Grayling

A study commissioned by our Peace Region Board provides important new information to help conserve Arctic Grayling in the Upper Peace Basin. The consultant report recommends exploring the potential for recolonization experiments, which may enable the species to recover its historic range within the Williston Reservoir watershed, and launching a monitoring program to better define conservation status and demographic connections among existing populations. New targeted research is also recommended to fill knowledge gaps critical to conserving this species that once dominated creel surveys throughout the reservoir, yet today is restricted mostly to the larger Williston streams.

The project, undertaken by Stamford Environmental, John Hagen and Associates, and Susanne Williamson in the Ministry of Environment, was funded by the FWCP. The purpose of the study was to evaluate current information, prioritize knowledge gaps, and facilitate quicker transitions to on-the-ground conservation and enhancement actions for this blue-listed species.

“Remnant populations of grayling currently using the smaller, direct tributaries of the reservoir could become extirpated without intervention,” says Mike Stamford, “For conservation and enhancement actions to be successful more information is required to understand seasonal migrations between critical habitats, which include possible movements through Williston Reservoir.” Read the final report at fwcp.ca.



Characteristic dorsal fin of the Arctic Grayling. Photo: John Hagen



Many Mackenzie area students discovered that the best learning often occurs out in the field.
Photo: Wildlife Infometrics

Update: Mackenzie Bear Committee 2016

Volunteers helped teach Morfee Elementary School students how to reduce bear encounters and what to do if they do run into a bear. Classroom lessons, radio ads and door-to-door canvassing are helping this community reduce attractants and food-conditioned bears. Their efforts were noticed: the Mackenzie Bear Committee was nominated for an Environmental Sustainability Award by the North Central Local Government Association (2015). While the committee didn't win that award, they're a winner to us and we are glad to be providing funds for this project.

Learning Outdoors Near Mackenzie

Since Wildlife Infometrics launched the Williston Area Schools Ecology Program, approximately 800 Mackenzie-area students have taken part in 35 classroom programs and 25 field trips. They've learned about birds, plants, fish, pond ecosystems, insects, caribou, forestry and more. And they've done it along with many professional and parent volunteers from the community who donated over 500 hours sharing their time and knowledge. This kindergarten to Grade 12 program is designed to complement and extend provincial learning objectives. FWCP grants have helped fund content development and module delivery for this program.

Elder Tells Bear Story

McLeod Lake Indian Band Elder, Alec Chingee, went back to the class to talk about bears. He helped translate posters made by Grade 4-7 students into Tsa'khene and left the students with a bear story to illustrate. Alec is on our Peace Region Board and First Nations Working Group.



Preparing for Whitenose Syndrome

Until March 2016 when White Nose Syndrome (WNS) was found in Washington State, B.C. bat experts and conservation managers thought they had more time to do baseline research and develop a response plan. With the fatal fungal disease now at B.C.'s doorstep, efforts are stepping up to plan for, and respond to, WNS before it decimates western bat populations.

"Detecting WNS in Washington is a game-changer for B.C.'s bats," says Dr. Cori Lausen, Wildlife Conservation Society Canada. "WNS hasn't been detected in B.C. yet, but it's just a matter of time."

Identifying winter hibernation sites and monitoring bat populations before – and after – WNS arrives in B.C. is an important part of managing and understanding this disease.

"The more field data we have for each species, the better we can forecast WNS and help inform local management actions to reduce the threat, and we can begin thinking about recovery strategies for species," says Lausen.

"Understanding winter bat ecology in the Peace River Basin will help set management objectives for bat habitat."



Northern Long-eared Bat. Photo: Jared Hobbs



Cavers Kirk Safford and Trent Blair descend into White Dwarf cave, Bocock Provincial Park.

WNS was first detected in New York State in 2006 and although the origin is uncertain, it could have been introduced by humans transporting fungal spores from an infected site or perhaps by an infected bat in a cargo ship.

In our Peace Region, the local Board approved FWCP funding for the Williston Reservoir Bat Ecology project that will start by identifying hibernation and roost sites. This species is a priority in the Peace Region, where much wetland forage habitat for bats was flooded when reservoirs were created behind BC Hydro's dams in the region.

"If we know where bats hibernate, we can monitor the species and we can work with others to limit access to these sensitive sites and reduce the spread of WNS," says Inge Jean Hansen, bat biologist in Dawson Creek.

Between fall 2015 and spring 2016, 1082 bat calls were detected at nine locations along the Peace Reach of the reservoir using acoustic detectors. These results confirm the presence of Big Brown Bats, Long-eared Myotis, Little Brown Myotis, Northern Long-eared Myotis, Eastern Red Bat and Silver-haired Bat. Winter detections – 75 calls at seven sites between November 2015 and March 2016 – confirmed hibernation of Big Brown Bat and one of the Myotis species. Mist-netting in fall 2016 confirmed Long-legged Bats and active monitoring while mist-netting recorded Hoary Bats.

Caves are a popular hibernation site, but many B.C. caves flood seasonally, suggesting they may not be used for over-wintering. Lausen notes that bats could be in high-elevation caves, which can be hard to monitor. Working with local cavers through the FWCP-sponsored BatCaver program (BatCaver.org), three bat roost-logging units were placed in remote caves in the Bocock Peak Provincial Park in late August 2015. Data from these units were collected after winter 2016 and one cave was confirmed to be a bat hibernaculum, although numbers of bats within the cave are suspected to be small.

What is White Nose Syndrome (WNS)?

This fungal disease is responsible for mass die-offs of hibernating bats. Since 2006, it has been spreading unstoppable and has killed millions of bats. The white fungus grows on the muzzles and bodies and can kill bats in various ways: wing damage, respiratory issues, starvation and dehydration due to repeated arousal during hibernation to groom fungal growth during winter months. Transmission of WNS is not well understood.

“Not much is known about caves in the Peace Region, but we know that Little Brown Myotis and Northern Myotis are already endangered, and WNS could be a knock-out blow to these small bats,” says Hansen, adding, “this work has already revealed important information and is helping fill information gaps. For example, it looks like western bats hibernate in smaller numbers than bats in the east and they may be more likely to hibernate in rock crevices.”

The researchers worked with citizens from the West Moberly, Saulteau, McLeod Lake, and the Tsay Keh Dene First Nations. Each Nation was involved in downloading data from, and retrieving, acoustic detectors.

Tsay Keh Dene Lead Caribou Project to Re-Grow Lichen

Imagine if a wildfire burned through your local grocery stores and wiped out your food supply for decades.

In 2014, that’s what happened to Northern Caribou in the Chase herd when two significant wildfires wiped out large portions of high value pine lichen habitat. The fires eliminated the primary winter food source for these at-risk ungulates of special concern. The size and location of the fires contribute to the declining condition of winter range when added to industrial pressures, and migration barriers that also reduce available winter forage for the Chase Northern Mountain Caribou herd.

It’s true that wildfires are a natural part of maintaining the productivity of an ecosystem. But certain lichen species can take 60 years to regrow and establish. A reduced amount of lichen puts further stress on this at-risk species.

That’s when Chu Cho Environmental, in collaboration with the Tsay Keh Dene Lands, Resources and Treaty Operations, and the Ministry of Forests, Land and Natural Resource Operations put together a plan, with funding from the FWCP and the Society for Ecosystem Restoration in North Central British Columbia, to help the vulnerable caribou herd.

“We believe we can accelerate the natural process for lichen regeneration in the area by transplanting terrestrial lichen to the site, overcoming dispersal restraints that would otherwise lead to a slower process of lichen establishment within the burned area,” said Sean Rapai of Chu Cho Environmental.

Using more than 3,000 litres of lichen gathered by hand near Wittisichica Creek, the team set out to fast-track lichen re-growth. The Tsay Keh Dene Lands Resource and Treaty Operations department donated employees to the program who lent a hand, literally. They helped spread a mix of lichen fragments and lichen mats across 80 test plots near Chase Provincial Park along the Mesilinka River in July 2016. The plots will be monitored, and while it’s too early to know how effective this approach will be, the study team is optimistic.

“It’s important to try new approaches and then share the results with others so we can make informed decisions about conservation and enhancement,” says Duncan McColl of the Ministry of Forests, Lands and Natural Resource Operations.



Planning for Action: In fall 2016, bat experts from across BC volunteered their time and came together to develop a WNS Response Action Plan. In just a few days and with a small amount of FWCP funding to help convene the group, they developed a plan, which is now under review by the BC Bat Action Team and will be submitted to the provincial government. The plan will be posted on bcbat.ca.



Environmental Monitor with Chu Cho Environmental, Stephen Friesen, helps collect lichen before it is planted in burned areas.

PARTING SHOT



Photo: B.C. Wildfire Service

Ecosystem restoration and habitat enhancement projects are an important part of how we work towards our vision of thriving fish and wildlife populations that are functioning and sustainable in our Coastal, Columbia and Peace regions. These projects include the removal of invasive plants and replanting with native species in our Coastal Region (page 5) and prescribed burns in the Peace and Columbia Regions (see page 8). In 2016 we helped fund four prescribed burns, treating approximately 1,200 hectares, including this one next to Arrow Lakes Reservoir in our Columbia Region.

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