



Columbia Basin
Fish & Wildlife
Compensation Program

CBFWCP is a joint initiative between BC Hydro, the BC Government (Ministry of Water, Land and Air Protection) and Fisheries and Oceans Canada to conserve and enhance fish and wildlife populations affected by the construction of BC Hydro dams in Canada's portion of the Columbia Basin.

Fall 2005 – Number 13

Program Update



Hoo-Hoo-Hooting It Up In The Kootenays

Project Finds Western Screech-Owls

They're here and we have the evidence to prove it! Results from a recently completed Columbia Basin Fish & Wildlife Compensation Program (CBFWCP) study confirm that endangered Western screech-owls are living in the Columbia Basin area. In fact, the study found nine new sites and confirmed that a nesting location is being used.

Biologists set out to determine if there are Western screech-owls in the area and, if so, where. Using call playbacks, biologists surveyed an area from Moyie Lake to Rossland and north to Slocan City.

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Western screech-owls are one of many species that rely on "wildlife trees" for nesting, roosting and other activities.

Jakob Dulisse

Fish & Wildlife Projects "Reel In" Economic Benefits Too!

Helping the local economy is not our primary goal but it's clear that CBFWCP projects are bringing both environmental and economic benefits to the Columbia Basin.

Just ask any angler on Kootenay Lake or the Arrow Lakes Reservoir and they'll tell you that

the fishing has been getting better and better since the Fertilization Program (jointly managed by the CBFWCP and the Ministry of Environment) began. Good fishing is good for business.

"When you have big fish you attract more people," says Ziggy Ziegler of Woodbury Resort on Kootenay Lake. "And we're seeing lots of Gerrard rainbow trout weighing in at more than 20 pounds. They are getting bigger and bigger every year and we're getting anglers from Montana, Idaho, Washington, the coast and other parts of western Canada who want to get in on some of the best fishing in 25 years."

On Kootenay Lake, the rainbow fishery is valued at close to \$2 million annually. This fishery value includes expenditures by anglers on virtually everything except boats - that's fuel, accommodation, food, gear, supplies, and transportation.

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Hooting It Up In The West Kootenay

“Most of the owl locations we found were in valley bottoms among mature cottonwood stands on private land,” says contract biologist Jakob Dulisse, who conducted the year-long study with fellow biologist Marc-Andre Beaucher.

These findings will add to the growing body of knowledge about the Western screech-owl in the Columbia Basin. Until 2001, nesting locations for the Western screech-owl had not been confirmed east of the Okanagan.

“The more we know about a species, the more effective our conservation strategies will be,” says Jakob, adding that private landowners can often play an important role in conserving important habitat, especially mature cottonwood stands.

If further funding is secured, biologists hope to build on these findings and return to the woods to confirm more nesting locations, and map out micro-habitats preferred by the Western screech-owls.

Partners on this project include FortisBC and the Ministry of Environment.

CBFWCP Annual Report Available

Our 2004 – 05 annual report is available on-line. Please visit:

www.cbfishwildlife.org to download your copy from our communications page or call 250-352-6874 to request your copy.

Hot Link

www.earth.google.com

A really different way of checking out this amazing planet we live on! You’ll have to download some software (free) and it works better with a high speed internet connection but the end result will give you one powerful and fascinating tool. Check out the Columbia Basin from 200 miles above the earth; zoom in to see the Creston Valley, or ‘fly up’ the Rocky Mountain Trench.

(continued from page 1)

Fish & Wildlife Projects “Reel In” Economic Benefits Too

It’s the same story on the Arrow Lakes Reservoir (ALR) where the rainbow fishery is valued at \$1 million (2001).

“Our family has been here for four generations and I can honestly say that in our time here we have never seen the fishing as good as this year,” says Gord Roberts, owner of Blue Jay’s Sport & Marine in Nakusp.

Those are just a few examples of how important the rainbow fishery is to the local economy. Now factor in some other numbers and you start to see a clear picture of why fish and wildlife matter to the region.

“Many tourists come to the East Kootenay to experience the natural beauty and to see the wildlife that makes this area so unique,” says Greg Deck, Chair of the Regional District of East Kootenay. “That’s why efforts to protect wildlife in the East Kootenay are important both environmentally and economically.”

The tourism industry in the Kootenay Rockies region is valued at \$850 million annually and province-wide tourism is one of B.C.’s largest industries. Nature-based tourism is defined by Tourism British Columbia as a tourism experience that is dependent on the natural environment and requires a land or water base. It is a growing sector of the tourism market and includes activities such as bird watching, fishing, hunting, wildlife watching and photography. This definition does not include skiing or golfing.

Nature-based tourism put \$908 million into the provincial economy in 2001. Ten percent of all nature-based tourism businesses in B.C. operate in the Kootenay Rockies region.

While the Compensation Program is definitely not in the tourism business it is involved in recovery efforts for several species at risk and has helped conserve thousands of hectares of critical habitat in the East and West Kootenay. The Compensation Program is also involved in a number of projects to restore vulnerable and sensitive ecosystems.

“By protecting habitats and restoring ecosystems we are helping to conserve vulnerable species that live in the Columbia Basin,” says Program Manager Maureen DeHaan. “If our work contributes to the local economy and supports the tourism sector then it’s a real win-win situation for everyone.”

Sources: Arrow Lakes Reservoir Creel Survey 2000 - 2002; Kootenay Rockies tourism; Kootenay Lake Rainbow Trout Survey Questionnaire Results 2001 - 2002; and Tourism BC.

WWWant to know more about tourism in the region? Visit www.tourismbc.com



Fish like this 21 pound Gerrard rainbow trout are becoming common place and are one of the reasons why tourists come to this region.

Ziggy Ziegler

Ten Years Of Work And We're Making A Difference! Thanks!

Where does the time go? It's hard to believe that it's already been 10 years! Time really does fly when you are busy funding and delivering projects and working with many of you to make a real difference to our local fish and wildlife populations.

It seems like just yesterday that the Columbia Basin Fish & Wildlife Compensation Program was "hatched" out of a number of smaller regional efforts to compensate for fish and wildlife losses resulting from BC Hydro dam construction in the region. The fact that we have been involved in hundreds of projects and can clearly see the positive impact tells me that we have been around long enough to effect real biological change.

Just look at the Fertilization Program in Kootenay Lake and the Arrow Lakes Reservoir, the number of species recovery plans we are involved in, or the thousands of hectares we have been able to acquire for wildlife management purposes. I feel proud of all the things we have achieved and the good relationships we have built and maintained over the years.

Strong results can only be achieved through strong partnerships. Two that have stood behind us from the beginning are BC Hydro and the BC Ministry of Environment. Last year we were pleased to welcome Fisheries and Oceans Canada as our third Program Partner and I look forward to delivering projects with these three key partners in the future.

There are countless other partners (too many to list here but please see our special pull-out anniversary section). Our thanks to each of you. By being involved in a project, or simply by supporting the Compensation Program, you have enabled us to do our job for the last 10 years.

While our partners are certainly vital, I have to take a moment to acknowledge the staff - the experts - I work with. There aren't a lot but each one - from fish and wildlife biologists, to GIS technicians, to administrators - is deeply committed to their work and to achieving our mandate. I want to thank current and retired staff for their commitment. The same goes for all of our committee members over the years that have helped shape the program into what it is today. These volunteers have contributed greatly to our success.

We have come a long way but there is still more to do, lots more to do in fact. We will continue to work on projects that make a difference for our local fish and wildlife populations and we will continue to work with a great group of people from across the Columbia Basin for the next decade and beyond.

Now that I've talked about where we've come from, it's appropriate to mention where we are going. The Ecological

Footprint Impact Study is a multi-year mapping and analyses project scheduled for completion in 2007. This is a large undertaking critical to fully understanding the impacts of BC Hydro dams on local fish and wildlife populations.

This project will increase our understanding of the habitats, ecosystems and species populations, both pre- and post-dam construction.

When complete it will help determine our conservation and enhancement priorities for the future. We'll keep you posted on the study's progress.

There's another aspect to our work in addition to the wealth of environmental benefits we deliver - economic benefits. Tourism. Recreation. Hunters. Anglers. Just ask a marina owner or fishing guide on Kootenay Lake or the Arrow Lakes Reservoir and they'll tell you that fishing is better now than it has been in decades - and that's good for their business. While we don't set out to bolster economic development it's a benefit that occurs as a result of our work. The environment and the economy really do go hand-in-hand through the work of the Compensation Program.

We are also committed to public and worker safety; we want to ensure that the work we do does not put the public or our staff at risk. That's why we are committed to "best practices" and ensure our policies and training reflects that commitment.

I look forward to reporting continued positive results in the next ten years. If you have questions or concerns about any of our fish and wildlife projects in the mean-time, just ask.



Program Manager Maureen DeHaan



Studying Dam Impacts **Ecological Review Underway**

In 2004 CBFWCP began a ground-breaking project to assess the footprint impacts of BC Hydro dams on local fish and wildlife. The Ecological Footprint Impact Study is a multi-year project looking at ecosystems and fish and wildlife populations before dams were built and comparing those findings against what exists today.

“Understanding the impact of BC Hydro dam construction on fish and wildlife populations is critical to our work,” says Program Manager Maureen DeHaan. “When complete this assessment will help determine our conservation and enhancement priorities in the future.”

Many of the impacts resulting from dam construction were not immediately or fully understood when the dams were built and, in some cases, it took years for impacts to become evident. Identifying and quantifying those

impacts is at the core of this project which is focused on major dams in the Columbia Basin including the Hugh Keenleyside, Kinbasket, Revelstoke, Mica, Seven-Mile and Duncan.

Compiling data for the project, particularly the pre-dam information, is a real team approach involving Program staff, the Ministry of Environment

and local mapping experts. The team had to locate old aerial photographs (circa 1940) from the Air Photo Library at UBC to piece together an image of

When complete this assessment will help determine our conservation and enhancement priorities in the future.

what the study areas looked like before the dams were built.

“This is a very large and important undertaking,” says DeHaan. “The techniques and strategies we’re developing for this assessment can be used elsewhere in similar projects so we’re really at the forefront of this type of analysis.”

The Ecological Footprint Impact Study is scheduled for completion in fiscal 2006 - 07.

Program **UPDATE** Newsletter

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We Would Appreciate Your Feedback

Let us know if you have questions or comments on the newsletter, or the Compensation Program.

Wildlife Tree Facts:

At least 90 species of wildlife in B.C. are dependent on ‘wildlife trees’ – dead, dying, diseased or insect-infected trees - for nesting, roosting, foraging, perching and communication.

Riparian cottonwood stands (along the shoreline and stream banks) provide crucial nesting habitat for the Western screech-owl, the blue-listed Lewis’ woodpecker, and many other species.

Cottonwoods play an important role in maintaining aquatic ecosystems by shading waterways and providing cover when they fall into the water, both critical factors for fish.

Tree roots and fallen trees help to stabilize stream banks, preventing erosion and siltation of streambeds.

Cottonwoods are routinely felled because they may pose a safety concern as mature trees begin to decay and shed their branches.

Wherever possible, these valuable wildlife trees should be retained.



Managing the Water

The Compensation Program funds fish and wildlife projects aimed at addressing impacts from the construction of BC Hydro dams in the Columbia Basin. BC Hydro provides annual funding to the Compensation Program. As a result of that relationship, the Compensation Program often gets questions about operational impacts, like water level management, which is outside of our mandate.

BC Hydro manages the three Treaty reservoirs in Canada (Arrow, Kinbasket and Duncan) based on the principles set out in the 1964 Columbia River Treaty between this country and the United States. The agreement covered the construction of four dams, three of which (Hugh Keenleyside, Mica and Duncan) are in Canada. The key areas of the agreement relating to the operation of these three Treaty dams include:

Flood control - managing water flows and levels to prevent periodic flooding in both countries; and

Energy production - storage and release of water to enable both countries to generate additional, and more valuable, hydroelectric energy. The province is entitled to half of the resulting additional generating capability in the U.S.

BC Hydro has some limited flexibility, within Treaty constraints, to exchange water between Canadian Treaty reservoirs. BC Hydro uses this flexibility to optimize the overall value of the hydroelectric system, considering both power and non-power values.

In addition, from time to time, BC Hydro signs supplemental Treaty agreements with the U.S. to alter overall Treaty storage levels and discharges. These agreements must be mutually beneficial to both countries, and are typically made primarily for the purpose of protecting fish or for improving recreation and other “non-power” values on both sides of the border. Since these agreements must be mutually beneficial, BC Hydro does not have unilateral control over the water levels in, or the discharges from, Treaty reservoirs.

BC Hydro is committed to working with stakeholders across the region to understand and address issues resulting from reservoir levels and river flows. BC Hydro meets with community leaders and stakeholders on a regular basis in an effort to understand and appreciate the impact of its facilities in the region.

For more information on water levels:

BC Hydro’s toll-free number 1-877-924-2444 has water level information for the Columbia Basin area, accessible anywhere in North America. This information is updated Monday to Friday, except holidays.

Water Survey of Canada at
<http://scitech.pyr.ec.gc.ca/waterweb/fullgraph.asp>

For BC Hydro detailed reservoir information:
www.bchydro.com/info/reshydromet/data/bir.txt

For Kootenay Lake levels call FortisBC at 250-368-0544

PEOPLE BEHIND THE PROGRAM

Get to Know Your First Nations Representatives

Name: Joe Nicholas

Role with CBFWCP: As a First Nations Representative on the Steering Committee Joe represents the Ktunaxa-Nation Council (KNC), formerly the Ktunaxa Kinbasket Tribal Council.

Lives: Joe lives in a cabin on 25 acres of Akisqnuq First Nation land on Windermere Lake.

Last Seen: Flying over Coy’s Golf Course near Fairmont with biologists who were locating badgers transplanted to the East Kootenay as part of the recovery efforts for this species funded by the CBFWCP.

In a nutshell: Up until 2000 Joe had been Chief of the KNC for 20 years. This avid outdoorsman now has more time to volunteer with the Akisqnuq Rediscovery Camp that runs out of Whiteswan Lake Provincial Park. The camp offers First Nations youth a chance to discover their heritage and face personal issues in a supportive and positive environment.

In my words:

“Human settlement is encroaching on habitat and wild spaces in the East Kootenay and I wonder where the wildlife will go. Our Band has lots of land - it’s one of the last wild areas - and I want to work with the Compensation Program to explore options to keep this, and other land wild.”



CBFWCP Staff Share Their Work With The World

You wouldn't think that wolverines, bats and kokanee have much in common, but think again. They're the reason why staff working on Columbia Basin Fish & Wildlife Compensation Program (CBFWCP) projects have packed their bags, and hopped on a plane (or two). In the last year alone limnologist Eva Schindler, senior wildlife biologist John Krebs, and student biologists Aaron Reid and Thomas Hill have joined colleagues from around the world and shared results from their fish and wildlife projects.

"There's no doubt that the work we are doing is increasing the knowledge base about specific species," says John Krebs. "The work we do is changing the way people think and when you have that kind of knowledge and expertise on staff other researchers in the field want to hear what you have to say."

Think about the Fertilization Program in the Arrow Lakes Reservoir and Kootenay Lake. This experimental approach to restoring kokanee stocks and, ultimately an ecosystem impacted by dam construction, is widely regarded as one of the largest lake restoration projects in the world. Attending an international limnology conference in Finland gave the CBFWCP and the Ministry of Environment (who jointly deliver the program) a chance to share their findings with 1,400 delegates from more than 80 countries.

"When you are doing lake restoration work on this scale and see fish stocks return to near historic levels, other people want to know what you are doing and they want to learn from you," says Eva, the limnologist who oversees the Fertilization Program.

It's much the same thing for John and the work he and others have done on wolverine den habitat and use, and feeding patterns in B.C. While the research was done here in the Columbia Basin, the results may apply elsewhere.

"The work we are doing on wolverines can help conservation efforts in Europe, particularly in Scandinavia where wolverine conservation has become a political issue due to conflicts between wolverines, reindeer and sheep herders in northern Sweden, Norway and Finland," says John, who together with his co-authors, presented study results at the First International Symposium on Wolverine Research and Management in Sweden.

The symposium attracted 160 delegates from a dozen countries and was another opportunity for Compensation Program staff to share their knowledge with experts from well beyond the Columbia Basin.

When it comes to bats, at least Townsend's big-eared bats, the work being done by Compensation Program student biologists Aaron Reid and Thomas Hill is turning traditional thinking upside down. Their work, funded by the Compensation Program and FortisBC, has confirmed that this blue-listed species (meaning it's vulnerable) uses naturally-occurring rock features for maternity colonies in B.C., challenging the assumption that caves at this latitude are too cool to be a suitable location.

"Our findings will change the assumptions about how Townsend's big-eared bats roost and that will change how other biologists approach their work," says Reid referring to the fact that until now most research was focused on

warmer, man-made structures like buildings.

"These findings will influence conservation efforts now that there is new information about where these bats roost."

It's this kind of "new thinking" that put these two young biologists on the agenda at the 36th Annual North America Symposium on Bat Research in California. Thomas and Aaron joined other bat experts from across the continent at the symposium which took place in October 2005.

These are just the latest "bragging rights" for the CBFWCP. In addition to presenting research findings and increasing the knowledge base among peers and colleagues, research findings are often published in professional journals and other peer-reviewed publications.

"The Compensation Program staff are delivering fish and wildlife projects aimed at addressing construction impacts of BC Hydro dams here in our backyard but their knowledge, expertise and project results are of interest to biologists and others around the world," says Program Manager Maureen DeHaan. "We are fortunate to have such high-calibre experts working with us."

It's a two way street of course. These professional gatherings are also an extremely valuable tool for the CBFWCP biologists to gather information and learn from their peers around the world.

WWWant to know more?

Learn more about kokanee salmon, wolverines, Townsend's big-eared bats and other species in the Columbia Basin. Check out our reports on-line at

www.cbfishwildlife.org

"There's no doubt that the work we are doing is increasing the knowledge base about specific species."

—John Krebs, Biologist

“White Goo” What Are You?

The CBFWCP received a query about whether a “pasty white algae” or “white goo” found in some areas of Kootenay Lake is linked to the Fertilization Program. There was a concern that the nutrients being added to the water through the Fertilization Program were causing an ‘excess of bio-activity’ and resulting in this growth. For anyone else wondering the same thing, the short answer is – no.

Eva Schindler, limnologist (freshwater lake specialist) and co-ordinator of the Fertilization Program set the record straight about the so-called “white goo.”

“It is a species of algae called *Didymosphenia geminata* which was first identified in B.C. in 1989. Its growth is not linked to the Fertilization Program work as it is found in various locations in B.C. even where no nutrients are added,” says Eva.

According to the Ministry of Environment, a number of river systems in B.C., including the Columbia and Kootenay rivers, have been found to contain this algae in significant quantities. Its existence is not considered an indicator of poor water quality. It is thought to proliferate due to increased exposure to ultraviolet radiation. Warm winters, reduced ice coverage and reduced flows may also contribute to the growth of the algae. Despite all these factors its growth is unpredictable and it does not necessarily occur in the same area from one year to the next. It seems to thrive in clear, warm, shallow and nutrient-poor water.

But why does it look like “white goo”? *Didymosphenia geminata* are not free-floating plankton but instead grow attached to rocks on a stream or lake bed. They are attached via a gelatinous stalk that forms mats when growing in high densities - the stalk contains no chlorophyll giving the mat a colour that ranges from pale yellow-brown to white, thus the “white goo” effect. As lake-levels drop the drying mats remain on the rocks and can be mistaken for toilet paper.

We monitor extensively to ensure water quality levels are not compromised.

Could the Fertilization Program cause over production of undesirable algae? “Yes, it could,” says Eva. “But we monitor extensively to ensure that this does not happen and that water quality levels are not compromised.”

The aim of the Program is to restore nutrient levels and fish populations rather than enhance them. As a result the amount of nutrients added to the lake is comparable to those entering the north arm of Kootenay Lake before the Duncan Dam was constructed. The Fertilization Program is supporting the food chain. In 2004 over one million spawning kokanee returned to Meadow Creek, and 500,000 spawned in the artificial spawning channel there.

Want to know more?

To learn about the Fertilization Program visit www.cbfishwildlife.org

For more information on *Didymosphenia geminata* check out www.gov.bc.ca/wat/wq/didy_bcstrms.html

So You Think You Know It All?

1 When placing a radio transmitter on a small animal, the general rule of thumb is that the weight of the transmitter cannot exceed:

- a) 5% of the host’s weight
- b) 10% of the host’s weight
- c) 20% of the host’s weight

2 What animal or fish:

- can jump into the air three or four times its body length?
- has a highly developed sense of smell that is much better than that of humans and, possibly, many animals?
- has no external ears yet has excellent hearing and can detect sound frequencies well outside the human hearing range?

3 When does the tail of a tadpole or froglet drop off?

4 Think you’re “dam” smart do you?

If so, name the country where this one was painted for aesthetic reasons.



See page 8 for answers

www.cbfishwildlife.org

Wanted: Public Representatives. Is that you?

If you've got an interest in fish and wildlife conservation and the ability to listen to others, maybe it's time to think about joining our Steering Committee? This small and dynamic committee is an integral part of the Compensation Program. It influences decisions and makes recommendations that shape the Compensation Program's overall direction. The committee is looking for two new faces to act as Public Representatives.

"We're looking for people who live in the Columbia Basin and have the time, interest, knowledge and the willingness to work with us to help conserve and enhance fish and wildlife impacted by BC Hydro dams constructed in the Columbia Basin," says CBFWCP Co-chair Wayne Stetski.

As one of three public representatives on this committee, you'll bring issues, concerns and ideas to the table and help raise awareness of, and support for, the Compensation

Program through your network of contacts. You will need to bring a regional perspective to the table rather than being focused on a single issue or area. We don't expect you to be a professional biologist, but hopefully your experience with fish and wildlife has rounded out your understanding of some of the issues and you can bring that knowledge to three meetings a year (in Nelson and Cranbrook), plus the occasional conference call. Don't worry, the Compensation Program covers the expenses.

So what do you think? Are you the next public representative? Maybe you know someone who might fit the bill? For more information or to request a nomination package, please contact Communications Coordinator, Angus Glass at 250-352-6874 or by email at angus.glass@bchydro.bc.ca. For complete details check out the Public Representatives link on our homepage at www.cbfishwildlife.org

Answers to So You Think You Know It All...

- 1 A - five %. Anything heavier and you run the risk of interfering with the animal's free movement.
- 2 The remarkable rainbow trout.
- 3 OK, trick question, the tail never actually drops off. It is reabsorbed back into the body. After about six to nine weeks, tadpoles start to absorb their tails and grow legs. Sometimes the legs grow first and then the tail is reabsorbed.
- 4 Sweden. Does it work for you?



Hill/Reid

The five gram transmitter will fall off this Townsend's big-eared bat within a few days.

FISH PROJECT UPDATES

KOOTENAY LAKE AND ARROW LAKES RESERVOIR FERTILIZATION AND MONITORING PROGRAM

PROJECT BIOLOGIST: Eva Schindler

CREEL SURVEY BIOLOGIST: Steve Arndt

CONTRACT BIOLOGIST: Don Miller

CONTRACTORS: Allison Alder, Deb Imeson, Heather Mackey, Glen Olson, Dr. Frances Pick, Dr. John Stockner, Grant Thorp, George Veale, Dr. Lidija Vidmanic

PARTNERS: Ministry of Environment, Columbia Power Corporation, Kootenai Tribe of Idaho

BACKGROUND

In 1992, just before the CBFWCP was formed, a team comprised of BC Hydro and the Ministry of Environment began fertilizing Kootenay Lake with an agricultural grade fertilizer. This new experimental approach was an attempt to address rapidly declining kokanee stocks. In 1999 a similar fertilization program was started on the Arrow Lakes Reservoir (ALR).

In both cases, biologists were attempting to restore lake productivity that had been impacted by upstream dams that were trapping nutrients. The fertilizer is dispersed off a barge on Kootenay Lake and from the Galena Bay ferry on the ALR. This approach to strengthening the food web and ultimately the species that rely on it has proven effective. The 2004 results showed the largest returns of kokanee spawners in a decade.

KEY OBJECTIVES

The Fertilization Program is an ongoing experiment and while the results to date have been encouraging, biologists monitor the program closely and adjust it accordingly.

In 2005, distribution changes were made in order to determine if the fertilizer could be used more efficiently than in past years.

UPDATE

From 1992 to 2004, fertilizer was distributed via a barge along a 10 kilometre route at the northern end of Kootenay Lake. In 2005, the run was extended by 5 kms, for a total of 15 kms. On the Arrow Lakes Reservoir, fertilizer has been distributed from the Galena Bay ferry since 1999. New for 2005, a portion of the fertilizer was dispensed weekly over a 15 km distance of the reservoir (on a north-south run) from the Shelter Bay ferry for 11 weeks from the end of June to the beginning of September. The CBFWCP paid for the additional, private ferry runs of the Shelter Bay ferry. Preliminary results indicate that these changes in distribution are resulting in a more suitable phytoplankton composition in Kootenay Lake and the ALR. However, there are other pieces to this puzzle that need to be analyzed. More detailed results will be reported in an upcoming issue.

(Fish Project Updates continued to page 10)

FISH PROJECT UPDATES – *continued*

SPROULE CREEK HABITAT RESTORATION RESULTS MORE FISH IN THE CREEK!

PROJECT BIOLOGIST: Steve Arndt

VOLUNTEER TECHNICIAN: Stu Pedersen

PARTNERS: Nelson District Rod and Gun Club, Ministry of Transportation (MoT), Columbia Power Corporation, Traditional Bowhunters, Patagonia Outdoor Experience and others

DURATION: Assessment of previously completed project

BACKGROUND

Construction of dams flooded many kilometres of stream habitat in the Kootenays, so the CBFWCP looks for opportunities to enhance or restore the remaining stream habitats. Sproule Creek near Nelson offered an opportunity for improving habitat due to past impacts of highway construction that had degraded habitats.

Sproule Creek flows into the West Arm of Kootenay Lake west of Nelson via a culvert that passes under Highway 3A. Portions of the creek have been straightened and channelized over the years as a result of highway construction. These adjustments to the natural creek flow have impacted spawning and rearing habitat for the rainbow trout that have been confirmed in the creek during spawning season. The creek provides habitat for both creek residents and migratory rainbow trout from the West Arm of Kootenay Lake, as well as longnose dace.

KEY OBJECTIVES

In 2001 the CBFWCP, together with the Nelson District Rod and Gun Club, MoT and other partners began a project to restore access to the creek for rainbow trout spawners from the West Arm by improving passage through the Highway 3A culvert, and improve habitat conditions for trout spawning and rearing in the straightened section of the creek upstream of the culvert.

In spring of 2001, a series of rock weirs were constructed below the highway culvert to raise the stream level making it easier for rainbow trout to enter the culvert and pass through to the creek for spawning.

In fall 2001, rock structures were installed in the channelized section of the creek to diversify the habitat to provide spawning and rearing areas for more juvenile rainbow trout. In 2002, the rock structures were adjusted and more boulders were added in an effort to create more deep-water habitat suitable for trout.

UPDATE

Monitoring of the number of fish staying in the creek, and the number moving out to the West Arm, has been ongoing since the habitat restoration work was completed and the news is very good. Densities of rainbow trout rearing in the creek are way up. In fact, biologists estimate that the number of fish in the restored area is now six to 10 times higher than before the work was done.

Numbers of juvenile trout emigrating to the West Arm have also increased dramatically. Catches were zero in the early years (1999-2002), but in 2003 the catch was 177. In 2004 biologists counted up to 1,000 juveniles emigrating from the creek, and in 2005, more than 2,000 juveniles moved out. That means more rainbow trout are making their way into Kootenay Lake and potentially contributing to the lake fishery.

Juvenile emigration monitoring was done using a live trap and then extrapolating the number of trap catches by the ratio of total creek flow/sampled flow to estimate the total emigrants.



Volunteer efforts to restore the fish habitat in Sproule Creek, near Nelson, have paid off.

WILDLIFE PROJECT UPDATES

ECOSYSTEM RESTORATION – EAST KOOTENAY WORK AT GINA LAKE PROCEEDING

PROJECT BIOLOGISTS: John Krebs, Larry Ingham

CONTRACT BIOLOGISTS: Doug Adama, Dave Lewis

PARTNERS: East Kootenay Trench Restoration Committee, East Kootenay Wildlife Association, Fire Maintained Ecosystem Restoration Committee, Ministry of Agriculture and Lands, Ministry of Environment, Ministry of Forests, Rocky Mountain Elk Foundation, Rocky Mountain Trench Natural Resources Society,

DURATION: Year 1 of 3

BACKGROUND

Grasslands and open forests are among Canada's most endangered ecosystems and restoring these critical habitats is essential to protecting several species at risk, including the Sharp-tailed grouse, American badger, Lewis' woodpecker and the Rocky Mountain Bighorn sheep. Many other threatened and endangered species in B.C. also rely on these habitats.

Fire suppression over the last several decades, combined with grazing and human settlement has reduced the amount of grasslands and open forests. CBFWCP biologists estimate that at least 3,000 hectares need to be treated (i.e., restored) each year just to maintain the existing extent of available grasslands and open forests in the East Kootenay. That's why the Compensation Program is working



The 209 hectares at Gina Lake includes small wetlands.

with a range of partners to restore local ecosystems including projects at Rock's pasture (near Newgate), the Gina Lake pasture (near Premier Ridge) and on the Hofert-Hoodoos property (between Invermere and Fairmont Hot Springs). The Gina Lake site, northeast of Wasa, provides winter range for elk and deer. This site also contains several First Nations archeological features which have been considered in the development of the restoration plans.

KEY OBJECTIVES

The restoration work on 209 hectares near Gina Lake is aimed at reducing tree density on the land base. When the project is complete, this area will feature more mixed grasslands and open forests.

Monitoring plots have been established at this site in order to track changes in the understory (grasses and shrubs) and overstory (tree species) following restoration treatments.

UPDATE

Timber harvesting has been completed at Gina Lake and a sloop will be brought to the site to protect archeological features. The sloop is a large tub used to burn slash in and keep the ashes, debris and unburned wood off the ground. In 2005 - 06 as much of the slash as possible will be burned in the sloop.

Slashing will continue in 2006 - 07 and if a prescribed burn is required it would likely occur, if the conditions are favourable, in 2008.

ROCKY MOUNTAIN BIGHORN SHEEP AUGMENTATION RELOCATED SHEEP DOING WELL

PROJECT BIOLOGIST: Larry Ingham

CONTRACT BIOLOGIST: Dave Lewis

PARTNERS: Ministry of Environment, Habitat Conservation Trust Fund, Parks Canada, Shuswap Indian Band, Canal Flats Wilderness Society, Bighorn in Our Backyard Program, Golden and Invermere Rod & Gun clubs

DURATION: Year 2 of 3

BACKGROUND

Rocky Mountain Bighorn sheep are a blue-listed (vulnerable) species in B.C. You need not look any further than Premier Ridge, northeast of Wasa, in the East Kootenay for evidence of just how vulnerable they are. The local herd numbers less than 40 individuals. Trends over the last decade suggest that the population will continue to decline.

Habitat loss caused by human settlement combined with forest ingrowth resulting from years of fire suppression has reduced the eligible forage for the bighorn sheep in this area and made them more vulnerable to predators.

KEY OBJECTIVES

In order to support the threatened Premier Ridge herd, 25 Rocky Mountain Bighorn sheep were relocated in February 2005 from Radium Hot Springs to a release site in the herd's traditional territory north of Cranbrook. Twenty-two ewes, all less than five years old, and three males, were selected for relocation.

UPDATE

CBFWCP biologists have been monitoring the herd using a mix of ground telemetry and fixed-wing flights (antennae are attached to wings on the plane) to track the movements of individual collared sheep. Fifteen of the 25 relocated sheep are wearing radio collars, three of which are GPS collars attached prior to the release. Monitoring occurred every two weeks last winter but when the sheep moved into higher elevation summer range the monitoring shifted to monthly flights.

This monitoring confirmed that some of the sheep traveled as far as 35 kms from the release site and then returned to it. Others have been seen with or in close proximity to the Premier Ridge herd of resident sheep. Tracking also confirmed that the relocated sheep are using traditional summer territory and trails used by the Premier Ridge herd. Several of the collared sheep are accompanied by lambs indicating that they have settled in very well to their new environment.

Biologists deliberately relocated young ewes since they are more likely than older ewes to follow other sheep.

Regular interactions between local herds combined with the likelihood of resident males breeding with relocated females, will eventually result in stronger herds made up of resident and relocated sheep. With the exception of one predation mortality, all the sheep have survived what biologists are calling a "successful relocation."



Larry Halverson

Sheep were lured into a "clover trap" before being selected for relocation.

Biologists confirm that sheep are traveling into and using habitat that has recently been enhanced by the CBFWCP. Manual treatments such as slashing, piling and burning on 200 hectares of high-value sheep habitat over the last few years will help support the threatened population by providing more suitable habitat.

The relocated sheep need to return to the release area and stay close to the Premier Ridge herd in order to help bolster numbers of that declining herd and make this relocation a real success story.

In addition to monitoring work, biologists hope to expand the habitat enhancement activities from Wildhorse Creek, east of Fort Steele, to just north of Premier Ridge. While it's not confirmed yet, another 25 sheep may be relocated in the future.

Want to know more?

Search our on-line database for reports on Rocky Mountain Bighorn sheep

www.cbfishwildlife.org

YELLOW-BREASTED CHAT SURVEY PATIENCE PAYS OFF: NESTS LOCATED

PROJECT BIOLOGISTS: John Krebs, Juliet Craig

CONTRACT BIOLOGISTS: Marlene Machmer, Steve Ogle

PARTNERS: FortisBC

DURATION: 1 year

BACKGROUND

The once common Yellow-breasted chat is now federally listed as an endangered species, and in B.C., it's red-listed, meaning it could face extirpation (could disappear locally) if things don't change. Currently, there are less than 100 breeding pairs of chats confirmed in B.C. The dramatic decline in chat numbers is associated with the loss of an estimated 87 percent of the low-land riparian habitat on which they depend.

Chats were first discovered locally near Waneta in 2004 during an impact assessment conducted at the dam. This surprise find triggered survey work in 2005, which is the first time chats in the West Kootenay have been studied. Until now, most chat studies and conservation efforts have been focused on the Okanagan and Similkameen Valleys – the known range for this large warbler.

Locating chats can be tricky work. The females are adept at hiding and locating the well-hidden nests is hard, even if you are close to one. This is despite the bird's unique call – an odd combination of song, chip and whistle notes that make them endearing to birdwatchers.

KEY OBJECTIVES

Improving the knowledge base about this species and its habitats in southeastern B.C. is an important step towards the recovery of this distinctive bird. 2005 was the first year of field work aimed at locating breeding pairs, finding their nests and identifying critical habitat in the West Kootenay.

Field work included spring and summer surveys of riparian areas in the lower Pend d'Oreille and Columbia Valleys (south of Trail). Survey sites were re-visited several times to listen for and attract chats using taped calls. If a male chat was located, follow-up visits were conducted and the search for a nest was on.

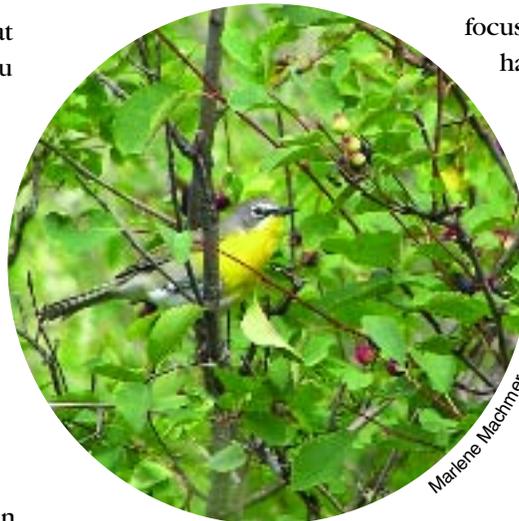
UPDATE

Patience and a keen eye paid off in 2005 when biologists located a nesting pair of chats that fledged three young near Waneta. Two other active territories were also located nearby. Field work in the Creston area turned up a breeding pair of chats that has since eluded biologists and their nest was never located. Until now, there have been unconfirmed reports of chats breeding in the Creston area. This field work is consistent with those reports and confirms that chats are nesting consistently in the West Kootenay, near Waneta.

Spotting chats is tricky work that requires patience – lots of it. In three or four hours of bird watching, you might see a male once, but you may never see the female. Locating the nest can be even more challenging. Biologists confirm that in both cases, nests were found in tall, relatively dense shrubland habitats less than 800 m from water. The nests are often secured to a tall shrub about a metre high and are well hidden from view.

These results are important because they confirm that the breeding range for this species in B.C. is larger than the Okanagan and Similkameen Valleys.

These areas have been the focus of recovery efforts, habitat protection and stewardship initiatives. Confirmation of chats in the West Kootenay will allow those efforts to expand. Now, that's something to chat about!



It's easy to see this Yellow-breasted chat, but for biologists working in the field, finding chat nests can be a long, slow and even frustrating process.

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THE PREY DYNAMICS OF WOLVES, MOOSE AND CARIBOU IN THE NORTHERN COLUMBIA MOUNTAINS

PROJECT BIOLOGIST: John Krebs

CONTRACT BIOLOGISTS: Shannon Stotyn, & Robert Serrouya

PARTNERS: Columbia Forest Science Program, Ministry of Forests, University of Alberta, Revelstoke Mountain Caribou Research Project, Yellowstone to Yukon Conservation Science Grants.

DURATION: 1 year

BACKGROUND

Mountain caribou in B.C. are red listed (endangered). Although wolf predation is not the main factor implicated in its decline in the Revelstoke area, increased moose and wolf populations have led to concerns that encounters between caribou and wolves are on the rise and predation rates may therefore increase.

Gaining a better understanding of how wolves, moose and caribou interact will help develop appropriate management strategies aimed at caribou recovery.

KEY OBJECTIVES

- Determine the spatial overlap between caribou, wolves and moose;
- Determine foraging rates of wolves; and
- Describe stand and landscape-level factors that affect the foraging patterns of wolves on moose.

UPDATE

Preliminary analysis of elevation overlap among the three species throughout the year indicates that caribou are at the lowest probability of encountering moose and wolves during late winter. The greatest degree of threat may occur during late summer with a reduced risk during spring and early winter.

Two wolf packs (one with seven animals and one with 12) were monitored to determine the kill rates over winter, both by radio telemetry and on-the-ground tracking. The territorial range of both packs was approximately between 430 km² and 1,000 km² and the total estimated number of kills for the entire winter by both packs was 28. All of these were moose except for one unidentified ungulate.

There was a moose kill, on average every five days for the larger pack and every 13 days for the smaller pack. The scavenger rate for the smaller pack was twice that of the larger pack.

Ungulates use a variety of methods to escape predation, including choice of terrain. Moose, for example, are known to use islands, or water bodies for protection from wolves. The study found that in winter, moose that ventured further from a major water source were more likely to be killed by wolves. It also found that moose were more likely to be killed at higher elevations and nearer seral (newer growth) edges. This indicates that moose that were within old growth forests or deep within clear cuts were less likely to fall prey to wolves.



Gary Pavan

Biologist Shannon Stotyn finds a moose killed by wolves.

This study is a component of the Revelstoke Mountain Caribou Research Project which integrates predator and prey work in order to better understand and inform caribou recovery efforts.

Want to know more?

For more information and results on this project go to:

www.cbfishwildlife.org and follow the links to 2005 Hot Reports.

Return Address:

CBFWCP
103 – 333 Victoria Street
Nelson, BC V1L 4K3

Canada Post 03458180



A Decade of Work

Conserving & Enhancing Fish & Wildlife



Columbia Basin

Fish & Wildlife

Compensation Program



For the last 10 years the Columbia Basin Fish & Wildlife Compensation Program (CBFWCP) has been funding and delivering “hands-on” projects

that conserve and enhance fish and wildlife impacted by the construction of BC Hydro dams in the Columbia Basin.

A Decade of Achievement

Since 1995 the CBFWCP has:

- Worked diligently since its formation to identify, fund and deliver more than 600 projects that conserve and enhance impacted fish and wildlife habitat/populations;
- Invested more than \$30 million in fish and wildlife projects in the Columbia Basin;
- Focused almost one-third of its efforts on species at risk;
- Worked with a wide range of partners, including First Nations, industrial partners, local communities and environmental groups to deliver projects;
- Funded a diverse range of projects, including the Fertilization Program in Kootenay Lake and the Arrow Lakes Reservoir. This is regarded as one of the largest successful lake restoration projects in the world and has resulted in a dramatic increase in the number of kokanee spawners, approaching historical pre-dam levels;
- Increased the number of kokanee which benefits other species such as the large Gerrard rainbow trout, bull trout, bald eagles and grizzlies;
- Improved fishing opportunities, boosting economic benefits associated with enhanced tourism and recreation;
- Funded, and is currently involved in, recovery efforts for a range of endangered species including white sturgeon, badger and Northern leopard frog;
- Been involved in the acquisition and conservation of more than 10,000 hectares of critical habitat in the East and West Kootenay;

- Helped restore ecosystems in the East and West Kootenay through prescribed burns, selective logging, slashing and other strategies so that the habitat is better able to support the diverse species that live in the area;
- Contributed significantly to the biological knowledge base in the region by funding numerous monitoring and inventory projects on a range of fish and wildlife species; and
- Made important biological discoveries that are helping conserve a range of species, including several that are at-risk.



Check out our poster celebrating the biodiversity of the Columbia Basin. Put it up now or give it to a child you know who loves the outdoors!

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What is the CBFWCP?

A Reminder:

The Columbia Basin Fish & Wildlife Compensation Program is a joint-initiative between BC Hydro, B.C. Ministry of Environment and Fisheries and Oceans Canada to conserve and enhance fish and wildlife populations affected by the construction of BC Hydro dams in Canada's portion of the Columbia Basin.

BC Hydro provides \$3.2 million annually (indexed for inflation to 1995 dollars) to the Compensation Program to fund fish and wildlife projects. In 2005, BC Hydro's funding to the CBFWCP topped \$3.9 million.

CBFWCP-funded projects are making a real difference in helping species impacted by BC Hydro dams.



Find out More!

Visit our website at www.cbfishwildlife.org

Find out more about the work we do and the many local groups and agencies we work with. Browse through our searchable data base of fish and wildlife reports and learn more about the many species that live in the Columbia Basin.

Feel free to call or email us if you have any questions.

Phone: 250-352-6874 Email: beth.woodbridge@bchydro.bc.ca

Photos: Brian Sperling & Steve Short



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Working Together



Meet Our Partners in Conservation and Enhancement



Columbia Basin
Fish & Wildlife
Compensation Program

“We have done an incredible amount of important work in terms of protecting critical habitats, species at risk and restoring ecosystems impacted by dams constructed decades ago,” say Kevin Conlin of BC Hydro, Co-Chair of the CBFWCP Steering Committee. “We couldn’t have done this work without the help of our many partners.”

Wayne Stetski of the Ministry of Environment, Co-chair of the CBFWCP Steering Committee agrees. “We want to thank and acknowledge all the people and organizations that make it possible for us to do our work. Together we are making a real difference.”

Program Partners - the provincial Ministry of Environment, BC Hydro and Fisheries and Oceans Canada provide ongoing funding and/or technical expertise critical to the Program’s success.

External Funding Partners - the Columbia Basin Trust, Columbia Power Corporation, and FortisBC provide funding for specific projects and initiatives.

Project Partners - include a range of regional fish and wildlife interest groups, community organizations and others. These groups apply for funding and work with the CBFWCP staff to deliver beneficial fish and wildlife projects across the Columbia Basin.

Thanks to our many partners for helping to make a difference!

American Museum of Natural History
Appropriate Forestry
Arrow Heights Elementary School
Bat Conservation Society of Canada
BC Conservation Foundation
BC Hydro
Beaumont Timber
Bighorn in Our Backyard Program
Birchbank Golf & Country Club
Blueberry Creek Irrigation District
Bonneville Power Administration
British Columbia Conservation Foundation
Canal Flats Wilderness Club
Castlegar & District Wildlife Association
City of Castlegar
City of Cranbrook
City of Revelstoke
Columbia Basin Naturalists Groups
Columbia Basin Trust
Columbia Forest Science Program
Columbia Kootenay Fisheries Renewal Partnership
Columbia Lake Band (Akisqnuq)
Columbia Mountains Institute
Columbia Power Corporation

Columbia River Greenways Alliance
Columbia Valley Field Naturalists
Conservation Data Centre
Copperpoint Golf Course
Cows & Fish Riparian Habitat Management Program
Creston Rod & Gun Club
Creston Valley Wildlife Mgmt. Area
Deer Creek Residents
District of Invermere
Downie Timber Ltd.
Duncan-Lardeau Advisory Committee
Ducks Unlimited
East Kootenay Conservation Program
East Kootenay Hunters Association
East Kootenay Trench Restoration Committee
East Kootenay Wildlife Association
EcoAction 2000
Elkford Rod & Gun Club
Environment Canada
Farmers Institute
Fernie Rod & Gun Club
Fire Maintained Ecosystem Restoration Committee
Fisheries and Oceans Canada
Foundation for North American Sheep

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www.cbfishwildlife.org

Thanks to our many partners for helping to make a difference! – *continued*

Forest Renewal BC
FortisBC
Freshwater Fisheries Society of BC
Friends of Creston Valley Wildlife Mgmt. Area
Friends of Mt. Revelstoke
Golden & District Rod & Gun Club
Grazing Enhancement Fund
Habitat Conservation Trust Fund
Human Resources Development Canada
Illecillewaet Greenbelt Society
Institute of Ocean Sciences
Invermere Rod & Gun Club
Invermere Veterinary Hospital
Jefersonii Badger Recovery Team
J.L. Crowe High School
Kalesnikoff Lumber
Kimberley Golf Course
Kimberly Wildlife & Wilderness Club
Kootenai Tribe of Idaho
Kootenay Livestock Association
Ktunaxa-Nation Council
Local Anglers
Local Community Groups
Local Houndsman
Local Ranchers
Lower Kootenay Band
Mica Volunteer Fire Department
Ministry of Agriculture & Lands
Ministry of Environment
Ministry of Forests
Ministry of Transportation
Montana Dept Fish, Wildlife & Parks
Nakusp Conservation Association
Nelson District Rod & Gun Club
Nelson Naturalists
New Denver Friends for Wildlife
North Arm Wildlife Club
Osprey Golf Club
Patagonia / Snowpack Outdoor Experience
Parks Canada
Peter Kiewit Sons Ltd.
Pope & Talbot
Private Landowners
Range Enhancement Fund
Regional District of Central Kootenay
Regional District of East Kootenay Weed Program
Revelstoke Advisory Committee
Revelstoke Community Forest Corporation
Revelstoke Fly Fishers Society
Revelstoke Mountain Caribou Project
Revelstoke Municipal Government
Revelstoke Rod & Gun Club
Revelstoke Rotary Club
Revelstoke Snowmobile Club
Revelstoke Trappers' Association
RL&L Environmental Services
Robson Valley Landowners
Rocky Mountain Elk Foundation
Rocky Mountain Natural Resources Society
Rocky Mountain Naturalists
Royal BC Museum
Salmo Watershed Streamkeepers Society
Science Council of BC
Selkirk College
Shuswap Indian Band
Slocan Forests Products
Slocan Valley Equal Access to Public Resources Society
South Kootenay Recovery Action Group
Southern BC Guides and Outfitters
Sparwood Fish & Wildlife Association
Sproulers Enterprises
St. Mary's Band
Teck Cominco
Tembec Industries
The Nature Trust of BC
Timberland Consultants
Tobacco Plains Indian Band
Traditional Bow Hunters of BC
Trail Wildlife Association
University of Alberta
University of British Columbia
University of Calgary
University of Victoria
Upper Columbia White Sturgeon Recovery Initiative
US Fish & Wildlife Service
Valemount Advisory Committee
Village of Radium Hot Springs
Village of Valemount
Wapati Flyfishers
Washington Dept. of Fish & Wildlife
Washington State University
Water Survey of Canada
West Arm Outdoors Club
West Kootenay Fly Fishers
Wild Sheep Society of BC
Wildsight
Windermere & District Rod & Gun Club
World Wildlife Fund
Yellowstone to Yukon Conservation Science Grants
York University
Zehnder Family Farm



Columbia Basin

Fish & Wildlife
Compensation Program

Helping fish, wildlife and the ecosystems they rely on

The CBFWCP is delivering projects to conserve & enhance
fish & wildlife affected by BC Hydro dams.

Racer Snake

These are the only egg-laying snakes in the Kootenays and they can grow to more than a metre long.
photo-Jakob Dulisse

Badger

Relocating badgers to the East Kootenay has proven successful.
photo-Tim McAllister

Ecosystems

Two-thirds of all vertebrates (animals with backbones) in B.C. live right here in the Columbia Basin. Nearly one half of all the vertebrates across the country live here too. That makes this part of B.C. very special.

Rocky Mountain Bighorn Sheep

These ungulates can often be seen in valley bottoms in the winter but they head up the mountains in summer.
photo-Steve Short

Kokanee

This is the only salmon that lives its entire life in fresh water.
photo- Brian Sperling

Fire!

Controlled burns are an excellent way to restore the landscape and bring back grasslands, open forests and the species that depend on them.

Wetlands

A real special place for lots of fish and wildlife including the Great Blue Heron. The Columbia River Wetlands are the headwaters for the Columbia River, the fourth largest river (by volume) in North America.
photo-Steve Short

Western Painted Turtle

Western Painted Turtles are the only freshwater turtle native to B.C. and are a species at risk.
photo-Steve Short

Northern Leopard Frog

The only remaining breeding population of Northern Leopard frogs in B.C. is found in the Creston Valley.
photo-Doug Adama

Grasslands

One quarter of the threatened and endangered species in B.C. need grasslands for their survival.
photo-Larry Halverson

Upper Columbia White Sturgeon

This juvenile could live up to 100 years. This fish is the largest freshwater fish in North America – it can grow longer than a car.
photo-Lorri Fehr

Western screech-owl

This endangered owl has recently been found in the West Kootenay.
photo-Jakob Dulisse



BC Hydro



www.cbfishwildlife.org

Grab your binoculars, get outside and see what's there