FISH & WILDLIFE COMPENSATION PROGRAM
COLUMBIA BASIN

Update

Fall/Winter 2008 Number 19

Conservation Property "Blitzed" By Biologists

Sometimes you just have to see things for yourself. At least, that's how it was for FWCP biologists and staff when they headed to the East Kootenay as part of a week-long "biodiversity blitz."

"We needed to increase our understanding of the Hofert-Hoodoos Conservation Property so we spent five days on the land doing a systematic inventory of key species and ecosystems," said FWCP senior wildlife biologist John Krebs.

The 4,037 hectare Hofert-Hoodoos Conservation Property is situated between Fairmont Hot Springs and Invermere in the Rocky Mountain Trench. The south edge of the property includes the distinctive "hoodoos" formations. This Columbia River Basin ecosystem contains numerous species-at-risk and provides vital winter range, migration corridors and staging grounds for a variety of animals. There are at least 16 known species-at-risk on the property including amphibians, reptiles, birds, mammals, and fish.

Amy Waterhouse

Thomas Hill

The Nature Trust purchased the land in 2003 with funding from the FWCP and others. Since then the FWCP has been involved in the development of a Land Management Plan for the conservation property and, says Krebs, "Improving our knowledge and under-

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Intact Ecosystems To Point the Way

FWCP biologists are learning that finding even small 'naturally intact' chunks of low elevation, open forest habitat in the West Kootenay is difficult. The hunt, however, is on, and when biologists do find them, the rewards are significant. Biologists are able to study the sheer complexity and diversity of plant species they contain. Most importantly, their discoveries play a critical role in shaping future FWCP restoration work, especially since low elevation open forest habitat is a primary target for such work in the West Kootenay.

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Hofert "Bio-Blitz"

standing of the biodiversity on this conservation property will help us plan upcoming restoration and conservation work."

The team, which included Rob Neil, East Kootenay conservation manager of The Nature Trust, spent the week surveying the property in a grid-like fashion, recording and documenting sightings and evidence of species.

"The exciting aspect of this inventory blitz is that we have found new, active badger dens so now we can co-ordinate our management activities to ensure that we always have badgers on the property," says Neil. "In my opinion, it really pays dividends to spend time on the ground, literally."

Besides badgers, the team was also looking for evidence of Lewis' woodpeckers, various grassland birds, flammulated owls, amphibians (including the Pacific chorus frog, western toad, spotted frog and the long toed salamander), reptiles (including the painted turtle, rubber boa, northern alligator lizard, western skink and common garter snake), badgers, fish (including bull trout), bats, invasive weeds, and rare plants.

Lynne Betts

James Baxter

Lynne Betts

The information collected about the biodiversity on the 4,000+ hectare property, from native plants like the wood lily to the blue-listed (vulnerable) bull trout, will be used to plan the long-term management and restoration of this diverse landscape.

Senior FWCP fisheries biologist James Baxter says, "This field work gave us a chance to do baseline sampling in some of the wetlands on the property." Bull trout, sculpins, northern pikeminnow, and non-native fish species were identified.

Dusky and ruffed grouse were sighted along with cavity nests of mountain bluebirds and red-naped sapsuckers. Several active nests for other species of birds were also recorded, and young fledged birds were evident on several wetlands confirming breeding in the area. Common nighthawk surveys were conducted and the results confirm this property is good habitat for this threatened species.

"We also conducted nocturnal bird surveys and uncovered some unusual species," says Krebs. "Common poorwills were observed at night on Hawke Road and while this is not considered a species-at-risk it is unusual and not well known in the East Kootenay."

"This season's inventory work is part of the Land Management Plan aimed at restoring grassland and open forest habitat which is critical to a wide range of species in the Rocky Mountain Trench," says B.C. Ministry of the Environment's Wayne Stetski, co-chair of the FWCP Steering Committee.

"In order to return the land to its natural ecological state we need to continue to develop and implement restoration plans at an ecosystem and stand level scale."

Since 2005 – 06, the FWCP helped pilot two treatments – hand slashing and using a feller buncher – to help return dense forested stands on the property to open forest and grasslands. The Hofert-Hoodoos Property is also the site of an innovative FWCP project using native heart-rot fungus to create wildlife trees faster than Mother Nature can do on her own. Wildlife trees support more than 80 different species including Lewis' woodpeckers and flammulated owls.

"Working to conserve and enhance fish and wildlife impacted by the construction of the BC Hydro dams is the FWCP mandate and the work we do on this conservation property is critical to restoring important and threatened habitats in the Columbia Basin," says Stetski.

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Intact Ecosystems To Point the Way

Simply put, intact ecosystems are those ecosystems that are the same, or at the very least, very similar, today as they were pre-1880s, before European settlers arrived. Of course the majority of human impacts have occurred in the last fifty years. Low-elevation areas have been disproportionately impacted by human development compared with other land (e.g. alpine or sub alpine) in the region. Open forest habitat is also more susceptible to human impacts because it is generally drier due to aspect, slope and soil texture. Typically these impacts have come from road, rail, natural gas and power line corridors, as well as from forestry, agriculture, reservoir creation, and fire suppression resulting in forest ingrowth.

The biologists are looking for these intact ecosystems larger than 20 ha. - or about 45 football fields - in size. These areas can then be used as "reference ecosystems" allowing biologists to plan future restoration work with this reference knowledge in mind.

"Finding such low-elevation ecosystems has been a tough challenge even with the help of computer modelling," says FWCP wildlife technician, Thomas Hill. "Human-led impacts are more extensive than many people might think and even the more remote and hidden areas are sometimes impacted. As soon as there is even a hint of human interference the diversity of the plant species is compromised, usually because of the introduction of non-native plant species."

So far, six intact ecosystem sights have been studied by local botanical specialist Evan McKenzie, and the preliminary results indicate a wealth of plant species in these areas. "One site had nearly one hundred species of forbs - herbaceous flowering plants - and grasses," added Hill.
"This is a significant number that includes numerous red and blue listed species, and highlights the ecological importance of undisturbed areas."

While more work needs to be done, the findings so far will help biologists to determine the desired future condition of the ecosystem, that is, the goal of any restoration work. This doesn't necessarily mean that the goal will be to return an area to its exact state prior to human interference. For example, it might not be possible to eradicate certain invasive weeds. This approach, however, provides some real guidance on the most effective restoration activities.

Thomas Hill

An intact ecosystem above the Goat River near Kitchener and the blue-listed Scutellaria angustifolia, one of many listed species that has been documented during the project.

The FWCP has always operated from a position of making decisions about habitat restoration based on sound science. This "reference ecosystem" work is a big step towards helping biologists do just that.

"Basically we are making sure that when we undertake habitat restoration projects in the future, we know exactly what we want to be shooting for," says Garth Mowat, chair of the FWCP Wildlife Technical Committee. "We have a long term plan for ecosystem restoration projects, so these findings will help us determine potential restoration sites, define our restoration goals, and help us evaluate our efforts at the end of it."

Update **Newsletter**

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Exceptional Efforts of Volunteer Lauded

Forty Years & Full Circle

Over the years FWCP has worked with hundreds of volunteers to implement successful fish and wildlife projects. Thanks go to all; without them the region's flora and fauna would otherwise be in a poorer state. Recently the FWCP offered a special nod of thanks to Rick Fillmore of the Trail Wildlife Association (TWA). Rick has worked tirelessly over four decades to conserve and enhance habitat in the south-west corner of the Compensation Program's area. He received the FWCP's Exceptional Volunteer Award.

Regarding the award, Rick was quick to divert the thanks, and spouted off a list of names of people who should get the "real" thanks. There is, however, no getting away from the fact that he has been a mainstay in the TWA's fight to conserve and enhance wildlife habitat.

"Volunteer burnout" obviously does not apply to Rick as he has sat on the TWA's Executive Committee for forty years, six of which as president. During that time there have been two major projects in TWA's sights: establishing a compensation program for the Pend d'Oreille Valley after the construction of Seven Mile Dam (which ultimately became a pre-curser to the FWCP for the Columbia Basin in 1995), and conserving the Fort Shepherd property near Trail.

Angus Glass

When not busy conserving and enhancing wildlife habitat, Rick lives in the Beaver Valley near Fruitvale raising quarter horses.

This year marks the 40th anniversary of the start of the Fort Shepherd project, and, yes, Rick was in the thick of it then too.

"Nineteen sixty-eight was a terrible winter that severely hit the deer population in the Fort Shepherd area," says Rick. "Our group took immediate action as soon as the snow left by implementing controlled burns, as well as doing slashing, thinning and other habitat restoration work. We started in 1969 and continued the labours for many years. My neck is still sore from carrying those fertilizer bags!"

Enhancing the habitat was the immediate goal, but the TWA wanted to make sure the land would be retained for Mother Nature. In November 2008 this finally became reality when the almost 1,000 ha. property was purchased, with the help of FWCP funding, and the Fort Shepherd Conservation Area became a reality. While the purchase announcement was made in 2007, Rick was central to raising the last remnants of the necessary capital, including $4,500 coming directly from the TWA.

This, and many other successful smaller wildlife projects the TWA has spearheaded, speaks volumes for the tenacity and resourcefulness of the TWA and of Rick himself. It does not, however, speak to the hundreds of hours he has spent in meetings, the days spent poring over reports and maps concerning access management (another priority of Rick's), or indeed facing some vocal opposition for taking a stance to help wildlife.

One thing is for sure: his efforts have made a huge and positive impact on wildlife in the region, and his activities should be an inspiration to us all. The Basin could do with more wildlife champions like Rick Fillmore.

The Stinger of All Stingers?

First a disclaimer - this article is not about a FWCP project per se. However, since a large chunk of the FWCP's work is about supporting biodiversity, from large ungulates to the small critters that end up on your windshield, we are happy to pass on interesting wildlife observations when we see them. This is one.

Found on the road directly outside the FWCP Nelson office, this not-so little insect (measuring 4.5cm head to tail) is a wood wasp or "horntail" and is the largest of the sawfly family. It doesn't look like your average wasp as there is no constricted "waist" behind the wings but it does display what looks like the stinger of all stingers; except you could pick up this creature and it would do you no harm.

The long spear-like spine – much more pronounced on the female (pictured) – is her oviposter, using it to drill holes in tree bark and, through which, she lays her eggs in the soft wood beneath, one egg at a time. Not surprisingly, the sawfly gets its name from this appendage and is likely the only type of insect with a saw at the rear end.

While seldom seen, there are several species of wood wasps in North America. All of the native varieties, such as this one, Urocerus gigas flavicornis, target only dead or dying trees for egg-laying, so there is no harm caused to the tree by their activities.

Angus Glass

This wasp should not be confused with its non-native, and more destructive, counterpart, the European wood wasp. The two wasps look nearly identical in shape and size, except the European wood wasp has a metallic blue body (without the orange bands) and dark antennae. After accidentally being introduced to Australia (1951), the European variety showed it could decimate pine plantations by targeting healthy trees for egg-laying. The female carries a fungus which accompanies the eggs into the tree, and this fungus can kill its host in a matter of weeks.

Basin residents are very unlikely to see the European wood wasp since Canadian sightings of it are restricted – so far - to southern Ontario. So, that leaves us free to fully appreciate our native wood wasp. Even though it looks like it shouldn't be messed with, its size, beauty and perhaps most importantly, its innocuousness mean we should view it in a favourable light.

Remember send us any cool bug photos you may have to info@fwcp.ca; if we publish them we'll send you an FWCP cap!

So You Think You Know It All?

Answers on page 14

1. **What is the connection between *Birds singing* and *syringes*?**
2. **Some snakes, such as racers, are occasionally known to *oviposit communally*. What does this mean?**
3. **This picture (right) was taken during the "Hofert bio-blitz." It used to be called a blue grouse, but what's its new name?**
4. **Explain what's in this photo (below) and how it was taken.**
5. **Q: Match the correct collective nouns (group name) to the animal**

1. Bears	A. Bed
2. Bobolinks	B. Rookery
3. Albatrosses	C. Cast
4. Cockroaches	D. Shoal
5. Clams	E. Sloth or sleuth
6. Bass	F. Intrusion
7. Crabs	G. Chain
8. Trout	H. Hover


BC Hydro


Rob Neil

Land Management – Or People Management?

"We checked the vehicle identification number on the burnt-out car but it has not been reported as stolen. The registered owner's from the coast so I guess he was in the area and decided to dump and torch it."

This was the response the FWCP received from an RCMP officer after the blackened metal shell sitting on the Pend d'Oreille conservation property east of Trail was reported to police. It was one of three discarded vehicles on the property that the FWCP paid to be towed away during summer 2008.

And that's just the tip of the iceberg when it comes to human-related impacts on conservation areas managed by the FWCP. Garbage dumping, cutting down wildlife trees, driving of off-road vehicles, mudbogging, and the spreading of invasive weeds; all of these activities can seriously hinder the FWCP as it goes about its work of habitat conservation or enhancement.

Thomas Hill

One of three vehicles the FWCP "inherited" on one conservation property.

"In the Pend d'Oreille it was a very long season for mushroom picking following the large wildfire there in 2007," noted FWCP contract wildlife biologist Ross Clarke. "The pickers set up semi-permanent camps and often when you get people camping for extended periods the garbage tends to follow. We had to bring in our three-person invasive weed control crew just to clean up the garbage from one of the camping sites."

Garbage is also brought into the area by people not wanting to pay the transfer site fees. "This year a chest freezer full of rotting meat was left on one of the properties," added Clarke.

The East Kootenay faces the very same issues. The cutting down of wildlife trees is especially prevalent as is the use of off-road vehicles on conservation properties," says FWCP Steering Committee co-chair Wayne Stetski. "We just ask people to respect these lands, and we want to remind people that there are significant fines for anyone caught chopping down trees on conservation properties."

The increase in use of off road vehicles is certainly accelerating the spread of invasive weeds. Their impact is two-fold: the vehicles can collect vegetation and spread seeds and cuttings from one area to another; and secondly, when they are driven off established trails, they remove the ground cover, exposing the mineral soils beneath making it easier for the weeds to gain a root-hold in the tracks.

Dumping of garbage, cutting wildlife trees and driving off-road vehicles on conservation properties all hurt efforts to restore and protect sensitive habitat. If members of the public observe such actions then please report them to the conservation hotline at the B.C. Ministry of Environment at 1-877-952 RAPP (7277) or #RAPP (7277) on the Telus mobility network.

New Partnership, New Opportunities

A new partnership in the West Kootenay, led by the Ministry of Forests (MOF), should enable the FWCP to work on larger restoration projects on crown land. The Arrow-Boundary Ecosystem Restoration Committee was struck in June 2008 with the goal of bringing a more coordinated approach to ecosystem restoration. The Committee should also be able to leverage funding for restoration work from various partners.

"We have to understand that there are a multitude of impacts on fish and wildlife, not just from hydro-electric construction," says FWCP senior wildlife biologist John Krebs. "Forestry, mining, transportation, agriculture and residential development have all played their part. It only makes sense that we pool our resources, experience and money so that we can all more effectively and efficiently restore the land that we have access to."

The heavy weights around the Committee table, in addition to MOF, include the B.C. Ministry of Environment, First Nations, Columbia Basin Trust, BC Cattleman's Association, BC Wildlife Federation and forest licensees including Interfor and Kalesnikoff Lumber.

The type of land that the Committee will focus on will primarily be "NDT4" (Natural Disturbance Type 4). This is land that, prior to the arrival of European settlers, typically experienced low intensity fires every four to 50 years. These fires occurred with such frequency, and at such a low intensity that they did not kill the larger, more mature trees, but removed the smaller saplings and cleared out the understory that promotes shrub growth. The natural fires also reduced the build-up of fuel so when the fires did strike they were less intense. Decades of successful fire suppression have resulted in a reduction of this open-forest habitat so the Committee's work will be extremely valuable with respect to restoring quality ungulate forage, and cavity-nesting bird habitat, to the region.

Among the members around the table there is definitely more than a hint of "can do" attitude. There are already a number of operational sub-committees, tasked with proposing projects. It will be the role of the Committee to prioritize those projects so that meaningful action can be taken. With this joint decision-making process, there is more likelihood of "buy-in" from the outset, and less likelihood of "road blocks" in the future.

One of the first projects the Committee has in its sights will be to undertake some restoration work on crown land adjacent to the Deer Creek conservation area, just north of Castlegar.

Kokanee Egg-to-fry Survival – Best Ever!

When it comes to managing spawning channels it is not only the absolute number of spawning fish that is important but also the egg-to-fry survival rate and, ultimately, the number of alevins emerging from the gravel. Against this measuring stick, Hill Creek Spawning Channel, located near Galena Bay north of Nakusp, posted some very impressive numbers this year. The channel, which is jointly operated by the FWCP and the B.C. Ministry of Environment (MOE), recorded an astounding 69.4 per cent egg-to-fry-survival rate, the best on record.

Such an egg-to-fry survival rate means that for every 100 eggs laid in the gravel of the spawning channel in the fall, nearly 70 fry (young kokanee) will swim out of the channel in the spring to Arrow Lakes Reservoir.

"High egg-to-fry survival shows that channel flow controls and annual gravel cleaning have been very well done," says FWCP Steering Committee co-chair Wayne Stetski of the MOE.

"In real terms, this means that about seven million fry emerged from Hill Creek Spawning Channel in 2008 and are growing and maturing in the Arrow Lakes Reservoir."

In 2006, 36 per cent of the eggs in Hill Creek Spawning Channel survived to the fry stage, and in 2007, the survival rate was 51.5 per cent. By comparison, typically less than 15 per cent of the eggs deposited by spawning kokanee in natural streams survive.

Depending on the year, Hill Creek Spawning Channel accounts for about half of all kokanee fry production in the whole Arrow Lakes Reservoir.

A high egg-to-fry survival rate was also recorded at Meadow Creek Spawning Channel at the north end of Kootenay Lake, also operated by the FWCP and MOE. The 2008 survival rate was 53.8 per cent, well above the ten year average of 47 per cent.

Leslie Leitch

There is nothing like learning in the great outdoors and 46 Grade 6/7 students, including Clinton Surina from Nakusp Elementary School, proved the point when they descended on Hill Creek Spawning Channel in the fall of 2008. With the help of Brian Barney who looks after the day-to-day operations of the channel and FWCP fisheries biologist, Steve Arndt, they learned about the kokanee lifecycle, how they make nests in the gravel and all the body parts.

Gerrard Rainbow Trout Run – Late But Great!

The FWCP, together with the B.C. Ministry of Environment (MOE), hosted an Open House on April 30, 2008, to raise awareness about the Gerrard rainbow trout and the Nutrient Restoration Program. Members of the public were invited to view the return of the fish to the main spawning site in the Lardeau River, at the outlet of Trout Lake.

The extremely late and cold spring provided environmental conditions (low water and cold temperatures) that delayed the return of the Gerrards, rainbow trout, so there were limited numbers of fish present by the planned Open House date. The spawning escapement records over the last 15 years indicated that an average of 268 fish could be expected to be present on the spawning grounds on Open House day (April 30), with a low of 71 recorded back in 1997. Although over 150 hardy souls braved the cold weather to attend the Open House, not everyone witnessed the scant half-dozen trout seemingly shiver (and not from the act of spawning) over the gravel for a few minutes and then turn tail and swim downstream.

As if to add an exclamation point, large numbers of spawning trout eventually returned in near record numbers once the displays had been packed away. Five hundred and seventeen Gerrards were observed on May 13th at the spawning grounds, the second highest daily peak count since 1961.

By comparison, in 2007 the peak number of Gerrards counted at the same location was 464 and in 2006 it was 438. Since 1991 the average peak daily count has been about 310 fish, so this year's peak count of 517 is well above the recent trend.

The Gerrard, the largest species of rainbow trout on earth, are counted daily during spawning season, weather permitting, by a guardian funded by the Habitat Conservation Trust Foundation.

There was a time when the peak count of spawning Gerrard rainbow trout was down to about 44 fish. However, careful management of the fishery by the MOE and the addition of nutrients to Kootenay Lake, coordinated by the MOE and the FWCP, has helped restore this population of unique trout, which live most of their lives in Kootenay Lake.

To view an under-water video clip of Gerrards spawning, visit www.fwcp.ca.

The Plot Thickens

In mid-summer 2007 a fierce wildfire swept though the Pend d'Oreille Valley, fuelled by strong southerly winds and high temperatures. It consumed pretty much anything and everything in its path. That path included portions of three Ministry of Environment conservation properties and two more owned by BC Hydro.

The FWCP often focuses on implementing lower-intensity prescribed burns and invasive weed control as part of its land management work. So, this natural wildfire is providing biologists with an excellent opportunity to better understand post-fire regeneration.

To learn as much as possible they established 22 photo plots in various locations and habitats throughout the scarred landscape in September 2007. Photo plots involve taking photographs from exactly the same position and angle at regular intervals over a period of time. The initial plan for this project is to record images every year for the next five years, then return at five-year intervals. The changes recorded by the digital images will be augmented by biologists who will visit each photo plot site to record plant diversity and wildlife observations.

By July 2008 the vegetation had already rebounded vigorously at nearly all of the photo plot sites. This indicates that while the 2007 fire was hot and intense, and killed many trees in its path, it did not sterilize the deeper mineral soils, but only removed the upper "duff" layer and in doing so released nutrients that were tied up in this layer.

"The vigorous growth shows how resilient the seed bank is; those are the seeds present in the soil when the fire occurred," says FWCP senior wildlife biologist, John Krebs. "The diversity of plants that have grown since the fire reminds us how important fires are to the ecosystem."

Well over one hundred flowering herbaceous plants and grasses have been recorded at the various photo plots since the fire, including many red- and blue-listed species. The same vigorous growth has, however, been exhibited by non-native plant species as well.

"In certain habitats where invasive plants had become established, typically in drier and more coarser-textured soil, they have come back stronger than ever," added Krebs. "This has particularly been the case where the soil has been more disturbed in the past, perhaps from cattle grazing, forestry or recreational activities. Invasive weeds such as St John's wort, sulphur cinquefoil, spotted knapweed, and cheatgrass are all prevalent at many of the open grassland photo plot sites."

By contrast where the soils have been less disturbed, such as in the pure stands of Douglas-fir, only the native vegetation has sprung back.

In more open forest habitat (above) native species such as balsamroot, silky lupine and spreading dogbane have thrived after the fire whereas in shrub and grass dominated areas (below), where the soil is more disturbed, the invasive weeds such as St John's wort (yellow flowers) and cheat grass have rebounded vigorously.

Thomas Hill

These results are very useful to the biologists. Over the long term they will be able to record and study the growth of the varied plant communities, including invasive weeds, which will help them refine future habitat restoration work.

In the short term the results will also provide guidance on how best to tackle the invasive weed problem in the Pend d'Oreille. For example, maybe it's better to leave areas that are already heavily infested with invasive weeds and concentrate resources instead on habitat that remains minimally degraded.

Either way, as the years unfold, it will be fascinating to see what continues to grow in front of the lens.

Supporting Largest Private Land Purchase for Conservation in Canadian History

It's big. Very big indeed. The "Darkwoods" property, just south of Nelson, contains 17 watersheds and covers 550 square kilometres that is roughly equal to 140 Stanley Parks. It's also very special. Its diverse habitat is home to nine nationally threatened species, including a herd of 46 mountain caribou, and 29 provincially at-risk species. It serves as a rich collection of rare old-growth forests, sub-alpine meadows, productive creeks, valley bottoms, and lakefront lands.

It is for these reasons that the Fish and Wildlife Compensation Program has contributed a quarter of a million dollars to the Nature Conservancy of Canada (NCC) to purchase the property. It is the largest single private conservation project ever undertaken in Canada.

"We are extremely happy to be a part of this project given its ecological importance," says FWCP Steering Committee co-chair Kevin Conlin. "Land acquisition is just one of many tools that we are using to ensure that biodiversity is maintained in the Basin for future generations."

It is not just the sheer size of the property that will help biodiversity in the region, but also its location. The northern boundary abuts West Arm Provincial Park while the south-eastern corner is connected to the Creston Valley Wildlife Management Area. So now a huge area is protected that is large enough for wide-ranging animals such as caribou and grizzly bear.

—map courtesy of Nature Conservancy of Canada

The property gets its name from the Pluto Darkwoods Corporation that has owned and operated the land since 1967. The previous owners managed a small-scale sustainable harvesting program that has helped preserve the land's natural integrity. This low- impact approach, involving many of the same foresters, will continue for the foreseeable future under the new ownership.

The total project cost is $125 million, which covers the purchase price and the endowment funds needed to ensure the land's sustainable management. The bulk of these funds are coming from NCC and the Federal government through the Natural Areas Conservation Program. The FWCP is not only contributing purchase funding, it will also work closely with the NCC to develop a Land Management Plan for the property.

For more information on Darkwoods, visit www.natureconservancy.ca.

Installing Bird Boxes Presents Big Challenges

The previous Update Newsletter brought you the story of volunteer public representative, Gerry Thompson, who toiled in his workshop during the winter to build 27 bird boxes of mammoth proportions – each over 3.6 meters in length. Ironically enough, these were built to house a relatively small bird – the Vaux's swift.

Building the "chimney" boxes was one challenge. Installing them turned out to be another. Each box weighed over 45kg (100 lbs) and the top of the box has to be attached to a tree trunk, about 12 metres above the ground.

The solution answer lay with an arborist, some extra muscle power, an intricate pulley system, and lots of rope. Thompson describes the system: "The arborist, Caleb Patterson, scaled the tree and fixed one pulley about 15 metres above the ground. With another two pulleys attached to the base of another tree trunk there was sufficient mechanical advantage for two people to raise the boxes. Caleb could then properly secure the box to the tree using eight inch bolts."

Boxes have been installed in the Creston Valley at the old Summit campground, the Duncan-Lardeau Flats area, Smallwood Creek near Beasley, and Merry Creek near Castlegar. One of the boxes can easily be seen just off the Merry Creek trail. About six boxes were installed in each area.

The bird boxes were all attached on the northern side of the trees so that they would not become over-heated in summer. Cedars were typically used as host trees due to their size and longevity.

It is hoped that the chimneys will provide a single nest site for a breeding pair, or a migratory roost for dozens of swifts. Historically these nesting and roosting sites were hollow tree trunks in old-growth forests, but changes in forestry practices, the creation of the reservoirs, and a multitude of other human impacts have resulted in fewer suitable sites.

"Even though the bird is small enough to fit into the palm of your hand, the box is large because research has shown that actual nests in hollow tree trunks are typically more than two metres below the cavity opening," says wildlife biologist Irene Manley. "Also the box opening is large – about the same size that a pileated woodpecker needs – because the swifts actually fly in without perching on the rim. They are amazing flyers and do everything on the wing including breaking small twigs off trees to make their nests."

In future years a small video camera will be inserted into some of the boxes to see if they are being used by the swifts or any other wildlife.

Bryce McKinnon

Flashback: during last winter Gerry Thompson made 27 of these massive bird boxes for Vaux's swifts (above). The tree climbing skills of arborist Caleb Patterson was a big part of the solution to the problem of installing these massive structures.

Creston Volunteers Turn Out In Force

They say that many hands make light work. Well many hands were available, courtesy of the Creston Valley Rod & Gun Club, for some stream restoration work at Boulder Creek during the summer, but the work was anything but "light." The work, funded by the FWCP, was to place in the stream, mostly by hand, more than three cubic metres of gravel to provide quality spawning habitat for kokanee.

It was part of a larger plan to "bring back" kokanee to the South Arm of Kootenay Lake that the B.C. Ministry of Environment (MOE), with the support of a variety of partners, has been working towards for several years.

Kokanee are not completely absent from the South Arm of Kootenay Lake. Each year a smattering of kokanee fight the rapids to lay eggs in several of its tributaries but, biologists suspect that with the construction of the Libby Dam in the U.S., nutrients have been trapped upstream. The lack of nutrients has resulted in fewer zooplankton in the South Arm of Kootenay Lake. These plankton are a primary food source for kokanee, and therefore South Arm kokanee numbers have plummeted since the mid 1970s. In addition to the dams trapping nutrients, the creation of reservoirs has removed available spawning habitat for kokanee.

Each year since 2005 the MOE, with the help of the Freshwater Fisheries Society of BC, has been placing kokanee "eyed-eggs" (this year more than 300,000), in redds in Boulder Creek.

Angus Glass

Creston Valley Rod and Gun Club members joined forces with FWCP and MOE staff to make a tough job a little easier at Boulder Creek.

Fall 2008 marks the earliest year that any of the kokanee could be expected to return to spawn but, not surprisingly, very few did so as the bulk of them are expected to return in their fourth year, fall 2009.

Angus Glass

FWCP Public Representative Gerry Thompson was part of team to hand-place the gravel.

"This work is one component of a larger approach in helping the South Arm kokanee," says FWCP's chair of the Fish Technical Committee, Jeff Burrows. "Improving the spawning habitat is being complemented with nutrient additions in the South Arm because, once the fry leave the creeks, they need to get food straight away."

Nutrients have been added to the South Arm since 2004 by the Kootenai Tribe of Idaho through funding by the Bonneville Power Administration and the Northwest Power & Conservation Council's Columbia Basin Fish & Wildlife Program. This is to compensate for the nutrients trapped upstream by the Libby Dam.

"So far we have selected four systems for the placement of eyed-eggs and spawning gravel," added Burrows. "They are Boulder, Crawford, and Summit creeks, and the Goat River, and depending on the size of the system, each could support 3,000 to 100,000 kokanee spawners. We are all hoping that these combined efforts will succeed and, if so, we will extend the work to other South Arm watersheds in the future."

FWCP public representative, Gerry Thompson from Wynndel, was one of the volunteers hauling gravel. "Certainly it was tough work in the thirty-degree heat, so it was great to see so many willing volunteers from the local rod and gun club. We are all optimistic that our efforts will make a real difference and it certainly fits in with the FWCP's mandate to conserve and enhance fish populations. It will be very interesting to see how many kokanee return next year."

For a short video clip of biologists placing "eyed-eggs" in Boulder Creek, visit www.fwcp.ca

Is Low Oxygen Affecting The Gerrards?

Reddish Stains Raise Reddish Flags

As fish go, Gerrard rainbow trout are pretty special – they are the largest rainbow trout in the world. The spawning beds at the outlet of Trout Lake in the Lardeau River are also pretty special - this 500m stretch of river forms the world's primary site for Gerrard reproduction. So, we pay pretty close attention to what happens there. Recent research has found that transportation-related work completed nearly 50 years ago could be having negative impacts on the fish eggs.

Wind back the clock a couple of years: fisheries researchers, Joe Thorley and Jason Bowers, completed a project, funded by the Habitat Conservation Trust Foundation, on changes in water depth and velocity over the spawning gravels. They found that, over a period of about 40 years, water depths over the main spawning gravels had nearly doubled during low flows and, correspondingly, water velocity just above the gravels had dropped by more than half.

Why has water depth increased? The change lies with Mobbs Creek, which runs into the Lardeau River below Trout Lake. It was once the great benefactor of the Gerrards, annually dumping its valuable gravel load in an alluvial fan in the river creating the sought-after spawning habitat. Then in the 1960s, the creek was channelized (straightened) for road and railway development, and the deposition of the gravel changed significantly – into a much smaller and more concentrated area. This change likely contributed to the Lardeau's rising water levels and the slower velocity. In fact, during Mobbs Creek floods, a flow reversal can even occur in the Lardeau River.

Fast forward one year and Thorley was digging up more information, this time with support from the Freshwater Fisheries Society of BC. Placing perforated metal canisters containing fertilized eggs in different parts of the spawning beds, he tried to establish egg-to-fry survival rates. Although interpretation of the results was complicated by the fact that the eggs were planted into the gravels a month prior than Gerrard rainbow trout typically spawn, the survival rates were far higher (up to 80 per cent) in the upstream gravel compared to zero in the gravel closer to Mobbs Creek. What's more, a reddish stain appeared on the plastic caps of the downstream canisters, suggesting high iron content often associated with groundwater that can sometimes have very low levels of oxygen, which could be killing some of the eggs in the gravels. Other studies have shown that reductions in water velocity will result in less exchange of water with the gravelbed which, again, could reduce oxygen levels.

And now to the present, with Thorley teaming up with FWCP fisheries biologist Steve Arndt, supported by FWCP Small Project funding. The team measured the actual oxygen levels in the gravel in various locations.

"This year we found that in the deeper gravel areas [between 30cm and 40cm in depth] closest to Mobbs Creek there were critically low levels of oxygen compared to similar gravels upstream," says Thorley. "Almost certainly too low to support egg development."

The biologists are not ringing alarm bells – yet. Gerrards probably bury their eggs in shallower gravel (between 20 and 30cms) where oxygen levels are adequate. This will likely be explored in future work but, armed with the valuable information already gleaned, the biologists are much further ahead in determining the limiting factors for Gerrard reproduction than they were three years ago.

The final report is expected in early 2009 and will be posted on the FWCP website at www.fwcp.ca.

Joe Thorley

The middle and right canisters were taken from gravels with low oxygen, with the middle one half-stained as it had been sitting at the interface between the anoxic (i.e. without oxygen) groundwater and oxygenated surface water.

Public Involvement Pays Off

For the first time this year, the FWCP posted a number of easy-to-complete, online forms for the public to use to report species-at-risk sightings in the Columbia Basin. And the response has not just been appreciated it has also been valuable to the data collection process.

Reports were requested on a number of species-at-risk, including common nighthawks, western skinks, great blue herons, badgers, and western screech-owls.

FWCP Steering Committee co-chair, Kevin Conlin, explains, "All of the conservation and enhancement projects we implement need to be based on a solid understanding of how the wildlife is doing. Using the eyes and the ears of the public to help provide that information is not only very effective and cost efficient but also involves interested citizens in active conservation efforts."

The FWCP received reports on all the species covered by the online forms with the fewest for the western screech-owl. This was perhaps not surprising given their extremely low numbers in the Columbia Basin. One western screech-owl sighting still provided valuable information as it led FWCP biologists to explore some previously-unknown owl habitat in the Salmo area.

The sightings of great blue heron nests also unearthed new information. "Three new small rookeries that were not part of our previous data set, were recently confirmed," said contract biologist Marlene Machmer. "They were all in the East Kootenay, near Fernie, Brisco, and north of Parsons."

Machmer went on to explain the fortuitous timing of these reports. "Our heron work is just coming into its final phase and we will be connecting with people living near known rookeries and asking them to keep a watchful eye, and perhaps to informally track whether sites are occupied and successful, next year. Information on these three new sites came in just in time."

The juvenile western skink has a bright blue tail that aids easy identification of the lizard. "Although we did not get skink sightings outside of the known distribution range, we received many useful reports that will help us in the long run," said contract biologist Jakob Dulisse. "One point to note is that several sightings were reported after the household cat had caught the skink. It serves as a reminder as to how many small animals and birds are taken by domestic cats each year."

Common nighthawk sightings, many of which were in the East Kootenay, were the most prevalent of all sightings. Sightings ranged from seeing individual birds, often sitting on the ground or a fence, to seeing scores of them circling in the sky at dusk as they feed on insects.

The FWCP plans to continue encouraging public completion of the online forms in 2009. All of the data collected will support the mapping out of distribution ranges and the planning of stewardship activities in the future.

Glenn Hildebrant

Of all the sightings, the common nighthawks were, well, the most common.

FWCP cap winners:

The following names were drawn from a hat – to win a hat! Congratulations to all!

Sightings:

Western skinks:	Reg Kodrin, Slocan Valley
Western screech-owls:	Julie Atkinson, Salmo
Great blue heron nests:	Phil Paine, Brisco
Badgers:	Walter Gray, Blairmore, Alberta
Common nighthawks:	Glenn Hildebrant, Invermere

Reader Response Cards:

Dobby Bissel, Fauquier

New Subscriber:

Robert Vliet, Salmo

Send Us Your Photos

Thanks to Mandy Bath for the kokanee image, snapped during the Meadow Creek Spawning Channel Open House; Justin Arndt, who spotted the mountain caribou at the top of the Salmo-Creston Pass, and finally Larry Belzac who witnessed this Merlin feasting on a cedar waxwing in Cranbrook.

If you have a great photo of local fish or wildlife in the Columbia Basin, send it to us. If we publish your photo, you'll get some FWCP swag. Send your images to info@fwcp.ca.

Keep in mind that printable photos require a "high quality" setting on your digital camera.

So You Think You Know It All?

Answers from page 5

1. Birds sing by using their syrinx, the vocal chord of the bird. The plural of *syrinx* is *syringes*.
2. Lay their eggs together with other snakes of the same species, and occasionally with other snake species, within the same nest.
3. Dusky grouse. A couple of years ago the species formerly known as blue grouse, was split into two species: dusky grouse and sooty grouse. The dusky is found in the interior while the sooty is more coastal.
4. It's a motion sensor camera next to Kootenay Canal to collect information on moose movements. Here an inquisitive great blue heron has broken the beam to capture a close-up self portrait.
5. 1E; 2G; 3B; 4F; 5A; 6D; 7C; 8H