StreamTalk

The newsletter for stewards of salmonids and their habitat • Volume 15 • Number 1 • Spring 2008

West Vancouver Streamkeepers

Simple solutions aid spawners – with help from passers-by

by John Barker

Salmon used to populate most of our West Vancouver streams. However, the introduction of culverts in the lower reaches of some streams has made them impassable to salmon. Until recently, no salmon had been observed in Lawson Creek for about 45 years.

Lawson Creek enters the ocean at the foot of 18th Street. Three years ago the District of West Vancouver started building baffles in the concrete box culvert that runs from beside the Legion at Duchess Avenue and 18th Street to the ocean. Baffles break the flow and create calm sections where salmon can rest. Many of these baffles have been funded by private donations.

The full program will include baffles up to the Legion, and a fish ladder that will allow salmon to reach spawning habitat above Duchess Avenue.

In another attempt to improve access, the West Vancouver Shoreline Preservation Society and the municipality have changed the estuary of Lawson Creek. Instead of tumbling straight into the ocean the stream now curves east and then gradually southwest. Salmon can now access the stream in most tidal stages, whereas previously they could do so only during the highest tides. The new estuary also provides protection from predators and a holding area.

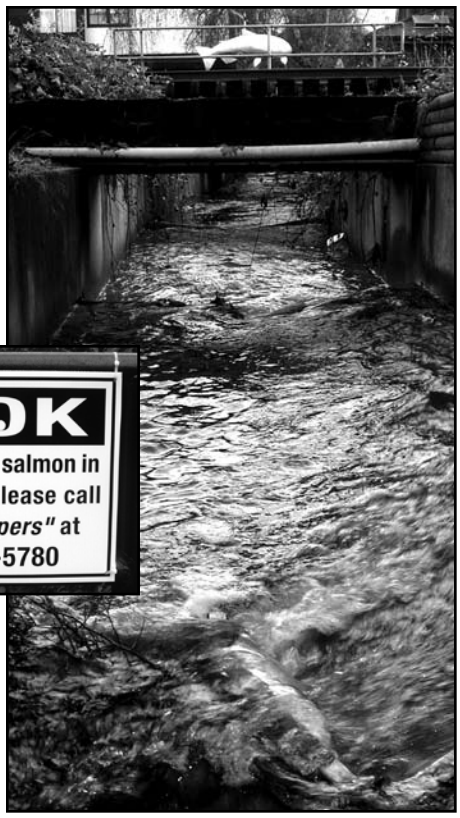
These projects were a good start. However, when in 2006 four salmon did start up the stream, they got stranded inside the culvert and died without spawning.

This year a rescue plan was devised with DFO and the municipality. The plan is simple: trained Streamkeepers net a fish, place it in a water-filled tote and truck it to one of three locations on upper Lawson Creek where there is good spawning habitat. The key is to spot the arrival of fish and get help to them in time.

Talk about great timing!

Last fall, a West Vancouver Senior Secondary student who had, just that day, attended a Streamkeepers' presentation at his school, observed a salmon in Lawson Creek. Joseph McDaniel telephoned the Streamkeepers to report the sighting and that was the start of the rescue program for 2007.

The municipality posted a sign to inform the public of the program and ask them to notify Streamkeepers when fish were seen. As a result, four chum and 47 coho were transported to spawning areas on Lawson Creek, McDonald Creek and Rodgers Creek.



Simple concrete baffles slow the formidable rush of Lawson Creek through the culvert.

About 75 per cent of the earliest returning coho were fin-clipped and assumed to be strays from Capilano Hatchery. After the first 27 coho were moved higher in Lawson Creek, it was decided, with the approval of

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In this issue:

Galiano Naturalists keep tabs on two island beaches

by Jerry Azevedo

As spring deepens into longer days and the changing tides promise to expose the intertidal zone during daylight hours, the Galiano Naturalists once again start planning a season of shore monitoring as part of the DFO Shorekeeper program.

Established in the late 1990s, the program lets curious non-professionals contribute credible data about what's going on at a particular foreshore site. Over the years the accumulation of this data for many sites in the region can help environmental managers assess the nature and extent of changes to the marine ecosystem.

A long skinny island in the southern Strait of Georgia, Galiano has a diverse shoreline of exposed sandstone, pebble beaches, protected harbours, and the occasional sandy cove. The Galiano Naturalists picked two sites for long-term monitoring. The first is in Montague Harbour, with its popular marina on one side and a provincial park on the other. In the summer the harbour is crowded with boats and the park is full of campers. The Galiano Conservancy operates a nature house that draws over 5,000 visitors during the season. The site, on the mud beach below the nature house, is a west-side protected habitat heavily used by people.

The other site, at Cable Bay on Galiano's exposed east shore, couldn't be more different. Adjacent to the Pebble Beach Reserve, Cable Bay is in a relatively undeveloped area. A jutting shelf of rock protects a small dogleg bay. This site represents an east-side exposed habitat less affected by human activities.

One challenge of shorekeeping is that the tide just won't stay still. All the mapping and studying and identifying must be done within the tide change. At Cable Bay in 2007, the naturalists followed the receding tide out, and it chased them back in. They worked on the last few quadrats with the water rising above their ankles. The little orange marker cones were rescued from floating away, and the surveyors gathered up the remaining gear and headed for higher ground.

The beauty of the Shorekeeper program is that it provides room for everyone to participate, drawing on the various skills and interests in a group. Those interested in geography can work on laying out the baseline and sketching the maps. Those with a penchant for marine biology and classification can noodle around in the muck and identify all the plants and creatures living there.

Shorekeeper monitoring on Galiano started in 2005 with the help of Sean MacConnachie. The DFO's *Shorekeeper's Guide* provides step-by-step instruction, but when a group of shorekeepers confronts a vast expanse of gurgling mud and cobble for the first time in a year, the guide provides limited comfort. Sean returned in 2007 to refresh our collective memory.

For more information about the Galiano Naturalists, visit http://gulfnet.sd64.bc.ca/GalianoNaturalists.html.

Sign up and survey

Using the Shorekeepers protocol developed by DFO science and habitat staff, groups are trained how to set up a survey site, define the habitat, collect physical measurements, draw a sketch map, and count and identify a wide variety of species all within one tide cycle.

A Shorekeepers training course involves a three-hour class presentation, and two full days on the beach.

If your group is interested in exploring life in the intertidal, check out www.keepersweb.org. You can also contact Sean MacConnachie at macconnachies@pac.dfo-mpo.gc.ca.

West Vancouver Streamkeepers... continued from page 1

our community advisor, to move some of the new arriving salmon to other local streams nearby that had not seen any salmon this season. Later in the season more non-clipped coho arrived, and it was decided to keep these adults in Lawson Creek since they probably came from our fry release program. West Vancouver Streamkeepers releases between 200,000 and 300,000 coho and chum fry in about 15 streams each spring.

With the completion of the baffle system and fish ladder, it is expected that a rescue operation will not be necessary in future years.

Our hope is that the salmon rescued this year will mate in the upper waters of Lawson Creek and the other two streams and resume natural salmon runs that have been absent for almost 50 years.

The Great Salmon Send-off

by Nerine Anne Berting

A phenomenal success story is unfolding in Burnaby's Stoney Creek. Every spring for the last few years, children have released hatchery-raised coho into the creek at the Great Salmon Send-Off. Coho have avoided the stream for 50 years, but are now returning every fall with other salmon to lay their eggs.

The Send-Off is an annual fun-filled community event for all ages. It includes activities with an environmental theme, displays, entertainment, refreshment and – most importantly – the salmon. The highlight is the release of the young coho, which remain in the rearing habitat of Stoney Creek for about a year before going to the ocean. The event stresses the need for vigilance and eco-friendly practices, and that much work still needs to be done to preserve natural habitat and educate the public to be stewards.

Before urbanization, Stoney Creek was a thriving natural spawning ground for coho, chum, steelhead and cutthroat. Then for 50 years man-made barriers prevented the salmon from returning. The community had a strong will to see the salmon return and the Stoney Creek Environment Committee, the Sapperton Fish and Game Club, Metro Vancouver, Fisheries and Oceans Canada, the City of Burnaby, the business community and Stoney Creek Community School all worked together to bring home the salmon. When the barriers were reduced, returning salmon were able to find their way home, and the last three years have seen the miraculous return of the fish.

Volunteer Streamkeepers demonstrate the safest way to release hatchery-raised coho smolts into a creek. Tip: Take it slowly!

In the fall, watch for the salmon returning to spawn. They might well be fish released into Stoney Creek at the Great Salmon Send-Off eighteen months before. It is an incredible sight, as the mature spawners instinctively, and with great determination, splash their way upstream to spawn.

For more information about the Great Salmon Send-Off, see the Stoney Creek website: www.vcn.bc.ca/stoney/gsso.html

STOP PRESS!

This just in: Workshop 2009 will take place in Maple Ridge on the May long weekend. Start planning for a great time of learning, sharing, and re-energizing!

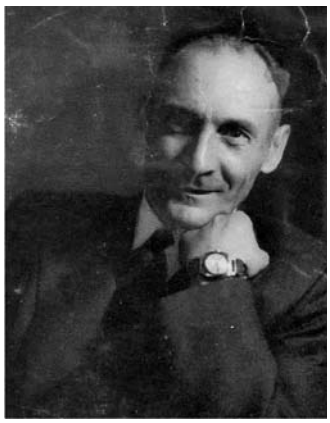
Haig-Brown centenary kicks off

The Haig-Brown Institute, the Museum at Campbell River, the Greenways Land Trust and the Stewardship Centre for BC, working with a variety of partners and supporters, are planning a program of events and activities focused on the 100th anniversary of the births of noted conservationist and author, Roderick Haig-Brown and his wife, Ann Elmore Haig-Brown.

Roderick Haig-Brown was a pioneering conservationist, writer of 25 books, a magistrate and fly-fisher whose collections of essays and broadcasts made him a strong voice of conscience not only in British Columbia but internationally. In later life, he was Chancellor of the University of Victoria and advisor to many provincial, national and international conservation organizations and initiatives that helped shape the thinking of resource managers, conservationists and naturalists in British Columbia.

Ann Elmore Haig-Brown was a conservationist, community activist, intellectual, librarian, and a strong advocate for women and social justice issues. Ann Elmore House, dedicated in her honour, provides support for women in transition in Campbell River.

The idea of the centenary is not only to recognize the Haig-Browns but also to animate and recognize the values and ideas they lived by. It is also to recognize those in current and younger generations who are living the same values and reinterpreting what it means to be a conservationist in the 21st century. The centenary year is meant to celebrate the contributions of the Haig-Browns - the writings, the knowledge, the salmon, the rivers and the stewardship of natural values.



Visit www.haigbrowninstitute.org/ to keep informed about the many exciting events planned for this year of celebration.

Streamkeepers Update

Share the load...and the fun

Grow your group

by Zo-Ann Morten

How do you let the world know that you offer volunteer opportunities, and welcome people with little or no experience?

Everyone has a first day out. Long-time volunteers now have tons of experience and can get straight to task, but there was a time when they knew that water flows downhill and not much more than that.

Many of us started out poking around a stream, exploring, picking up litter. Slowly we learned about our waterways and what lives in and around them, more about like-minded groups in the community, about meetings, consultation processes, websites, newsletters, and so on!

The more there is on the "to-do" list the less time there is to talk to others, encourage their participation and keep them from being overwhelmed. But we need them very badly, and it is worth the time it takes to show them that even the simplest task has value and is easy to learn. Chances are there are people in your group with special skills to welcome new volunteers. Ask them to get into conversation with new recruits and find out what types of activities they want to participate in. Suggest that experienced volunteers partner novices with similar interests. Eventually, they too may become leaders, their carports overflowing with shovels, cement salmon, pumps and storm drain marking kits.

It pays to advertise

Make it easy for people in your community to find you and become part of your team.

- Encourage members to use your calendar of events to recruit friends and neighbours.
- Ask members to suggest that their employer create a company-wide Volunteer Day that coincides with a big clean-up or replanting event.
- When the local paper comes to photograph your event, ask if the caption can include an invitation to the next one. *"These local Streamkeepers are clearing out alien plants from the streambank. Come out and join them on Saturday, June 10! More information at www..."*
- Have an invitation to your next event clearly on your home page. Include an "I want to volunteer!" button. Post your calendar.
- Fundraising is a chance to share your group's accomplishments with granting bodies, businesses and private individuals. Take this opportunity to invite them to join you at your next event, either as observers or as new volunteers.

Show your appreciation

Designate a member to collect contact information from everyone who shows up at an event. As soon as possible, send them a note of thanks, and share with them the achievement accomplished. If data was collected, explain how it will be used to further the group's mission. Note the achievement on your website and in your newsletter.

Let it be known to members and outsiders alike that everyone is welcome to attend your events. They will gain knowledge of their local environment and they will be proud to know that the tasks they undertake are making a difference to the watershed they call "home".

It's that time again

Annual membership to the Pacific Streamkeepers Federation is coming due, as well as your insurance policy renewals.

Membership fees are the same, at $15 per individual or group, and $150 for a lifetime or corporate membership. These dues help to keep our phone lines in place and our website on view. Download the form at www.pskf.ca/program/member.html.

Our insurance brokers, Speirs and Co. Ltd., have sent a letter to all those who currently have a Streamkeepers Volunteer Insurance Policy (VIP) regarding changes this year. They have revised the policy to reflect the vast array of activities that Streamkeeper groups are involved in.

While the majority of your activities will not affect your base rate, there is a need to review and quote on policies for those who are undertaking large-scale projects such as stream restoration or dredging. Those involved in operating a hatchery will see an increase in their premium. Please send in your request for quotation early, so that there is no disruption in your coverage.

The forms are at www.pskf.ca/program/insurance.html. Note that there is a line for members' activities and another for the public (non-members). Brooke Speirs is familiar with our modules, so for example you may write *Module 1* if you are involved in stream mapping, and so on.

Speirs and Co. Ltd. have done their best to keep the cost of policies down, while offering coverage that is appropriate for our activities. We thank them for the care and concern they show for the needs of our community.

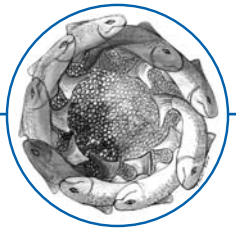
Volunteer Recognition Extravaganza

Ugly Bug Ball III

June 28, 2008

Here's an invitation for all Lower Mainland SEP and Streamkeeper volunteers to come out for a fun day with fellow volunteers. The theme this time is *"How has your group used the Arts to draw attention, share your message?"* Share your photos, paintings, poems, videos, signs, and sculptures. An afternoon of relaxing, eating and sharing the beauty of our works. We thank A Rocha for again allowing us to use their marvelous venue. Check out www.pskf.ca/ubb/

See you there!



Transformation, by L. Towell

Steelhead trout, genetic variation, and hatcheries

by Eric Taylor, Professor, Department of Zoology, UBC (Vancouver)

Humans have been propagating wild animals under artificial conditions for various uses for centuries. The use of hatcheries for salmonid fishes in Canada can play an important role to restore depressed natural populations or to supplement production for recreational and commercial fisheries.

While the use of fish hatcheries for steelhead trout has a long history in British Columbia, this practice is not without concerns. One is that the release of artificially bred steelhead into wild populations may alter or depress the levels of genetic variation within them and reduce their sustainability over time.

Genetic variation represents the total amount of inherited differences within and among individuals from a given population. Genetic variation within a population is often considered to reflect its genetic health because low levels of variation can signal dangerously low population sizes and also may compromise a population's ability to adapt to changes in the environment over time.

Hatchery practices can depress genetic variation by using only a small number of adult fish in the culture program which do not represent the full range of variation in the wild population. High survival under hatchery conditions and eventual release of large numbers of hatchery fish from small numbers of adult spawners into nature can result in an over-representation of fish of hatchery origin (with low genetic variation) spawning in the wild.

The Kitimat River hatchery on B.C.'s central coast has operated for about 20 years. In 2006, I was part of a study published in *Transactions of the American Fisheries Society* to test for any reductions in genetic diversity in steelhead trout in the river after hatchery operations began. We studied fish from archived scale samples spanning a time period of 1976-2003. We studied a type of genetic variation known as "microsatellites" which tend to be highly variable and which can be assayed non-lethally. Similar assays are used in human "DNA fingerprinting" applications because they are so variable and sensitive to individual differences.

Smithers angler Debbie Cichowski on the Kitimat River with a hatchery male steelhead trout (circa 1995). Photo: Mark Beere

For the range of samples that we examined, our analyses did not detect any significant reductions in genetic diversity in Kitimat River steelhead trout since the onset of the hatchery program. This result suggested that the hatchery program had sampled an adequate number of spawners over time to maintain "natural" levels of genetic diversity in the river's population, or has had minimal impact on the genetic characteristics of wild steelhead trout. Our study is an example of genetic monitoring that is essential for a full biological assessment of hatchery operations and their potential effects on natural populations.

Our study is an example of genetic monitoring that is essential for a full biological assessment of hatchery operations and their potential effects on natural populations.

Notwithstanding our results, some caveats must be understood. First, our results, while encouraging, pertain to only a tiny portion of the total genome (genetic makeup) of Kitimat River steelhead trout. Other features of the fish, which can also represent genetic variation, such as run-timing, growth rates, behaviour, etc., could have been affected by the hatchery program but were not measured in our study.

Second, our results pertain only to the situation in the Kitimat River. Each hatchery requires its own monitoring program to suit the individual circumstances. It would, therefore, be inadvisable to extend our results on the Kitimat River to other populations with hatchery steelhead trout. For instance, we have done further work on five south coast hatchery populations that suggests there can be major shifts in genetic characteristics of populations following hatchery operations.

Our work represents the only comprehensive genetic monitoring of hatchery operations for B.C. steelhead trout and represents an effective collaboration between universities from Canada and Norway and the B.C. government.

Dorothee Kieser retires

by Joanne Day

Dorothee Kieser has retired as head of Nanaimo's Pacific Biological Station (PBS) Fish Pathology Lab, also known as the Diagnostic Lab, after 31 years with the department.

In true Streamkeeper fashion, Dorothee examines a retirement gift with an insect-kit magnifying glass. She identified the specimen as a pair of beautiful earrings.

Dorothee has been a friend of the DFO Community Involvement Program since the beginning and is well known to volunteers throughout the province. She began her career at the UBC Cancer Research Laboratory, but when the Salmonid Enhancement Program was started in the 1970s she switched to fish health and was the third person to be hired for the Diagnostic Lab.

In the early days of the program, much needed to be learned about fish health in hatcheries. Capilano, Quinsam and Robertson Creek hatcheries were all operating in 1975, and many more were planned. Part of Dorothee's job was to conduct site visits before the facilities were even built. Tests of wild fish created a disease profile database, identifying disease agents in the watershed that might create problems for hatchery fish later on.

Dorothee made visits all over the province, often with her husband Robert, to help solve problems and work with community groups. All were memorable, particularly one on the Kitimat River during which Bryan Allen took a group of DFO staff flying uphill in a Zodiac.

As the programs grew, it became more practical for samples to be sent to PBS for examination. Dorothee promoted training on the handling of lab samples. No longer do smelly packages of dead fish arrive after slow travels through the mail.

She spent 2003 in Ottawa focusing on the National Aquatic Health Program, the goal of which is to prevent, control and/or eradicate aquatic animal diseases which may affect the health of animals and the Canadian economy.

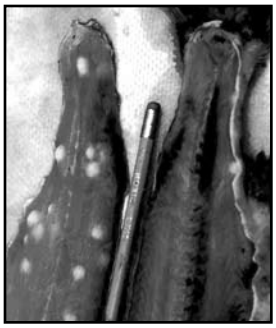
Dorothy is the proud owner of a collection of environmentally friendly coffee mugs from many years of Community Involvement Workshops, and feels that she contributes to saving the environment one cup of coffee at a time. This reflects nicely her belief that community groups are making a difference one day and one project at a time in their own neighbourhoods. If everyone does their part to save their little piece of paradise, the world will be a better place.

Congratulations to Dorothee on a well-earned retirement. The volunteer community looks forward to seeing you at Workshop 2009 and beyond!

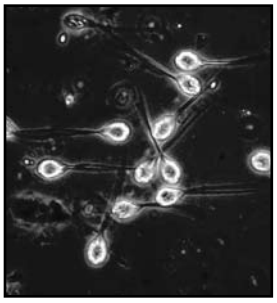
A typical day at the office...

Fielding questions from the public, as well as from fish culturists, has been part of the job for Dorothee. For example, anglers have enquired about white cysts found on salmon they have caught. Is it safe to eat?

"The parasite *Henneguya salminicola* is commonly found in the flesh of salmonids," says Dorothee. "The response of the fish is to wall off the parasitic infection into a cyst. The content of the cysts is a milky fluid which is actually a large accumulation of parasites."



Cysts on pink salmon



Spores released from a cyst

Henneguya has a complex life cycle in which the salmon is one of two hosts. The spores are released from the fish after spawning. They enter an as-yet-unidentified second host, likely an invertebrate, in the spawning stream. When juvenile salmon out-migrate to the ocean, the second host releases a stage infective to salmon. The parasite is then carried in the salmon until the next spawning cycle. The myxosporean parasite causing whirling disease in trout has a similar life cycle, but *Henneguya* does not appear to cause disease in the host salmon. Even heavily infected fish return to spawn successfully.

While unsightly, the parasite has no human health implications. Having said that it is always advisable to use good hygienic practices when handling uncooked fish.

Project Highlight

Spawning herring are material girls and guys

There may be as many as 970,000 herring eggs coating each of these fabric-wrapped pilings. Let's see... one...two...three...

By Jonn Matsen, Herring Coordinator, Squamish Streamkeepers

In the 1960s, herring in the millions spawned in Mamquam Blind Channel, just east of the Squamish River mouth. Industrial development polluted and disturbed the area, discouraging herring from spawning and affecting their eggs when they did. Herring like to attach their eggs to kelp or eelgrass, which no longer exist in the channel in any quantity. That leaves creosote pilings for them to spawn on but studies have shown that creosote is toxic to larva development.

StreamTalk readers may recall an article (spring 2006) about the efforts of Squamish Streamkeepers to attract spawning herring back to the Squamish estuary. In previous trials we placed hemlock branches in the water as a substitute for eelgrass and kelp, and met with some success. However, this was labour-intensive, and the branches could be used only once as they would eventually disintegrate.

One of our new strategies is to cover the pilings with heavy-duty landscape weed control fabric, which blocks the effects of the creosote. The fabric is attached to the pilings with 3/8 inch stainless steel staples using a hammer stapler.

There was a low enough tide on Sunday, February 24, to see what the herring thought of the new materials we put out the week before. We found that they had spawned heavily throughout the new materials that were run lengthwise as well as on the pilings that had been wrapped last year. It's hard to calculate how many eggs there were but certainly many millions.

The weed control material that had been run lengthwise at a slight angle was heavily spawned on the underneath side and hardly spawned at all on the upper side, as expected.

The 100 feet of experimental geotech felt material that was put in on float and lead lines, in imitation of kelp, was heavily spawned on both sides. We'll add more float lines next year. This method has two advantages. It helps to prevent the fertilizing milt (which the males spread first) from floating out to mid-channel pilings that are difficult for volunteers to reach; and the eggs which the females then attach to the strips are better protected from exposure to the drying effects of air at low tide because the material is always floating.

The strips of felt and weed control material that were tacked at one end to pilings had been spawned where they were vertical but, as most of the strips floated horizontally, the lower parts went unspawned.

The untreated back wall was again spawned though not as heavily as the lower pilings. The next project might be to run a strip along its full 500-foot length, which can be done with about $600 worth of material.

We estimate that we saved 30 million eggs last year and 100 million this year. Thanks to the hard-working crews, this is really working!

Is your dock a herring nursery?

Herring come in to spawn on their own schedule, and there may be nobody to observe their visit. Check underwater structures in your area to see if they have spawned. The eggs are clear when first laid. They turn milky as they develop. If they are killed, they turn yellow, and eventually are visible only as a mucky yellow coating on dock supports.

It could be your year to make a splash in the Marine Poster Contest

Back for its fourth year, the contest is co-sponsored by Parks Canada and Fisheries and Oceans Canada. It's open to students in grades 4 to 8 residing in British Columbia. Contest guidelines are available by request or on the Teacher's Corner of the Parks Canada website (www.pc.gc.ca/education). For more information, please contact us at straitofgeorgianmca@pc.gc.ca

Salmon @ Site-ings

www.speciesatrisk.bc.ca

This new site, hosted by the Stewardship Centre of BC, is intended as a first stop for local governments, non-governmental organizations, students, and citizens concerned about species at risk in their geographic area. Search for SARA/COSEWIC listed species by regional district and habitat type, and print species summary sheets that include general management recommendations. Also included are overviews of SARA from a local government perspective, the role of local government in species at risk recovery, and advice on developing management strategies.

www.certc.ca

The Cheakamus Ecosystem Restoration Technical Committee (CERTC) was formed in August 2005 in response to the train derailment and subsequent spill of sodium hydroxide into the Cheakamus River. CERTC's mandate is to understand ecosystem-level impacts and develop restoration and monitoring strategies for affected species to accelerate the return of the Cheakamus ecosystem to a pre-spill state as quickly as reasonably possible. Visit this site for updates on the recovery process.

www.falsecreekwatershed.org

Vancouver residents are often unaware of the watershed flowing invisibly beneath their feet. The False Creek Watershed Society has researched and mapped the streams that contributed to Vancouver's history and development. Visit this site to explore their findings and find out about the events they host each year to celebrate urban streams.

Keeping our waterways off drugs

by Joanne Day

Those outdated medications in your bathroom cabinet can become harmful after their expiration dates. For example, aspirin becomes more acidic and tetracycline becomes toxic. No one should risk their health by taking them.

It is not a good idea to toss them in the trash or flush them down the toilet either. Drugs leach into waterways and can lead to environmental damage and to increased antibiotic resistance in humans. Streamkeepers have seen harmful effects on streams when tainted by runoff from deteriorating garbage dumps.

Almost 90 per cent of B.C. pharmacies are now registered in the Medication Return Program, and that is good news for the environment.

Return products (including medicines, non-prescription drugs, herbal products, vitamins, throat lozenges, etc.) in their original containers to a participating pharmacy for safe disposal by incineration. To preserve your privacy, use a felt marker and ink out the personal information on the dispensing label.

Visit www.medicationsreturn.ca to find a participating pharmacy in your area.

Help us save trees and postage.
Receive StreamTalk by e-mail.
Please contact Joanne Day at dayj@pac.dfo-mpo.gc.ca, with the subject line "StreamTalk by e-mail."

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