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FALL 2003

SalmonWatch

THE T. BUCK SUZUKI ENVIRONMENTAL FOUNDATION • WORKING TO PROTECT OUR FISH HABITAT

Restoring natural habitat

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RIVERS DAY Pacific Streamkeepers Federation president ZoAnn Morten (r) and North Vancouver District Trail and Habitat coordinator Graham Knell work with local volunteers in replanting Hoskins Creek stream bank (story page 2).

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> "I grew up here but I didn't think twice about Hoskins Creek then. Now that I've moved back, I realize just how important it is to preserve and protect it." **BLAIR JARVIS**

HOSKINS CREEK

Restoring natural habitat

Stream bank planting a Rivers Day project

AN URBAN STREAM is being returned to its natural habitat — with a little help from the suburban neighbourhood.

As groups around the province marked Rivers Day Sept. 24, dozens of volunteers worked with shovels and rakes on the banks of Hoskins Creek in North Vancouver District, pulling out invasive urban plant growth and carefully replacing it with plants native to the forest that surrounds the creek.

Hoskins Creek is itself home to cutthroat trout but it's also an important food-producing stream for Hastings Creek, a key coho stream in the Lynn River watershed that flows along the base of Seymour Mountain and into Burrard Inlet.

Volunteers came from the neighbourhood and a local Girl Guides troop, as well as the ranks of the North Vancouver Streamkeepers. Working with them was Graham Knell, the trail and habitat coordinator for the District of North Vancouver.

"They did a fabulous job of replanting and people said they had a wonderful time doing it," said ZoAnn Morten, president of the Pacific Streamkeepers Federation, who organized the event as part of the Rivers Day. It was also the kick-off event for a longer-term project that will see the District of North Vancouver working with Ross Road Elementary School students and staff to continue the replanting along the remainder of the stream corridor.

The native plants, including salal, mountain ash, vine maple, ferns and many others, came from the construction site in the Seymour conservation area where the new filtration plant is being built for the Greater Vancouver water system. "We harvested the plants and Graham Knell took care of them until the replanting," Morten said.

Because residential properties back on to Hoskins Creek, many home gardeners have over the years dumped wheelbarrow loads of clippings containing grass and invasive ground cover plants such as ivy and lamium. In time, that ground cover has proliferated, pushing out native plants.

REPLANTING
Project renews community awareness of salmon streams

"People think that it's all compost — but it's not. It can stifle the natural plant growth," Morten said. In several areas along the stream bank, the denuded areas where lawn grass clippings have been dumped are testament to that.

The Rivers Day effort has not only restored the stream bank but renewed community awareness of the creek that flows through their neighbourhood. "I grew up here but I didn't even think twice about the creek,' said resident Blair Jarvis as he prepared ground for planting. "Now that I've moved back I realize just how important it is to preserve and protect it."

SalmonWatch

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WORKING TO PROTECT OUR FISH HABITAT

SalmonWatch examines issues concerning the protection and rehabilitation of salmon habitat in B.C.

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SEEING SALMON Nanoose Girl Guides show images of salmon they have been painting on storm drains to remind the community around Parksville that storm runoff goes straight into the Englishman River

Society launches Business Stewardship Project

Auto shops involved in stopping polluted runoff

MANY MUNICIPALITIES around the Pacific Northwest have installed filters on storm drains to protect streams from runoff. But streamkeepers on Vancouver Island have launched a new initiative to keep contaminants out of the storm drain in the first place.

The Mid-Vancouver Island Habitat Enhancement Society (MVIHES) began working earlier this year with automotive dealers and repair shops in the Parksville area on a new Business Stewardship Project. The aim is to help the shops reduce non-point pollution from entering the storm drain system.

The project is part of the Englishman River Watershed Recovery Plan, a multi-year program to rebuild salmon stocks on the Englishman River system, which is home to every species of Pacific salmon, including steelhead.

"We looked around and saw that there are nearly 40 automotive operations in a very small area around Parksville," says Carol Cornish, the stewardship and education co-ordinator for both MVIHES and the Recovery Plan.

"There are five different storm drain outflows that go into the mainstem of the Englishman River or Shelley Creek, a tributary stream," she says.

The idea came from a similar project in the Rock Creek area near Victoria where the Burnside Gorge Community Association has launched its own initiative to contain pollutants.

Community involvement

Cornish says the project has generated "real community involvement," including participation from the Girl Guides who have been marking storm drains with images of fish.

The MVIHES initially approached Parksville Chrysler to try the project out and owner Bruce Alexander "was really good about becoming involved," says Cornish. He's also become part of an advisory committee that includes representatives from DFO, the province and the city of Parksville.

A number of other auto shops have agreed to be part of the initiative and to conduct an assessment of their practices to see where improvements can be made. In many cases, "it was a real revelation for shop owners to learn that the runoff went right into the river," Cornish notes.

Guidebooks produced

She points out that MVIHES has developed a guidebook that provides an outline for best management practices, and covers seven different automotive operations.

"It used to be common practice in some repair shops to throw solvent on the floor to get rid of the oil and then sweep it all into the drain," she says. "But now people realize that there are good management practices to follow. We're telling them that it's not only the environmentally responsible thing to, but also that customers expect it. That means we have to educate the public as well."

ESCAPEMENTS

Runs show healthy stocks on north and south coast

Spawner return to indicator streams particularly good for northern coho

SALMON STOCKS SHOWED STRONG healthy returns from the Panhandle to the Fraser River this year — with pinks surging back brawnier than ever.

Sockeye returns and escapements were higher than expectations on the Skeena and the Fraser — both on low-cycle years in 2003 — and even on the Central Coast where spawners coming back to Smith Inlet reached counts not seen in a decade. Pinks salmon returns also surpassed expectations north and south of Cape Caution, and average fish sizes were up coastwide (see story page 7).

"We're pretty happy with the returns and escapements this year," said Mark Potyrala, North Coast stock assessment biologist for Fisheries and Oceans. "Sockeye came back a lot better than we expected based on last year's jack returns and pinks were what we expected, except for Area 6 where the returns were a lot high than projected."

Chinook and chum returns have also been good on the north Coast and coho escapement has been particularly good in the three indicator streams monitored by DFO biologists.

Those escapements range from "average on the Babine to really good on the Sustut to the third best ever on Toboggan Creek," Potyrala said.

Biologists were projecting a Skeena sockeye return of 1.2 million adults but got over two million, with escapements alone equalling the pre-season run size.

Potyrala said that pink escapements were still being assessed but would certainly be good, especially in the Kitimat and other Area 6 rivers. "The escapement to the Kitimat River has been just phenomenal," he said, adding that he had been fly fishing for chums on the river and watching the pinks make their way upstream. "Usually you just see a bunch of fish and then another bunch — but this was just a steady stream of fish moving upstream."

The little-noticed good news story on the coast this year was the rebounding of sockeye counts at the Docee fence in Smith Inlet, which is also used by DFO as an indicator of Rivers Inlet sockeye abundance. The Docee fence is at the outlet to Long Lake, whose waters drain into Wyclees Lagoon before flowing into Smith Inlet.

The fence count reached 179,462 spawners on Sept. 15, the last day of counting— the highest returns to the Central Coast since 1993. Escapement to Long Lake reached 217,106 that year but has fallen dramatically over the last decade to a low of only 1,430 spawners in 2000.

Significantly, this year's run was based on a 1999 brood return of only 5,418 adults, indicating that both fresh water and marine conditions have been more favourable.

SMITH INLET SOCKEYE RETURNS

Year	Brood escapement	Final escapement
2003	5,841	179,462
2002	75,100	91,908
2001	30,320	8450
2000	50,545	1430
1999	56,244	5841
1995	259,316	56,244

> This year, some Fraser River sockeye again entered the fresh water early but at least half of the Late run held in the Gulf before moving into the river in September.

Although the Docee fence count is also used as an indicator of Rivers Inlet-Owikeno Lake run strength, preliminary asssessments suggested Owikeno returns wouldn't be as high. Escapements at SalmonWatch press time were just over 50,000, about the same as the brood year.

Barkley Sound sockeye top projections

On the South coast, sockeye returns to Barkley Sound on the West Coast of Vancouver Island reflected the abundant trend. Fisheries managers pegged the run size at 1,025,000, about 10 per cent higher than the pre-season projection. Escapements to the Somass River were also on target.

Although it was a low-cycle year for the Fraser, sockeye returns to that system were also higher than projected. The Pacific Salmon Commission set the final run-size estimate at 5,556,000, just above the 50 per cent probability forecast level.

The numbers for Early Stuart sockeye only came up to 30,000 — compared to the forecast 55,000 — but all other run components were greater than projected.

Overall, sockeye escapement to the Mission sounder hit 3.1 million by Sept. 19, including 1.2 million Late-run fish.

A number of studies will be carried out this year in conjunction with tagging of Late-run sockeye to determine the migration patterns and the effects of early migration. Since 1996, several Late-run stocks have been hit by heavy pre-spawn mortality when they enter the river in August rather than holding in the Gulf for several week before moving into fresh water.

There seemed to be a shift in that pattern last year when close to six million Adams River sockeye made their way to the spawning grounds. This year, some fish again entered the river early but at least half of the Late run held in the Gulf before moving into the river in September.

Again this year, concerns over later-Run stocks were the driver for fisheries management, pushing the commercial fleet off the water as soon as Late-run sockeye moved into marine approach areas.

Earlier this year, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) also confirmed its endangered listing for both Cultus Lake and Sakinaw Lake sockeye.

Cultus Lake is monitored at the Sweltzer Creek counting fence where sockeye returns this year — 1,929 as of Oct. 30 — show a run struggling to rebuild. The adult returns in the brood year in 1999 were decimated by the parvicapsula parasite and although 12,000 returned, barely 10 per cent spawned successfully.

The good news in 2003 is that "we're not seeing any disease and we're not seeing any evidence of pre-spawn mortality," said Gary Boak, a DFO technician working at the Sweltzer Creek fence.

CULTUS SOCKEYE
DFO's Gary Boak lifts the grid at the counting fence on Sweltzer Creek at the outlet to Cultus Lake.

The biggest story this year, however, was Fraser River pinks, which surged back to the river system in record numbers, hitting 25 million. "We've never seen anything like it," said Wayne Saito, chair of the Fraser Panel of the PSC. "Most likely it's the largest run since 1913."

No assessment of pink escapement will be conducted this year, although there will be a fry survey in the spring.

Returns of Fraser River chinook were also up this year. Graphs generated by catches at the Albion test fishery on the Fraser — in operation since 1981, the year after the commercial chinook fishery was suspended — show a significant jump in abundance this season.

Province has no plan to avert lice outbreak in 2004, groups told

DESPITE MOUNTING evidence pointing to salmon farms as the source of sea lice infestations affecting wild pink salmon, the provincial government has no plans to require the salmon farming industry to fallow its sites along Broughton migration routes next spring.

That was the gist of statements made by Bud Graham, assistant deputy minister for Agriculture Food and Fisheries following a meeting with environmental groups in Victoria Oct. 17.

"Graham told us there was no plan for 2004 to require farms to fallow sites along juvenile pink salmon migration routes as there was in 2003," said David Lane, executive director of the T. Buck Suzuki Environmental Foundation, one of the groups that met with Graham. The delegation included Otto Langer, marine programs director for the David Suzuki Foundation, Lynn Hunter from the Coastal Alliance for Aquaculture Reform, Suzanne Connell from Georgia Strait Alliance and Chief Bill Cranmer from the Namgis First Nation.

Following a report from the Pacific Fisheries Resource Conservation Council last year, the province convinced some salmon farming companies to fallow their sites during the 2003 pink salmon out-migration. Preliminary results show that the fallowing was effective in reducing lice infection rates. But despite that result, the province has apparently decided to abandon any similar program next year.

Chief Bill Cranmer was also critical of the province for not consulting with any First Nations before deciding to stop fallowing farms in the Broughton area.

BROUGHTON PINKS

SEA LICE DFO crews study pink juveniles in seine bunt during marine sea lice sampling program in the Broughton in 2003

Pink runs down for second year

Decline follows lice outbreak on brood

AS PINK SALMON surged back to the spawning grounds in record numbers, the runs to seven Broughton area rivers were struggling back in substantially reduced numbers for the second year in a row, pointing once again to the impact of sea lice.

Returns to four of the rivers were down about 90 per cent compared to the brood year while those in three other rivers declined by about 70 per cent. The four worst affected were the Ahta, Glendale, Kakweikan and Kwalate, while the Embly, the Kingcome and the Klinaklini also suffered declines. Only on the Ahunati were escapements equal to or slightly better than the brood return.

Echo Bay whale researcher Alexandra Morton, who first brought scientists' attention to the sea lice outbreak on Broughton pink juveniles in 2001, said the numbers confirmed what she had feared when she was sampling in 2002.

"My research predicted a 90 per cent collapse of these salmon as a result of epidemic sea lice infections that are only found near fish farms," she said. "In the streams closest to the fish farms, that's what we are seeing."

DFO is still finalizing its report on sea lice monitoring carried out in the Broughton area this spring and summer in response to the Pacific Fisheries Resource Conservation Council's report last year.

DFO biologist Brent Hargreaves who headed up the marine sampling work, told a B.C. Aboriginal Fisheries Commission summit on aquaculture that both pink and chum salmon fry were being infested by sea lice as they migrated through the area. Although infestation rates varied, he said, they ranged as high as 50 per cent in some cases and infection rates rose as fish moved into and through the Broughton Archipelago along routes dotted by salmon farms.

SPAWNING PINKS They returned in abundance from Alaska to Washington, with the returns on the Fraser system exceeding anything since records were first kept by the Pacific International Salmon Fisheries Commission

ESCAPEMENTS

In the pinks

Pink salmon come back in abundance on both the north and south coast

IF THE NORTH PACIFIC was offering improved marine survival for salmon this season, an extra helping seems to have gone to pink salmon.

Pinks returned strong and fat to Alaska and B.C. — averaging a half a pound or more over their usual size — and came back in well over the predicted numbers on both the north and south B.C. coast. The singular, troubling exception was the pink escapement to the rivers of the Broughton Archipelago where the brood year smolts had been devastated by an infestation of sea lice linked to area salmon farms (story page 6).

In southeast Alaska, the return of some 50 million pinks was close to pre-season projection but the size was well over the average. "In week 25 (the early part of the run), pinks were coming in averaging 4.4 pounds," said Steve Heinl, pink salmon biologist with the Alaska Department of Fish and Game in Ketchikan. "Those are pretty big fish."

Heinl said biologists haven't yet looked for any specific reasons for the bigger fish, suggesting that marine conditions have been generally good for salmon the last couple of years. They may have been particularly good in nearer-shore waters, since pinks do not forage as far out in the Pacific as other species.

Pinks were also bigger on the B.C. north coast, tipping the scales at a slightly lower weight than their Alaskan cousins but still over the average by half a pound. Runs to most rivers in the north were expected to be close to the numbers predicted, except for the returns to Area 6, which were 25 per cent or more over the forecast.

"I've been fishing in Area 6 many years and I haven't seen such abundance in a long time," said veteran pink salmon seine fisherman Vince Fiamengo. He said he was "filling the boat with only one set, which is unheard of."

The returns this year to the north were also unusual in that northern pinks are traditionally more abundant in even-numbered years while those in the south are better in odd years. But even if the calendar favoured them, Fraser pinks surpassed all expectations, with a bigger run and bigger fish, like their northern counterparts.

The Pacific Salmon Commission estimated the Fraser pink run this year at 25 million, the largest run since the PSC's predecessor, the International Pacific Salmon Fisheries Commission, first began keeping records in 1959. This year's return was from a brood year that was itself a record at 20 million.

The trend to higher abundance over those years was in sharp contrast to a decade ago when pink salmon returns dropped dramatically on both the north and south coast. In 1993, fisheries managers were unable to get even a third of their target escapement on the Skeena and returns to the Fraser were down by the same margin. To make it more confounding, returns to Southeast Alaska were at record levels.

This year, however, the surge of pinks was felt from Alaska to Washington, with biologists reporting record runs to many rivers, including the Skagit.

BIG FISH The abundance this year was combined with higher than average weight, especially in the North.

ADFG PHOTO

TOXIC BURDEN
High on the food chain, seals carry high levels of PCBS, with North Atlantic seals fourth on Oceana's list.

PCB WARNING

Contamination of marine animals is rising alarmingly — and sewage from GVRD and CRD is adding to the toxic load

OVER LIMITS
PCB levels in effluent from primary treatment plants is well over guidelines set by B.C. ministry, California

IT'S BEEN TWO YEARS since Canada led the countries of the world in signing the Stockholm Convention aimed at curbing "persistent organic pollutants" or POPs, but action to stop the dumping of POPs into Canadian waters has been slow in coming — dangerously slow.

A report released last month by the U.S. environmental group Oceana found that polychlorinated biphenyls (PCBs) — one of the "dirty dozen" POPs named in the Stockholm Convention — had reached alarming high levels in ten animal species, including orcas, seals, polar bears and sea eagles. According to the report, Northwest orcas were the second highest in PCB contamination, with PCBs showing up in their blubber at 1000 parts per million — nearly 60 times the level at which serious health effects begin to appear.

The Oceana report, entitled Toxic Burden: PCBs in Marine Life, was issued to emphasize the need for the U.S. administration to sign the United Nations Convention on Persistent Organic Pollutants, better known as the Stockholm Convention. But even though Canada was the first country in the world to sign the convention in 2001, Environment Canada has still not established environmental limits on PCBs.

What's worse is that PCBs continue to flow, untreated, from primary wastewater treatment plants in the two major population centres in British Columbia — two of them in the Greater Vancouver Regional District and two in the Capital Regional District in Victoria. Although upgrading to secondary treatment would virtually eliminate the PCBs in wastewater, neither district has moved to make the upgrade and the federal government has not used the authority it has under the Fisheries Act to compel them to do so.

Two years ago, in December, 2001, Sierra Legal Defence, the United Fisherman and Allied Workers Union-CAW and the Labour Environmental Alliance Society called on federal Environment Minister David Anderson to use his authority under federal legislation to prevent PCBs from being discharged in wastewater. No action was taken, although Anderson did state in a letter that Ottawa planned to bring in regulations by March 2003 that would set an allowable limit on PCBs.

Those promised regulations have yet to be introduced — which in some ways may be a blessing, because the limit would permit 1,000 times the PCB level allowed by the B.C. provin-

CHARTING PCB LEVELS

Location	Level (ng/L)
Clover, Macauley Point	16
Iona plant	16.3
B.C. guideline	0.1
California guideline	0.019

> PCB levels in GVRD's Iona treatment plant effluent were more than 160 times higher than the B.C. water quality standard.

cial government and more than 5000 times the amount allowed by California. waters.

British Columbia's environmental quality guidelines for aquatic and marine waters specify a limit of 0.1 nanograms/litres total PCBs (a nanogram is one-billionth of a gram), with much lower limits for four specific congeners of PCBs. California's standard for marine waters is even stricter — it allows only 0.019 nanograms/litre

Those low limits are based on the extreme toxicity of PCBs. There are 209 different chemical formulas for PCBs (known as congeners), some with greater toxicity than others, but they all share common characteristics: they persist for a long time in the environment and they "bio-accumulate", growing more concentrated in animals high on the food chain that have eaten other PCB-contaminated prey animals.

Consequently, orcas, seals and polar bears typically show the highest levels, but there is growing concern that if PCBs continue to flow into the marine environment from wastewater, the extremely low levels of PCBs currently seen in salmon will begin to rise — perhaps to risk levels.

PCBs are among the most toxic substances ever created. Once widely used as insulators in electrical switches and transformers, they've been banned in Canada and the U.S. But they are still manufactured in some parts of the world and PCBs leach from dump sites on this continent.

They're among many chemicals known as endocrine disrupters, substances that affect the hormone-producing organs of animals, either by mimicking the effects of natural hormones or disrupting the organs' functions. Because of that, they're associated with a wide variety of health effects, including impaired reproduction, developmental defects and suppression of the immune system that can lead to lethal viral and bacterial infections. PCB contamination in humans has been linked to developmental impairment.

Since PCBs bio-accumulate, environmentalists emphasize the urgency of taking action to stop PCBs from flowing into the environment through wastewater.

In March of this year, Sierra Legal Defence took samples of effluent from the Clover and Macauley Point outfalls in Victoria, the two sewage outfalls that discharge wastewater from the Capital Regional District (CRD) with only primary treatment. The samples were sent to private labs for analysis and the results made public in July.

The tests showed PCB levels in the wastewater at 16 nanograms per litre — 160 times the limit set by the Province of B.C. for fresh water and more than 800 times California's limit for marine waters.

"Today's results show that the CRD releases more than 1,000 grams of PCBs into the Strait of Juan de Fuca each year," Sierra Legal staff scientist John Werring told a news conference in Victoria July 11.

CONTINUED ON PAGE 15

HAZARDOUS
PCB levels are so high in Northwest orcas that they would qualify as hazardous waste under Canadian law.

"Climate change could be a big driving factor. But we're still generating only one data point each year and it's going to take five or more years to get definitive answers." **RICK ROUTLEDGE**

Restoring Rivers Inlet sockeye

GLACIAL WATERS Aerial view of Owikeno Lake, the rearing lake for Rivers Inlet sockeye

Project team looking at climate and ocean changes

WHILE MUCH OF THE WORLD may see the evidence of climate change in rising temperatures around the globe, the impact on unique ecosystems may be even more profound.

It may even offer some insight into what happened to Rivers Inlet sockeye — at least that's what Simon Fraser University professor Rick Routledge is hoping.

Routledge, who combines the disciplines of mathematics and biology with his own keen interest in Rivers Inlet, is heading up a unique research project, looking for answers to the decline of Rivers Inlet sockeye in the changes that seems to be taking place in the Rivers Inlet ecosystem. He's working with Dr. Ron Tanasichuk from DFO's Pacific Biological Station, Seana Buchanan, a SFU grad student, and the Oweekeno First Nation.

Once the most prolific producer on the coast, the Rivers Inlet-Owikeno Lake sockeye run suddenly collapsed in 1995. Although it has struggled back since then — with 2003 returns looking more promising — the number of spawners is only a fraction of what it once was.

With major funding from the Pacific Salmon Foundation, Routledge began working in the summer of 2002, gathering data on the ecology of the fjords in Rivers Inlet, reviewing stream flows in the Wannock River that drains Owikeno Lake, and taking sediment cores from the lake itself. That work continued this summer and fall.

"What we've come up with so far is some speculative working hypotheses," Routledge says. "There's a lot of work to be done."

Still, the evidence on which those hypotheses are based presents an intriguing glimpse of an ecosystem affected by a number of factors, some of which may be changing.

Lake, inlet nutrient levels low

The sockeye smolts that have emerged from Owikeno Lake into Rivers Inlet have always been some of the smallest on the coast, presumably because the silty, glacial waters of Owikeno Lake provide a low level abundance of food for the juvenile salmon. In their new research, Routledge and his team found that zooplankton levels were low in 2002 throughout Rivers Inlet and tended to decrease over time. Possibly as a result of the unusually dry winter, it appears

> "One of the striking features when you look at the records over the last 30 to 40 years is that the mid-winter river flows changed in the mid 1990s. That's when the runs collapsed."

that levels may be higher in 2003.

Scientists at DFO's Institute of Ocean Sciences are also looking at the possibility that there may be changes to the nutrients in the deep waters of the inlets, Routledge says. "Normally there are periodic surges of cold, nutrient-rich water from the open ocean that flow into Rivers Inlet over a sill that's just outside the entrance."

It's not known whether there have been changes to those surges that may be affecting the flow of nutrients into the inlet. "But there do seem to be changes in nutrient levels in the inlets and we're looking for the reasons for those changes," he notes.

Another area of research will involve examining the sediment cores from the bed of Owikeno Lake to determine the extent to which decaying salmon carcasses contribute to the nutrients to the lake. "The cores may tell us whether Rivers Inlet sockeye stocks collapsed repeatedly in the more distant past," Routledge says.

There's also evidence that the declining salmon returns may have resulted in much lower nutrient levels — which could mean even poorer fry survival and smaller smolts, compounding the overall sockeye decline.

"Those are all potential influencing factors, but the evidence is still preliminary," Routledge points out, adding that while fishing pressure may have reduced the number of spawners in the past, that hasn't been a factor for some time and especially not since 1995, when fisheries closed in both Rivers and Smith inlets.

Major change in river discharge

What does seem to be the major driving factor, however, is the change to the discharge patterns on the Wannock River. "One of the striking features when you look at the records over the last 30 to 40 years is that the mid-winter river flows changed in the mid 1990s. That's coincidental with the out-migration for the runs that suffered the most serious collapse," he says.

Key among those changes was a spring freshet that came much earlier than in the past. That could mean that fry were emerging at a time when nutrient levels were lower than usual, making their survival even more precarious.

Routledge added that the winters over the last few years have also been unusually warm — a pattern seen in many parts of northern Canada. But when that larger pattern of climate change is overlaid on a smaller and very unique ecosystem like that in Rivers Inlet, the impact can be profound. "The speculation is that climate change could be a big driving factor," Routledge says.

RICK ROUTLEDGE
Climate change and change in river flows among the factors

This year, nature may be providing some adaptive help. Routledge notes that he's encouraged by the returns to Long Lake in Smith Inlet this year, although the "jury's still out on Rivers Inlet.

"My guess is that returns will be reasonable because there were so few fish in 1999 that there would not have such a shortage of food in the lake and the inlet."

But he emphasizes that there is still a lot of research to be done to determine the factors that are affecting Rivers Inlet sockeye and to provide a scientific basis for a recovery plan.

"We're basically generating one data point each year and it's going to take five years or more before we can get some definitive answers," he says. "We hope we can get continued funding for that."

He says that there has been "a lot of support from the Pacific Salmon Foundation," the major funder for the first two years of the project.

RIVERS INLET
Graduate student Seana Buchanan (l) and Rick Shaw from the Oweekeno First Nation check samples on the Western Bounty

> “The essence of this new regulation is precisely what the largest commercial developer group, the National Association of Industrial and Office Parks, was pitching to government.”

COMMENTARY

Axe poised over Streamside Protection Act

Murray proposes to hand riparian assessments over to the developers

BY DAVID LANE

PROVINCIAL MINISTER OF LAND, Water and Air Protection, Joyce Murray, is poised to axe an important urban steam protection law, the Streamside Protection Regulation.

In a November letter to T. Buck Suzuki Environmental Foundation, Murray says the regulation is soon to be replaced by new measures and she anticipates an announcement “later this fall.”

The Streamside Protection Regulation set out standards for municipalities to ensure protection areas around urban streams ranging from five to 30 metres, but in most cases guaranteeing a 20 metre buffer zone to protect trees and vegetation.

Instead of these clear, enforceable riparian buffers, Murray says the province will enact a new regulation allowing housing and shopping centre developers to hire their own “qualified environmental professional.” This developer-paid contractor would be the one to establish site specific measures to “avoid or mitigate impacts to riparian fish habitat” within a 30 metre “riparian assessment zone.”

To put it bluntly, this is clearly a direct sellout to big developer interests.

I should know.

I sat on the provincial stakeholder committee reviewing the implementation of the streamside regulation. The essence of this new regulation is precisely what the largest commercial developer group, the National Association of Industrial and Office Parks, was pitching to government, backed up by the Urban Development Institute.

All other non-developer interests at the table — environmental and stream stewardship groups, municipal government representatives and the federal Department of Fisheries and Oceans — were unanimous in recommending against this direction.

Provincial environmental protection staff have been trying their best to patch up what is a flawed approach to stream protection. They are working with DFO and municipal staff to develop a stream assessment methodology and a “guidebook” that would identify stream features, functions and conditions that should be preserved.

DAVID LANE
Victoria giving developers what they want at the expense of streams, says T. Buck Suzuki Foundation executive director

The hope is that any independent professional following the methodology would reach the proper conclusions about what setback distances and other measures are needed to keep a stream healthy.

There is a monitoring strategy that ensures that senior government agencies would at least be auditing a percentage of the stream assessments to see if they were done properly. Plus there would be a “riparian effectiveness” audit conducted periodically at the watershed level to determine if problems are developing.

This is all helpful.

But it doesn’t cover over the fact that in this era of downsized environmental enforcement staffing levels at DFO and the province, we could easily speculate that most development will proceed without proper scrutiny. The damage that may be done will only become apparent years from now, when enforcement action will be meaningless.

In municipalities that have good environmental protection bylaws backed by knowledgeable environmental protection staff, there may even be an erosion of their effectiveness. Developers may bypass them, taking their proposals directly to local Boards of Variance where environmental perspectives are few or non-existent.

That’s not good for urban streams and it’s not good for salmon.

We can only hope that DFO sticks to its principles by demanding protection measures that match the full intent of the federal Fisheries Act.And we hope the province backs up its new regulation with adequate staffing levels to ensure that salmon habitat is properly protected and urban salmon runs are not doomed to a slow death by a thousand cuts.

OIL EXPLORATION Unpredictable weather, massive waves and onshore currents in Hecate Strait create dangerous conditions for oil and gas exploration unlike those anywhere else in the world

CENTRAL COAST

Gaps in knowledge huge, say scientists

Hearings warned that too little is known about oil exploration risk

THE GAPS IN SCIENTIFIC knowledge about the impact of exploration on B.C. North Coast are as wide as the waters of Hecate Strait that separate the Queen Charlotte Islands from the mainland. And that lack of knowledge could prove to be just as perilous as those waters can be during a winter storm.

That was the clear message that emerged after seven days of presentations from scientists, First Nations leaders, environmentalists and oil industry representatives as the Royal Society of Canada conducted its "scoping hearings" in October to outline the issues involved in oil and gas exploration on the North Coast. The hearings were held in Vancouver Oct. 15-17 and 28-30 and then moved to Prince Rupert for one day Oct. 31.

Under pressure from the B.C. provincial government to lift its long-standing moratorium on oil and gas exploration, federal Natural Resources Minister Herb Dhaliwal commissioned the Royal Society to conduct the hearings.

Environmental groups , including the Sierra Club and the Livings Oceans Society, were critical of the initial hearing process, noting that the issues involved could not possibly be covered in the two-week period set out for the hearings.

Conditions unlike those on East Coast

That became even more evident during the hearings as one scientist after another pointed out that the ecology of the Queen Charlotte Basin is unlike that of any other region of the world. And the knowledge gaps are enormous.

The weather patterns pose a particularly grave risk for oil and gas but the available data is years out of date and would take more than a decade and new technology to get more reliable information, said Laurie Neil, head of research for applications in the Meteorological Service of Canada.

"It's a far worse problem here than anywhere else in the northern hemisphere," he said.

OIL DAMAGE Currents in Hecate Strait would send 90 per cent of any oil spilled onshore

As it is now, he added, "we miss one in five storm warnings." Storms in Hecate Strait can bring 30 metre waves and high winds, worse than any conditions confronting East Coast oil platforms.

What we do know is that currents in Hecate Strait move onshore, unlike those on the East Coast, said Bill Crawford, an oceanographer with the Institute of Ocean Sciences in Sydney. If there were an oil spill in winter, he noted,"90 per cent of the surface oil will hit the shore, either here or in Alaska."

DFO scientist David Welch emphasized that the implications for salmon are substantial because virtually all North American Pacific salmon stocks — resident southern stocks are the only exception — move through the Queen Charlotte Basin, including Fraser, Skeena and Rivers and Smith Inlet sockeye. And because they spend most of their time near the surface of the water, they are particularly vulnerable to the toxic effects of oil contamination.

Precautionary approach urged

Several speakers urged the federal government to adopt a precautionary approach, and maintain the moratorium as long as there is an unknown risk.

That was echoed in Prince Rupert, where panelists went to hear traditional knowledge. "The moratorium should not be lifted," said Bob Hill, president of the Tsimshian Tribal Council, "There are simply too many data gaps and unresolved issues surrounding the Queen Charlotte Basin."

Des Nobels, northern organizer for the T. Buck Suzuki Environmental Foundation, said there were 15 speakers at the workshop, including representatives of the northern oil and gas task force and the Prince Rupert Port Authority who argued that any potential environmental problems can be overcome.

But the message from those opposing exploration is clear, he said. "They pointed out that science is 20 years out of date, the area is known for some of the worst weather in the North Pacific and there are no studies on the overall impact on the ecosystem of oil exploration."

The four-member panel is to report by February 2004, at which time further hearings could be called, likely under federal auspices.

Fish-toxic products replaced

LEAS recognized for Cleaners work

THE VOLUME OF TOXIC chemicals flowing into Georgia Strait has now been reduced by several thousand litres, thanks to a project launched two years ago by the Labour Environmental Alliance Society (LEAS).

The innovative project, which combines workers health and safety with environmental action, won national recognition this year from the Canadian Council of Ministers of the Environment (CCME), which gave LEAS its 2002 Pollution Prevention Award for a non-profit society. LEAS executive director Mae Burrows and researcher Sean Griffin received the award at the CCME ceremony in Calgary in June.

The ongoing project, first launched in 2001, has brought LEAS researchers together with occupational health and safety committees in a number of unionized sites around the Lower Mainland, including two Lower Mainland school districts. Researchers reviewed the Material Safety Data Sheets for the cleaning products used at the sites and identified products containing toxic ingredients. They then worked with the joint employer-union safety committees to find replacement products that were safer and environmentally-friendly.

The work was assisted by an advisory committee headed up by Larry Stoffman, health and safety director for Local 1518 of the United Food and Commercial Workers.

The project has flagged more than 20 toxic ingredients that regularly show up in industrial and institutional cleaning products. Key among them are known carcinogens and reproductive toxicants.

Project researchers also found two particular ingredients, widely used in laundry detergents and other cleaning products, that can have a significant environmental impact on salmon — ethoxylated nonyl phenols (NPEs) and nitrilotriacetic acid (NTA).

CCME AWARD
LEAS Cleaners and Toxins project wins national honour

NPEs are endocrine disrupting chemicals that have been shown to have "gender-bending" effects on fish.

NTA, a known carcinogen, is also an environmental pollutant that impedes the elimination of metals from wastewater and can re-mobilize zinc from waste sediment. Zinc is toxic to fish.

The products containing NTA and NPEs were successfully eliminated and substitutes found in all of the project sites. In the case of the Burnaby school district, more than 20,000 litres of toxic cleaning products were replaced.

ON STAFF **Fisherman Des Nobels will raise habitat issues on North Coast for T. Buck Suzuki Foundation.**

Nobels brings northern focus to T. Buck Suzuki

The T. Buck Suzuki Environmental Foundation is pleased to have Des Nobels on staff now working hard to raise and act on Foundation issues on the North Coast. Des was brought on a year ago to ensure that North Coast issues get the focus they deserve.

"The three biggest environmental concerns on the North Coast at the moment are the potential lifting of the moratorium on offshore oil and gas exploration, the expansion of the salmon farming industry into the North and the need to rehabilitate major damage caused by poor logging practices in the past," Nobels said.

"I hope to raise the profile of T. Buck Suzuki Environmental Foundation in the community, including some public education through the schools and the community college," he added.

Des is a long-time halibut and salmon fisherman and lives on a small island across the harbour from Prince Rupert. He works half-time for the Foundation and can be contacted through the UFAWU-CAW Northern Office at 250-624-6048.

Website documents B.C. record on environment

Want specific details on the provincial government's actions on environmental protection since 2001?

TOXIC WASTE

Figures show high level of PCBs

CONTINUED FROM PAGE 9

Wastewater analysis carried out by the GVRD in 1997 — the most recent survey made public — showed similar results. Samples from the Iona outfall, which discharges primary-treated effluent into Georgia Strait, showed all PCB congeners at a total concentration of 16.3 nanograms/L.

The overall PCB levels at Iona could potentially be higher when new samples that were taken in 2002 and 2003 are analyzed for a report next year. The 1997 tests only tested for some 80 PCB congeners, whereas the new samples will test for all 209 congeners.

What makes the PCB dumping particularly troubling is that PCBs can be almost completely eliminated through secondary treatment of wastewater, with removal rates of 99 per cent, according to Sierra Legal. That figure is based on the chemical analysis carried out by the GVRD on effluent from the Annacis Island sewage plant, which used secondary treatment. Further treatment is also necessary to ensure complete destruction of PCBs in solid waste but all the necessary technology exists for that as well.

JOHN WERRING
Victoria releasing unsafe levels of PCBs into Juan de Fuca Strait

Significantly, the European Community is currently enacting regulations to ensure that member countries have fully upgraded to secondary treatment in urban centres by Dec. 31, 2005. It's urgent that both the GVRD and the CRD take the same step — yet neither district has a scheduled proposal to make the upgrade and Ottawa has no plans to step in and ensure that it is done.

The environmental price that we're paying for that delay is already evident in high PCB contamination levels. And as the Oceana report showed, the price may be getting higher every day.

A new website sponsored by more than a dozen B.C. environmental groups is home to the most comprehensive overview of the provincial governments environmental record to date.

The site is updated constantly so you can usually find recent changes to policy and regulations. You can get a quick snapshot of every environmental initiative, a quick assessment as to whether it's good or bad, plus website references to get more information and longer reports.

On it you will find key decisions that are reshaping B.C. forest practices, major changes to pollution prevention regulations and recent cuts to government enforcement staff. You can find out about the new pesticide regulations, the new waste management laws and the decisions putting off secondary sewage treatment for Vancouver and Victoria. There are items flagging the move to lift the moratorium on offshore oil and gas, the expansion of the salmon farming industry and the opening up of new opportunities for mining companies.

Each entry has either a check mark or an X indicating whether the initiative is positive or negative for the environment.

The site is cross-referenced by subject so that you can look up issues concerning human health, pollution, wildlife, parks, climate change, resource management, enforcement and public participation in planning and decision-making.

Check it out at www.bcfacts.org <http://www.bcfacts.org/>

Lack of oxygen could threaten fish populations

OXYGEN DEPLETION caused by an overload of organic material in the water — such as around sewage outfalls — could be causing long term damage to the reproductive ability of fish populations, according to new research carried out this year.

A study carried out by biochemist Dr. Rudolf Wu, showed that lack of oxygen, or hypoxia, actually acts as an "endocrine-disruptor" in fish, disturbing the hormone-producing organs and impairing reproductive ability. Dr. Wu, who completed his doctoral work at the University of B.C., is currently chair of the department of Biology and Chemistry at City University in Hong Kong and director of the Centre for Coastal Pollution and Conservation.

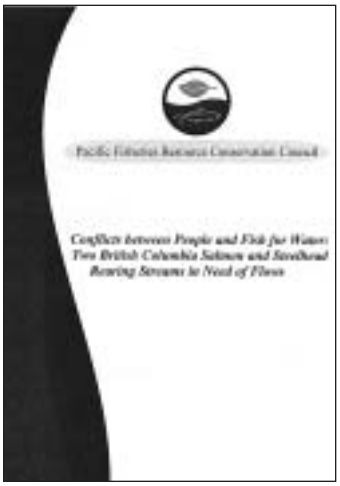
His research team studied two groups of adult carp, one raised in a normal environment and one raised under hypoxic conditions. Those raised under conditions of oxygen depletion suffered changes in hormone levels and reduced rates of fertilization. But the most striking difference was in the survival rates of offspring — only five percent of the larvae produced by the oxygen-deprived fish survived compared to 90 per cent for the normal fish.

Hypoxia is occurring more and more frequently in waters around the world, as a result of nitrogen and phosphate overload — caused in turn by runoff from developed land, agricultural fertilizers and sewage discharge.

"The severity of hypoxia has increased in the last few decades," said Dr. Wu. Due to rapid human population growth, increases in nutrient input and global warming, the problem is likely to become worse in coming years."

resources

Is there something we should know? Point us to new books, studies, websites. Share your resources! Send info to SalmonWatch at info@bucksuzuki.org



Water conflicts

Conflicts over the needs of salmon for water and other water users are growing in British Columbia and changes to policy are vital if adequate flows for fish are to be maintained, says a new report, just released by the Pacific Fisheries Resource Conservation Council.

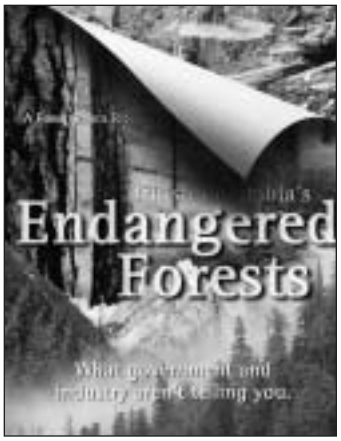
The report, entitled Conflicts between People and Fish for Water: Two British Columbia Salmon and Steelhead Rearing Streams in Need of Flows, was written by Mark Angelo and Dr. Marvin Rosenau from the B.C. Institute of Technology.

Once known for its abundance of fresh water, B.C. has seen an unprecedented demand for water for agricultural, industrial and domestic purposes, the authors say. Already, for some 3,500 streams across the province, the volumes covered by water licences are either at, or exceed the available stream flow. And the pressure for further water extraction continues while earlier legislative efforts to protect water flows, such as the Fish Protection Act, have been stalled, they say.

The report focuses on two river systems, the Englishman River on central Vancouver Island and the Nicola River in the Interior, where excessive water extractions are the major factor in the serious decline of salmon stocks, especially coho. The authors make several recommendations for changes to protect water flows. Copies of the report are available in pdf from the PFRCC website at www.fish.bc.ca

Understanding SARA

The Sierra Legal Defence Fund has put together a comprehensive guide to the new Species At Risk Act (SARA). The guide outlines the "nuts and bolts" of how the Act works, what it covers and points out some of the major weaknesses. It describes the body that establishes the list of endangered species, looks at the main tools for protection and talks about how recovery plans are created and implemented for listed species. You can find the guide at: http://www.sierralegal.org/reports/SARA_Guide_May2003.pdf



Forest practices

ForestEthics, a environmental group advocating major change to B.C. forest practices, has released a report that chronicles the destruction of forests including the boreal, the rainshadow wilderness and the world's only inland rainforest. The report calls for a significantly reduced sustainable rate of harvest, a shift to ecosystem-based forest practices, a revamping of the forest tenure system and transition funding for workers and communities, to ensure social stability and encourage innovation. ForestEthics was successful at convincing Staples office superstore to phase out products produced from unsustainable logging and is now working on Office Depot to meet or beat Staples' commitment. The report, entitled BC's Endangered Forests: What Government and Industry Aren't Telling You, can be viewed or downloaded from their website at www.endangeredforests.com

Pesticide alternatives

The Georgia Strait Alliance has put out a new eight page pamphlet on ways to reduce or stop the use of pesticides in the home and garden, as part of their ToxicSmart program. The pamphlet gives practical advice on non-toxic alternatives for dealing with common pests. You can view or download the pamphlet at: http://www.georgiastrait.org/newsletter2PM.pdf or you can contact them at 250-753-3459.