

“Salmon on the Rough Edge of Canada and Beyond”



Salmon
People

This series of 10-short stories has been written to honour the salmon, the beautiful rivers that they exist in and some of these memorable people who have worked tirelessly over the past decades on the task of conserving and restoring these iconic species.



The author, Matt Foy, as a biologist with the Fisheries and Oceans Canada (DFO), Salmonid Enhancement Program(SEP) for 35 years (now retired), has tried to capture small glimpses into their world and the world of salmon.

Coho salmon: Why children and stream stewards love this *Salmon in the Backyard*

By Matt Foy

Many of us have personal stories of how we came to know the various salmon that inhabit our oceans, rivers and lakes here on the West Coast of Canada. For coho salmon, it might be that first salmon caught in the ocean, often from a small boat close to shore along the inlets, sounds and straits of the winding B.C. coastline.

For generations, the coho summer fishery in the Strait of Georgia has been a highlight of the south coast family vacation, which meant loading up the old car topper and trolling from a boat tight against the kelp beds searching for the elusive, aggressive and exciting coho salmon. So, it was for our family so many years ago. Names such as coho, cohoe, blueback, *k'wéxwəθ* (in the Sto'lo language), hooknose and northern were passed from old fisher to new fisher, perhaps sitting by the campfire or chatting with friends and family while cleaning fishing gear.

The People's Salmon

This species of salmon inhabits almost every stream that flows into the ocean along the B.C. coast, including many streams that penetrate deep into the interior regions of the province. Because of its widespread presence, there are more separate stocks of coho salmon, many of these stocks small in numbers, than any other Pacific salmon species.



Male coho salmon Coquitlam River, BC, Canada

In total numbers, coho are the second least abundant of the five-salmon species (ahead of Chinook). But what it lacks in quantity is made up for by the large number of people that care deeply about this species' future in our streams, in our experiences and in our fisheries. Coho salmon is truly the people's salmon.

Because of its habit of spawning in the smallest of streams, it is often the first salmon spotted by children as they begin to explore their world in back yards, local parks, greenways or camp sites near streams around B.C. Young coho salmon spend from one to two years rearing in the smallest streams, growing to the right size to successfully migrate to the ocean as smolts in the spring. For this reason, many children first see these small fry during summer forays around their neighbourhood creeks. In this way, the link between the large salmon of the ocean and these small fry at their feet allows young minds begin to understand the interconnections in the natural world, concepts that evolve into the meaning and importance of ecology to our lives.

People Power

Since the beginning of the Canada Salmonid Enhancement Program (SEP) in 1977, coho salmon have been the backbone of volunteer, stewardship and Streamkeepers efforts to enhance salmon and restore fish habitat. The red fish of the small streams provide the ties that bind SEP and the volunteer community together for common purpose.



Coho salmon smolt as it prepares to leave freshwater to the ocean

The Pacific Streamkeeper Federation (<http://www.pskf.ca/index.html>) has grown out of the efforts of the many local groups around BC that take care of and monitor their local streams. This diverse group of individuals are an unseen force throughout the small streams of the Province that are making a difference every day for species such as coho salmon.

One example of neighbourhood folks inspired to work for coho are Henry Gouwenberg and his family, dairy farmers along Hicks Creek, just east of Agassiz, B.C. I first met Henry back in 1984 on the banks of that little stream in the Fraser Valley in southwestern BC. Farmers have an intimate knowledge of their land and how the seasons and passing years bring changes. They loved to watch the coho return to the little creek on their farm but were troubled that the run was slowly shrinking in size. They reached out to the Salmonid Enhancement Program and a scheme was hatched to increase spawning habitat for the coho, which liked to lay their eggs in the patches of gravel at the base of mountain-fed springs that flowed into Hicks Creek. Years of keen observation and clever design combined to create the Hicks Creek spawning ponds, fed by the springs in the pastures along the stream.



Upper Hicks Creek Spawning Pond, Agassiz, BC, Canada

Constructed in the mid 1980's these two groundwater fed ponds continue to see 200 to 500 coho salmon return to spawn each season along with hundreds of chum salmon.

Farther downstream, lies Maria Slough where many of the coho fry from Hicks Creek go to rear during the summer months when Hicks Creek drops to a trickle and can go dry in long sections in the upper creek. Maria Slough was once a flowing side channel of the Fraser River but has been cut-off from these river flows for almost 60 years. During the early 1950's both the highway and railway bridges at its upper end were removed and filled in cutting off Fraser River flows to downstream areas.

Luckily, Maria Slough is fed part way down my large upwelling groundwater inflows which support a rich assemblage of fish, including those little Hicks Creek coho fry.

Spring water is much warmer than surface fed streams during the winter, but spring water is also much cooler than surface water during the summer and this makes for fine rearing habitat for coho juveniles in both summer and winter in Maria Slough.

Seabird Island, is also the home community of the thriving Seabird Island Band, a Sto:lo (People of the River) First Nation. It is always a pleasure to work with those that truly care about salmon, it binds us together for a common purpose. Passionate Maria Slough advocates, Clem Seymour and Chuck McNeil (Chief and Band Manager of the

Seabird Island Band respectively) and their community have worked hard to restore the slough to health.

Since we first worked together on the groundwater fed Seabird Channel, constructed in 1983, fat and healthy coho fry have crowded into this refuge every summer and winter since. Over the years the SIB and SEP team have delivered many more restoration projects on the slough for coho but also chum and Chinook salmon, with the odd rare late sockeye showing up for the party. Maria Slough, the sometime forgotten waterway, not so forgotten, because of these efforts, and the people that refuse to forget.

Hicks Creek and Maria Slough are just some of the small, yet vibrant coho salmon waters that continue to thrive even under intense development pressures, largely because local citizens such as these refuse to see them disappear.

Critical Winter Habitat



On many of the larger rivers such as the Chilliwack, Englishman, Puntledge, Alouette, Coquitlam and Cheakamus, research has shown how important good winter habitat is to young coho juveniles trying to survive their first winter in freshwater.

Studies have shown the amount and quality of winter habitat to be critical in deciding how many coho salmon will survive to become smolts the next spring.

Coho juveniles in Pelk-Wilem Channel, Squamish, BC, Canada

Critical winter habitat often means wetlands, ponds, side channels and other of these types of “off channel” habitats set back on the floodplain away from the high river flows of a typical coastal winter. These areas are often the first places to be developed as lands were settled and many areas of this type of habitat was lost in the more developed areas of the Province. For this reason, much of the restoration work for coho salmon has focused on increasing the amount of this off channel habitat to benefit young coho salmon during the winter months.

Coho fry can be found in almost any type of habitat during the summer if the water temperatures are not too high and food abundant. However, when the first of the fall storms bring the rivers up from their summer lows there is an unseen migration that occurs in most coho salmon streams.

Thousands of small fingerling coho juveniles, fat from a summer of feeding, start to migrate downstream in the larger rivers and then quickly turn upstream into the smaller tributaries looking for these very special places. These quiet ponds and wetlands are perfect coho winter habitat where the juveniles can lay quiet and conserve their energy while the winter storms rage in the main rivers of their birth.



Lovely Pond, Chilliwack River, BC, Canada

Throughout BC from Cheakamus River, near Squamish to the Englishman River near Parksville or to the Chilliwack River in the BC Lower Mainland, these quiet refuges for coho salmon have been created. Over the past forty years, community-based groups working with the SEP engineers and biologists, have developed many of these off-channel projects all for the benefit of the little orange tailed salmon.

Too Tough to Kill

I can't imagine too many medium sized coho salmon rivers that have been as beaten up and abused as the Coquitlam River has been over the twentieth century. The Coquitlam River, a tributary of the lower Fraser River was first dammed in 1905 and each time the dam was rebuilt it got bigger and taller and took more water from the river for both water supply for the growing cities and later for hydro-electric generation.



Upper Coquitlam River

After the record flood of December 1960 hundreds of thousands of cubic meters of gravel was mined from the river bed and river side dykes were built all in the name of flood control. When no more gravel could be removed from the river bed new gravel mines began sprouting along the hills adjacent to the river that to this day continue to have problems controlling the amount of fine materials that wash off the exposed mine areas after heavy rains. Lastly the Coquitlam River flows through the vibrant and growing Cities of Coquitlam and Port Coquitlam with all the resultant pressures that come with urban development. Yet after all these challenges, this river just refuses to die and in fact has made a remarkable recovery since it hit bottom in the 1970's.

Let's talk about coho salmon. They need two really important things to survive to get to an ocean-bound smolt in their second spring. An adequate flow of cool, clean water during the summer when they are growing as fast as they can to get some fat on their backs before the hard and lean months of winter catch them out. Second, they need a quiet and secure place to hide during the winter to wait out the floods, off channel is best but a really complex log jam might just work too.

Since the 1970's the Coquitlam River had a few things going for it beyond its inherent beauty and its upper watershed which is largely protected from human influence as it is now in a major source of potable water for the Metro Vancouver. It had the Kwikwetlem First Nation (KFN) on its lower banks that were not going anywhere and refused to forget the way things used to be. In later years KFN members Glen Joe, George

Chaffee and Nancy Joe were active team members in getting many of the lower river habitat projects off and flying.

Second, it had the Port Coquitlam and District Hunting and Fishing Club (PCDHFC), who's members did not buy into the inevitability that the river was doomed as a salmon stream. PCDHFC stalwarts, Al Grist, Wayne Goeson and Vance Reach, and many other club members led the charge to see the Coquitlam River rise from the ashes. The PCDHFC defined river advocacy in BC during the 1960's and 1970's before there were many speaking out about our use and abuse of rivers.

Whether it was pointing out BC Hydro needed to release more water from their dam for the benefit of fish downstream, or to lobby the gravel mining industry to get control of their mine run-off, or to take a lead in salmon habitat restoration or to start up the first hatchery program to restore salmon in the river the club was always there. With a little help from their friends Maurice Coulter-Boisvert and Scott Ducharme, with the SEP Community Involvement Program, the fish guardians at PCDHFC have stood up and roared for the last forty years.



Coquitlam River Dam- Grant's Tomb Coho Habitat Pond

What was in the early days a lonely march turned into a rather large parade of so many organizations, levels of government or just plain individuals that cared about the salmon and the river. The BC Hydro 2005 Coquitlam-Buntzen Water Use Plan Consultative Committee had 70 contributing members and organizations, that led to a ground-breaking improvement in water flows in the Coquitlam River.

The restoration of critical off channel habitats began in 1993, through a partnership between PCDHFC, BC Hydro and DFO-Salmonid Enhancement Program. Over the past 25 years some 15-major off channel projects along the Coquitlam River floodplain have been developed with a wide range of partners.

The large Oxbow off- channel complex was created through a partnership between the River Springs Strata (John Jaske), City of Coquitlam Parks (Dave Palidwor) and the DFO-SEP. Tony Matahlija, ex-commercial fisherman from the North Fraser Salmon Assistance Society was the bull in the china shop to get many of the later projects built along the river such as the Sheep Paddocks Channel projects (2002,2008). Salmon restoration was very personal to Tony so everyone would just step a side when he was charging ahead to get things done.



Sheep Paddock Channel, Coquitlam, BC, Canada

Up on the Scott-Hoy Creek, a major sub-basin of the lower Coquitlam River, a whole raft of folks contribute their energy to restore that very urban watershed to health. Condos, highways and hillside residences all surround and embrace this urban red salmon jewel in this very vibrant urban neighbourhood.

What has been the result of all this TLC over the years? Well, numerous studies over they years have shown the benefits of these restorative works for the production of coho salmon from the Coquitlam River watershed. The results are clear, if you restore habitat they will come, coho salmon that is, and the Coquitlam River is proof of that.

http://www.forrex.org/sites/default/files/publications/articles/streamline_vol4_no3_art10.pdf

Backyard Salmon Heroes

On coho streams across B.C., similar local acts of kindness, to the red fish in the backyard, are repeated over and over again. Here is a short list of some active groups across the Province, check out what they are all about!

Stoney Creek Environment Committee (Burnaby), <http://scec.ca/>

Hoy-Scott Watershed Society <http://www.hoyscottcreeks.org/>

Oyster River Enhancement Society

<http://www.oysterriverenhancement.org/about-ores.html>

Yakoun Hatchery (Haida Gwaii),

<http://www.oldmassettvillagecouncil.com/yakoun-hatchery>

Hyde Creek Watershed Society

<http://www.hydecreek.org/>

Salmon River Watershed Roundtable (Salmon Arm),

https://www.fraserbasin.bc.ca/Library/Recent_Events_Presentations/ws_presentation_srwr_2013_wallis.pdf

Gitga'at First Nation- Hartley Bay Salmon Hatchery

<http://www.pac.dfo-mpo.gc.ca/sep-pmvs/projects-projets/cedp-pdec/baie-hartley-bay-eng.html>

Fanny Bay Salmonid Enhancement Society <http://www.fbses.ca/index.html>

Langley Environmental Partners Society <http://www.leps.bc.ca/>

The will to protect, enhance and restore these areas comes from the people that really care about salmon and are willing to do something toward that goal. The money to undertake complex restoration or enhancement often comes from various levels of government or industry.

Money, Money, Money

Over the past 40-years, I have seen the Government of Canada, no matter the political party, always seem to come through with some funding that local groups can request for undertaking enhancement and habitat restoration projects. This is good and shows that

a broad consensus does exist in Canada that there is something inherently honourable to not let these species slip off into extinction due to our inaction.

Like all governments, every few years they like to announce a new program with new name. In the late 1970's it was the Salmonid Enhancement Program, but around a decade after the program was started the bloom was off the rose, the government had changed and something new needed to be announced. Governments do like to make announcements so new programs adding to the effort were rolled out. Sometimes they had rather catchy names like the 1990's "THE GREEN PLAN", but often times they chose names that were rather long and convoluted, with a deep message only they understood. All I can say is thank god for acronyms, the time saved by everyone that used an acronym went toward getting the projects actually done.

The Habitat Restoration and Salmon Enhancement Program (HRSEP), the Recreational Fisheries Conservation Partnerships Program (RFCPP) or the energetic, West Coast Energy-Fish Habitat Restoration Initiatives (WCEFHI) all just roll off the tongue and inspire the imagination. I can't imagine what the coho think, they must be so enamoured with all this serious attention.

The Province of BC is a little better with funds like the Habitat Conservation Trust Fund (HCTF) that sound good and who could not trust them with a name like that. Then there is the BC Hydro Fish and Wildlife Compensation Program (FWCP). At least this program says what it means to do and why they are doing it, so good on them.

The Pacific Salmon Foundation's has also been a long-time supporter of community salmon programs and has been recently strengthened through increased sources of funding that will benefit the stewards' favorite fish. The good old PSF has been there for the stewards through thick and thin, so you got to love them, I do.

But at the end of the day all these programs do one thing. They marry the enthusiasm and creative energy of the motivated public with the collective power of the country to do the right thing for these special fish and their habitats. So aside from a few tongue twisters, what could be so bad about that.

With this critical help from the various funding partners, the DFO Salmonid Enhancement Program, government agencies, First Nations, industry, community groups and individuals, have all played an active role in delivering thousands of salmon enhancement and habitat restoration projects across BC that benefit coho salmon.

Improving poorly designed culverts to aid fish passage, creating new wetlands and ponds, placing large wood and logs in streams, planting and protecting sensitive riparian habitats, releasing newly hatched coho fry into restored habitat, rearing smolts in community hatcheries to supplement fisheries in streams damaged by human

impacts – all have been major activities of these groups since the inception of the SEP program back in 1977. Protecting the genetic diversity of coho populations starts in the little streams near home and it will always be one of the most important contributions we can all make.



Coho salmon, Harrison River Slough, BC, Canada

Glass Half Full

In southern BC most of the coho live for around three years of age, half of that time is spent in freshwater and half is spent in saltwater. The long- term survival and diversity of coho salmon in BC will be largely determined how we treat the freshwater streams, rivers, estuaries and lakes which the young coho salmon juveniles need if they are to successfully survive and grow large enough to face the big wide ocean. Without coho smolts leaving the watersheds to go the sea, we won't have any coho no matter what they will face in their ocean lives.

However, it is also becoming more and more clear that the ocean can greatly affect the overall abundance of coho salmon across whole regions, in streams, big and small, for reasons we are still trying to figure out.

Here in southern BC many would remember the coveted coho fisheries that occurred each summer in the Strait of Georgia. Anywhere from 200,000-1,300,000 coho salmon would be caught by families in their little boats taking their summer holidays along the shores of the Strait. This had been the situation since at least the 1950's or even earlier, pure heaven if you were a small boat angler.

Then came 1991 when something occurred that had not been recorded at any time in the past. Virtually all the coho salmon swam out to the west coast of Vancouver Island and refused to come back into the Strait that summer until they were ready to spawn later in the fall. The summer Strait of Georgia coho fishery collapsed and the end of our angling world as we knew it was upon us. Did we fish them too hard, did we pave over too many streams, was it something we did?

Scientists had observed that marine survivals of the coho smolts have been declining since around the late 1970's but the catch seemed to be holding up not bad. In the early 1970s around 15 % of the coho smolts that entered the Strait of Georgia could be expected to survive to adulthood (1 in 6). By the 1980's maybe 7-8 % survived to adulthood (1 in 12) and by the late 1990's, in some particularly bad years, as few as 2 % of the coho smolts were surviving to adulthood (1 in 50). This confused a lot of scientists and fish managers because they just did not know what was driving these declines and if there was anything they could do about it beyond closing all coho fisheries if coho returns reached some critical low point.

Then came 1992 when the coho seemed to remain in the Strait as in the past with an almost a normal catch in the Strait of Georgia. The rods came back out and all seemed good with the world. Perhaps 1991 was just a bad dream caused by a belligerent sunspot or a volcano eruption or one of those deep ocean methane belches. But the real surprise came the next year, in 1993.

That year the rumour mill started very early that there were lots and lots of coho in the Strait. We all polished up our little tin boats and revved up the outboards and got ready to go fishing. By the end of that memorable fishery a modern- day record catch of 1,500,000 coho were landed during that summer of bliss.

Seemingly all our past sins had been forgiven, but "Coyote" was not finished with us yet. A little history here, Coyote is known as the trickster in many



indigenous cultures in North America including the Salish cultures from around the Strait of Georgia. He teaches humans important life lessons. I like to imagine Coyote was playing one his tricks on us, after tickling our toes in 1991 just to get our attention, he gave us the gift of absolution in 1993. But the joke was on us, his best trick was yet to come.

Maybe he just wanted us to teach us a lesson, that we should cherish more what we have, and not abuse the gifts we have been given. Perhaps he thought we took for granted the unearned abundances we had been blessed with. You see the long slide into our 25- year confusion began in the euphoria of 1993 and the final act played out in the summer of 1995, when the Strait of Georgia summer coho fishery truly and finally collapsed. It has not recovered to this day.

<http://waves-vagues.dfo-mpo.gc.ca/Library/345644.pdf>



Probably no more that 5,000-10,000 coho are caught in the Strait of Georgia each summer in the last two decades. Most coho today just keep on going to outside waters off the west coast of Vancouver Island, to wile away the summer months. Aside from this shift in summer distribution and to add to the mystery, from what we can tell the rivers are still producing many millions of wild coho smolts each year. Maybe another 5-7-million are released from hatcheries around the Strait. So, when one considers the increase in hatchery production since the mid-1970's, there is probably as many (maybe

more) coho smolts from all sources entering the Strait today than there was in the good old days of the 1950-1970s. So where are the summer coho?

There were almost certainly about as many coho smolts entering Georgia Strait in May 1992, that contributed to the great catch of 1993 as there were smolts entering in May 1994, that contributed to the great disappointment of 1995.

After 1995, the scientists believe the young coho salmon smolts as enter the Strait simply died in much higher numbers than in the past in their first few months at sea and those that do survive this critical early ocean phase just swim away to the west coast and don't come back to the Strait until early fall on their spawning migrations. Either way they are not in the Strait during the traditional summer fishery months, no coho, no fishery. We all have our pet theories what triggered this great shift in early survival and behavior of young Strait of Georgia coho salmon but nobody really knows for sure. The hard truth is it might just be something called "ecology".

But every good theory deserves its day in the sun and everyone loves a good mystery and some really bright scientists are trying to delve deeply into the ecology of the Strait of Georgia and maybe, just maybe we might know the real story some day. Stay tuned!

<https://www.psf.ca/what-we-do/salish-sea-marine-survival-initiative>

Red Fish Calling

I personally have a feeling that the red fish in our back yards have probably faced similar challenges to their survival from changes in ocean ecology over past centuries, as I think they had a plan in their DNA to leave the Salish Sea "en masse" when things got a little too hot in the kitchen and things weren't working out so well. So, if things cool off a bit and they think the coast is clear, maybe, just maybe "the summer of 1993" and all the streams filled to bursting with the red fish in our backyards might just come back again in our lifetimes.

Perhaps this is just wishful thinking but it might just put a little extra wind in our sails to deal with the real challenges we face in freshwater today where we can make a real difference by our collective actions, with the hope the future might give a tail wind and have some pleasant surprises in store for us.

So here we find ourselves in 2018 within sight of 2019 and the "International Year of the Salmon". Over the past century our society has evolved from one largely driven by the exploitation of natural resources to one more focused on sustainable management with a strong eye toward conserving into the future.

We have been humbled by nature and learned that abundance should never be taken for granted for it can go away through neglect or for poorly understood reasons. But we have also learned that our actions do matter and can impact the long-term survival of this special fish. Coho salmon live where we live and they will need all the care and attention we can muster to make it through this next century. I remain firmly optimistic from what I have seen over the past four decades that we are up to the task.



The Never-ending Story

All in all, the love affair with coho salmon has stood this test of time. Our challenge will be to ensure that the red, hooknose salmon of our backyards, the blueback along the kelp slashing the trolled bucktail fly, the bright adult on a commercial troller's deck far from lands shores, the Thanksgiving runs of ocean-bright coho into the river fisheries and the small fry and the small child meeting for the first time on the edge of a summer creek will endure and thrive long into the future.