

How exactly does soil migration affect the survival of BC salmon. What exactly is soil migration? How does soil migrate, who or what is moving it? We all know salmon need in river fresh water habitat to reproduce, but how can soil possibly affect or hinder the long term viability of BC salmon? Finding credible answers in the salmon debate over the years has long been the problem. The following may assist in an explanation of soil migration and related resource demise in the BC salmon debate.

Soil migration is the natural movement seaward of earthen material through a number of natural physical processes including erosion, (of earth material), gravity and hydraulic action. The only real interruption in the process of soil completing this migration seaward is the diversity of recurring/renewing plants and associated root structures that have dammed, trapped, and stabilized soil over thousands of years.

The acumination, volume and depth of stabilized soil within an estuary is the most important component of any rain forest salmon dependant ecosystem. Soil forms the absolute foundation and basis for ecosystems, plants, and dependant (including wild salmon) animal life. The volume of soil historically stabilized by plant material with in an ecosystem is directly related to the climax potential of plant species, plant volume, and the number and diversity of animal species. Wild salmon are totally dependant on healthy high soil volume/ high plant volume rain forest ecosystems. There are some amazing remaining (but not in BC) examples.

Examples of these high plant volume ecosystems can be found in diminishing areas around the world including the Amazon, Russia, and Alaska etc. These high plant volume ecosystems I describe as "biological dynamos". Most if not all of these high volume ecosystems are extremely fragile as each component is dependant on the collective to create the humidity, temperature, flow velocity, nutrient exchange, and related conditions for all components to thrive. Some of these components including wild salmon appear to be symbiotic in nature with the ecosystem. I understand an American research team in Russia is now investigating this exact salmon to forest relationship. Alaska understands this same concept as in their Ford Arm example. The marine nutrient exchange (dead salmon in the forest) between salmon and the forest appears to be far more complex than anyone imagined several decades ago.

The diversity of plants and plant volume historically with in any Pacific coast salmon dependant ecosystem is exactly how and why soil stability has been so effective in retaining ecosystem soil volume. Soil stability is very much like the stability built with in ancient Roman roads. The Roman road was built using several layers and sizes of rock of which large boulders were the base. This provided great advantages in road stability, maintenance, and the transportation of heavy loads. In a similar way, with in the historical climax rain forest, the larger trees historically have stabilized the deeper soil volumes. The remaining smaller plant species under the treed forest canopy protect, confine, and stabilize the remaining soil volume areas. Ferns are especially effective in confining surface soil volumes. When these described historical root structures are compromised, it becomes a falling domino scenario as the described accumulated soils are now allowed to migrate seaward.

Soil materials in a Pacific coast rain forest ecosystem that "are confined" with in high volume plant root structures are the most fundamental, valued, and stable asset with in that ecosystem. Soils that are "not confined" with in a Pacific coast rainforest ecosystem due to (logging) decaying root systems, etc, are a salmon dependant ecosystems worst enemy. Salmon need clean, cool, oxygen rich water. Soils that are not contained or poorly contained and supported result in an ecosystem burdened with high water temperatures, increased flow velocity, erosion, poor water quality, and excessive particulate mater. Wild salmon are a direct and immediate "domino falling" casualty of an ecosystem in decline due to excessive soil migration. Soil that has accumulated in a climax rain forest canopy ecosystem over many thousands of years via the described assisted plant root systems is how and why salmon have historically evolved and exist (to some degree) today in the Pacific Northwest.

I suggest we review several known physical facts. If soil did not exist, plants would not exist. If plants did not exist, animals would not exist, wild salmon being one of those animals.

Most of the problems we now face in BC with in the fore mentioned salmon dependant rain forest ecosystems has been the removal of historical plant material from historically high plant volume areas. Our Pacific Northwest “biological dynamo” ecosystems that existed over 100 or so years ago are today in various stages of soil migration demise. Once plant material is removed and roots structures decay and cease to exist soil migration continues seaward. There is a documentary titled “Easter Island” that speaks to this exact soil migration scenario. Should we be surprised when high volumes of historical plant root structures are removed from wild salmon dependant ecosystems, that 10-20 years later salmon runs collapse?

There is a cost of destroying ecosystems and related soil stability for very short-term gain. The ancient inhabitants of Easter Island paid that price. We in BC maybe well on our way in paying that same price. The over harvesting of plant material with in an ecosystem cripples the ability of that system to absorb and moderate heavy periods of rain fall. This reduction in plant volume all most always hinders the ability to control flooding in lower portions of any river system. It matters not where in the world that river system exists. There are many examples of soil migration and flooding due to extensive deforestation around the world. Several recent examples around the world including BC in the news are Haiti, the Amazon, Bella Coola, the Comox Valley, and soil migration in Oregon. The problems in these areas are really very much the same. Some may question the long term ability of these threatened areas to once again achieve soil stability. The real truth is we are looking at real geologic (100's of years or more) time for these ecosystems to fully recover. These ecosystems are much more fragile than governments know or possibly care to admit. For many of our BC salmon runs the extinction time clock ticks on.. Many BC salmon runs are extinct, and many more are on the way to extinction. It's about fact, it's not about debate. Can we in Canada accept and deal with beyond politics, the long term physical damage that naturally follows the migration of historical soils seaward? It is very much a Pandora's Box.

We can expect soil migration and flooding to continue despite what our politicians or Federal Fisheries Ministers may continue to promise. We have worked incredibly hard in BC in breaching plant root structures, now the salmon resource and those dependant are paying the price. Our coastal salmon runs and dependant coastal people are simply casualties of the soil migration process much like flood victims. If we as Canadians intend to violate nature's law, we are destined to suffer in the same way as the ancient inhabitants of Easter Island. If you breach or destroy an organic complex historical root structure that has trapped untold tons of soil for thousands of years, what exactly do we, as Canadians, expect? Given enough time, gravity is always the winner!

We all understand the recent initiatives in saving the habitats of the Mountain Caribou and Great Spirit Bear but, aren't salmon equally habitat dependant? If not what exactly is the difference? It's interesting that not one representative organization in BC has identified habitat loss as first and foremost in the demise of wild BC salmon. Not one! I suggest we all have a very long journey in addressing the truth about wild BC salmon.

Examples of high volume rain forest ecosystems as they relate to salmon abundance can be reviewed in the August 2009 issue of *National Geographic Magazine*. The article speaks to protected pristine salmon habitat in Russia and stable abundant salmon stocks in Alaska. Unfortunately the *National Geographic* on page 54 cites Canada as being “stupid and careless” in regards to our wild salmon resource. The fore mentioned article is now more than a year old. It does not appear that any politician, or DFO representative in Canada has stepped forward to address comments regarding *National Geographic's* reference “stupid and careless”. I suggest that more people in the free world read and have saved copies of the *National Geographic Magazine* than probably read the Bible on a regular basis. The *National Geographic* has given Canada a factual window to study and understand the salmon resource beyond politics. I expect the governments of Canada to thumb their nose in true grade school fashion.

Where habitat exists in Alaska and Russia, salmon stocks exist in good and many times amazing harvestable abundance. Where habitat is compromised and lost, salmon continue to struggle or go extinct.

As to salmon conservation, Canada appears to be punch drunk on chasing commercial fisherman. This still plays well in the media and sport sector. This has been our history in Canada over the last 40 years. Have Canadians really been stupid and careless in the management of BC salmon?

We in Canada have experienced difficulty over many years discussing real issues as they relate to the survival of wild salmon. How many times have you heard the term “soil migration” in the last thirty years? How many times have you heard or read the phrase “over fishing” in the last thirty years? We as Canadians have threatened for decades to address our salmon stock concerns. We never do. We continue to make promises to those dependant on the resource and continue to fail them each and every year with political excuses and stacked evaluations. It’s never really been about conservation. We have now reached a point in the demise of coastal salmon where sport fisherman and native food concerns have at times been displaced by conservation. I suggest the fore mentioned August 2009 issue of *National Geographic* says it all.

How do we in Canada explain our enlightened conservation measures, meetings, and conservation seminars over the past 40 years that have yielded over that same forty year period extensive wide spread loss of salmon habitat? Who exactly is responsible for continued salmon habitat loss over this 40-year period. Over this same 40 years wasn’t the commercial sector at times under extreme conservation measures? How do we continue to chase the commercial salmon fleet with little opportunity when they today number less than one third of those commercial vessels fishing 30 years ago? The 40-year campaign to focus on the commercial salmon fleet has destroyed coastal communities and fishing dependant families. This campaign has had little or no advantage to the conservation or recovery of the salmon resource. The real truth is, we as Canadians are not only running out of healthy salmon stocks in BC, we are running out of commercial salmon families to blame. I suggest soil migration is a dominate factor in the demise of wild salmon, not the few commercial salmon fisherman that remain in BC.

I suggest 40 years of politics, neglect, and the badgering of native people and the commercial salmon sector deserves a new enlightened Canadian perspective. Salmon habitat and related abundance comparisons with Alaska and Russia are something Canada cannot crawl away from to day or in the future. We in Canada are burdened with a blind faith that we can return our salmon runs to historical abundance while continuing environmental abuse. It’s not true to day, and it wasn’t true 40 years ago.

It should be clear to most west coast Canadians today that the governments of Canada over the last forty years have had little or no interest in addressing the demise of the salmon resource in BC in a fair and objective manner. The Canadian focus has always been eastern Canada. Maybe we should review and compare the BC salmon resource in this same 40 year period with Alaskan salmon conservation and resource abundance.

We must ask ourselves regarding the statement in the National Geographic Aug 2009 issue referring to Canada as “stupid and careless”, how offended should we as Canadians really be? Has the National Geographic Magazine misrepresented the facts? I suggest that those Canadians including our political parties who continue to deny the facts stated with in the National Geographic Aug 2009 issue are the real problem.

The National Geographic and those in Alaska are clearly here to lead the way for all to see and read. The sustainability and future harvesting of high quality protein is of serious global concern. The future of a sustainable global food supply and the displacement of arable land around the world, should be foremost on the minds of all Canadians. We are not likely to see the phrase “soil migration” anywhere soon in Canada. We are locked with in a political structure that demands the displacement of historical salmon habitat, and the harvest of quality marine protein by our commercial salmon fishing families. Wild salmon historically have had few political allies. Canadians simply have little concept of the impending global food shortage or how much arable land is required to produce quality protein.

We in Canada are not leaders in salmon management, conservation, or the recovery of the resource. As the world turns its attention to the problems of global food supply, we in Canada continue to find new ways to displace salmon habitat, coastal people, and communities that can show historic dependence. Our methods,

management, and abuse of the salmon resource in Canada are unsustainable and geared toward profits in other preferred industrial sectors. I suggest the politics and mindset within the ancient culture of Easter Island were probably much the same.

In conclusion, soil conservation as it relates to wild salmon is most fundamental in the protection and stability of essential habitat and ultimately the salmon resource. What we have in our salmon dependant ecosystems is a fragile card castle scenario dependant on soil stability. Everything contained within salmon dependant ecosystems are built on the stability, volume, and quality of historical soil accumulated over many thousands of years. Our long term salmon recovery plan, requires an awareness and control of soil migration and the need to return to canopied high plant volume riparian areas. Altered habitat displaces historical species and creates opportunity and conditions for new and sometimes invasive species. Probably the best example of soil migration awareness has been reviewed in the January 15, 2010 issue of the *Oregonian*. This article speaks to runoff from road and logging as “non-point pollution”. The article (included, links) also addresses poor water quality, soil runoff, and future possible lawsuits identifying logging effects as detrimental to wild salmon. Can we in BC really be that far removed from this elevated salmon habitat awareness?

We as Canadians are likely to witness a continued lobby to spin responsible and accountable management of BC salmon. It may buy politics several years. We are not likely to see a retraction from the *National Geographic Magazine* or the January 15, 2010 issue of the *Oregonian*. We in BC should expect to see continued salmon resource comparisons in the future with Alaska and Russia. Who was it that said, “Canada is the resource prostitute of the world?”

Tom Gray

Supporting links:

<http://ngm.nationalgeographic.com/2009/08/kamchatka-salmon/quammen-text>

<http://wflc.org/inthenews/salmon/ORmedia/1.17.10Oregonian/view>

<http://wflc.org/inthenews/salmon/>

<http://wflc.org/inthenews/landslidesflooding/>

## **The Oregonian: "Oregon held to account for failing to protect coastal waterways"**

January 15, 2010 -- Oregon doesn't do enough to protect its coastal waterways from the harmful effects of logging, and that could end up costing the state millions in withheld federal dollars.

[http://www.oregonlive.com/environment/index.ssf/2010/01/oregon\\_held\\_to\\_account\\_for\\_fai.html](http://www.oregonlive.com/environment/index.ssf/2010/01/oregon_held_to_account_for_fai.html).

By Matthew Preusch

Oregon doesn't do enough to protect its coastal waterways from the harmful effects of logging, and that could end up costing the state millions in withheld federal dollars.

The controversy stems from a federal law requiring 34 states, including Oregon, to combat so-called non-point source pollution: the fouling of waterways from small sources, like road runoff, as opposed to large, obvious polluters like factory waste pipes. The Environmental Protection Agency and National Oceanic and Atmospheric Administration have approved most of Oregon's coastal plan. But shortcomings in the state's pioneering Forest Practices Act are the main sticking point, and a conservation group has mounted a legal challenge.

"Oregon's forestry program lacks adequate measures for protection riparian areas of medium, small and non-fish bearing streams, high risk landslide areas, and for mitigating the impacts of legacy roads," the federal agencies wrote in a letter to the state Department of Environmental Quality and Department of Land Conservation and Development in August.

The agencies want the state to start dealing with muddy runoff from the vast network of old logging roads; forbid loggers from cutting all trees right up to the banks of certain small streams; and restrict logging in places with a high risk of landslides that could impact water quality.

The agencies have already signed off on the forestry portions of California and Washington's coastal protection plans.

"The fact is, California and Washington have riparian protections that are two to three times as strong as Oregon's," said Dave Powers, EPA's regional manager for forests and rangelands.

That may be, but Oregon's forest lands are home to the cleanest water in the state, said Jim Paul, head of the Oregon Department of Forestry's private forests division.

"Clearly Oregon does not have the strictest regulations, but in terms of water quality conditions, the data speaks for itself," Paul said.

And the state, he said, has made many improvements to its 39-year old forest protection law for state and private lands, like recently limiting log-hauling during very wet times and increasing monitoring of logging's impact to waterways. But EPA and NOAA say it isn't enough.

"We have been trying to find a way to address the concerns and also make sure EPA and NOAA are fully aware of what we have done, and just to see if there is a way that we can resolve this," Paul said.

If the federal government doesn't sign off on a state's plan, the feds are supposed to withhold money from the state. But despite Oregon's ongoing failure to satisfy the environmental and fisheries agencies, the government continues to send Oregon coastal conservation funds – nearly \$50 million between 1998 and 2008, according to court documents.

"In this difficult economic period, we appreciate all federal dollars that support important state program - in this case, a program that balance coastal economic development and conservation," Gov. Ted Kulongoski said in a press release announcing the funds last year.

Opponents argue the continued funding enabled the state to postpone changes to its forest laws that would improve water quality.

Last year, a Portland environmental group sued to force the federal government to cut off the funding as a way to leverage the state into beefing up the logging rules.

"Our primary interest is certainly in reforming Oregon's forest practices so that they protect water quality, but when Congress made these funds available they did so with the understanding that the states would take their responsibilities seriously, and if they didn't they wouldn't be getting the funds," said Nina Bell, executive director of Northwest Environmental Advocates.

Complicating that is a recent warning from the Oregon Department of Forestry that it doesn't have enough funding to even enforce the rules that are in place right now, especially if expected budget cuts go through.

Bell's group and federal attorneys are currently negotiating ways to settle the suit. One possible outcome is that Oregon's Environmental Quality Commission could petition the state Board of Forestry to make the necessary improvements the state's forest rules.

If the board doesn't comply, that could have consequences like exposing loggers to possible lawsuits for water quality violations or for harming threatened species such as salmon.

"We're really hopeful that we can work through this with EPA and NOAA," said Mike Carrier, the governor's natural resource advisor.