



## **Results-based forestry: A proven failure in the protection of salmon streams**

A joint submission from  
the United Fishermen and Allied Workers' Union – CAW  
and the T. Buck Suzuki Environmental Foundation  
to Professor George Hoberg, Faculty of Forestry, UBC



## **Inadequate logging regulations impact salmon-related jobs and coastal communities**

The T. Buck Suzuki Environmental Foundation is a province-wide environmental non-profit organization with over 3,500 members, many of whom work in the commercial salmon fishery and are engaged in local volunteer salmon stream protection activities. The Foundation works to protect and improve fish life and fish habitat in B.C. by encouraging policy, laws and public behaviour that ensure that fish-bearing marshes, streams, rivers lakes and marine waters are not polluted, dammed, diverted, wasted or degraded.

The wild salmon fishery contributes about \$170 million in wholesale value to the B.C. economy directly. But the full importance of salmon to B.C. extends much further. Sports fishing for salmon contributes more than \$200 million in GDP to the economy. The First Nations constitutional aboriginal fishery and commercial First Nations pilot sales program contributes significant monetary and social value to local First Nations communities, many of which have few other employment opportunities.

More than 10,000 people work directly in the commercial fishery and fish processing. The B.C. government estimates that sports fishing related activities provide employment for about 6,400 people. Thousands of First Nations people in hundreds of small communities rely on salmon for sustenance, employment, and social and ceremonial uses.

A 1996 study of the status of B.C. salmon stocks (Slaney et al. 1996) found that of stocks where populations were known, about 20% were at risk, extinct or of special concern. Forestry was seen as a major threat to many of these stocks because of the extensive nature of logging activity throughout the province and the long history of impacts. The direct impact of logging, the report states, appears to be a complex series of changes that result in increased growth at some life stages of salmon and reduced survival at other stages. Logging impacts documented at Carnation Creek on the West Coast of Vancouver Island included increases in erosion, sedimentation and summer water temperatures. Other concerns include the loss of riparian cover, reductions in large organic debris, and changes in habitat unit characteristics.

In addition, associated activities such as road construction, log storage and herbicide spraying have led to further fish habitat degradation. In coastal areas of the province, logging on steep slopes and heavy precipitation have increased the frequency of landslides, debris torrents and the subsequent loss of stream habitat for salmon. Tripp and Poulin (1992) reported the total destruction of salmon rearing habitat in some streams after such events. Poorly planned logging road construction through post-glacial lake deposits in tributaries of the Upper Fraser River has resulted in severe sedimentation of salmon spawning and rearing habitat (Slaney et al. 1977).

Protecting salmon streams from the impacts of poor logging practices is not a simplistic “jobs vs. the environment” trade-off. Long-term damage to salmon stream ecosystems will cause the collapse of more salmon runs with little chance of restoration or rebuilding of the runs for many decades if at all. This has two effects on the commercial fishery. First, there are declining numbers of salmon due to habitat loss. As runs diminish, fisheries are cut back to perhaps only one day fishing on a particular run, or if the run declines to the point of jeopardizing the necessary spawners returning to the spawning grounds, a fishery can be closed altogether. Secondly, as Fisheries and Oceans Canada increasingly moves to incorporate a weak stock salmon fishery management model – that is, if a run of concern could be impacted as it is caught as bycatch during a fishery on a large, healthy run the entire fishery can be closed to protect the weak stock – losses of a relatively small number of fish from a sensitive stock can close a large, lucrative fishery on a major salmon run. This, indeed, is the larger impact from habitat loss.

Coastal commercial fishermen and First Nations should not be forced to bear the economic consequences of habitat loss caused by another industry that is being managed in an unsustainable

manner. For the fishing industry, enforceable environmental protection for salmon streams means healthy livelihoods and healthy coastal communities.

### **Complexity of riparian ecosystems makes “results-based” model unworkable**

It is precisely the complexity of the forest ecosystem and the needs of salmon that makes immediate and long-term damage to fish habitat extremely likely unless specific measures are in place to ensure riparian zones are protected, roads and bridges are built with fish in mind, steep slopes are not cut, and the rate of cut is effectively planned for long-term watershed health.

Streams and aquatic habitat deserve special consideration in forest planning. Water links estuaries to alpine environments. These habitats are the focus of activity of a large portion of all fauna and contain the most diverse flora in a watershed.

Forests in riparian areas play critical roles in shading, food production and food-gathering processes within streams. These areas affect the rate of water movement through the soil, are the source of woody debris that help to store gravel in the stream channel and provide habitat for a wide variety of aquatic organisms. Forest cover regulates stream velocity and influences stream channel morphology.

Streams, lakes and estuaries all provide incubation and rearing environments for trout and salmon. These land-water systems are strongly affected by logging and roadbuilding activities which can alter channel morphology, hydrology, water quality and shading or thermal regimes. Events far upstream, well removed from salmon spawning areas can influence downstream characteristics and organisms. Changes in the riparian environment that modify physical processes or alter food availability influence invertebrates and thus may alter fish species composition or abundance.

Some juvenile coho salmon and cutthroat trout seasonally enter very small tributaries and ponds which are safe refuge in the winter but are dry riparian areas in the summer. These areas are extremely susceptible to logging impacts as they are very often ignored or misclassified. In some years, this habitat produces almost one-quarter of all coho smolts in some coastal streams (Brown and Hartman 1988).

Many streams contain small resident populations of cutthroat trout and Dolly Varden. They occupy relatively short lengths of stream channel, typically in low-gradient stream reaches located above barriers that block upstream migration. Resident fish such as Dolly Varden have been isolated from downstream fish for thousands of years and may be genetically distinct. Because they spend most of their life within relatively short reaches of stream channels, they have no refuge from damage to their stream channel and no ability to rebuild their populations by immigration from the sea or adjacent streams. These species are particularly vulnerable to poor logging practices and inadequate field identification.

The complexity and subtlety of riparian processes are what led the Clayoquot Science Panel to emphasize the importance of maintaining vegetation in riparian areas, restricting the rate-of-cut in watersheds, carefully locating and constructing roads, and treating watersheds as discrete units needing long-term planning and monitoring.

### **Preventative vs. reactive regulation**

The mounting evidence of salmon habitat destruction from logging led government scientist and managers to recommend the establishment of a preventative approach to fish habitat protection, as the reactive “results-based” measures in the federal *Fisheries Act* had proven a failure at curbing widespread habitat damage. Although the *Fisheries Act* made it illegal to harmfully alter, disrupt or destroy fish habitat or to deposit any deleterious substance in waters frequented by fish, monitoring and proving the harmful “results” from logging activities was difficult, expensive and often impossible.

A recent Fisheries and Oceans Canada workshop into the effectiveness of the *Fisheries Act* and their No Net Loss of Habitat policy concluded that the *Fisheries Act* is not the best tool for protecting rural forest habitat and that provincial stream and aquatic habitat protection legislation was needed. Indeed it is the only way to prevent loss of habitat before damage occurs. In addition to preventative provincial regulations, watershed planning is essential to ensure against long term ecosystem impacts and cumulative watershed effects.

The province and Fisheries and Oceans Canada worked jointly to establish the B.C. Coastal Fish/Forestry Guidelines, updated in 1993, to fill the preventative void in government regulation. Although it was a big move forward, audit analysis of the effectiveness of the guidelines (Tripp 1992, 1994) showed major impacts were still occurring despite the new measures. Half to two-thirds of the streams with fish concerns showed impacts from logging. The most impacted were small streams and side channels. Impacts included sedimentation, surface erosion, inadequate drainage controls, encroachment on streams by landings, roads and bridges, and impacts from poor falling and yarding. Other impacts occurred after logging operations had ended, including landslides, torrents and tree blowdown.

The recommendations coming out of these audits were precisely in the opposite direction to the current provincial government thinking. They called for specific and enforceable preventative standards for stream protection. Without “enforceable standards, prescriptions such as ‘maintain water quality’ are impossible to achieve” the 1992 Tripp report concluded.

It was evidence such as this that led to the establishment of the provincial *Forest Practices Code* in 1995 as a more enforceable, detailed mechanism to ensure stream and riparian protection, among many other important environmental values.

A study conducted in 1998 by the Forest Practices Board that looked at logging impacts on streams pre-Code and post-Code concluded that there was “a marked reduction in the level of logging-related alterations to streams since the period preceding Code implementation.” The most important difference post-Code was the implementation of strict riparian reserve zones for different sizes of streams. It is clear that as the province moved to more preventative standards-based stream protection, fish habitat impacts were reduced. A move away from this approach will fail.

Nothing in the draft “result-based” code gives any assurance that streams will be protected. No science has been presented that shows that such an approach can protect salmon streams.

In fact, from a biological standpoint, there is an emerging scientific consensus that to ensure the protection of the important aspects of stream integrity – shading and temperature control, root strength, bank stability, stream flow control, large organic debris and litter recruitment and the maintenance of food sources – strict no harvest zones must be prescribed approximately one tree height from the edge of a stream channel with a second tree height buffer reserve zone beyond that.

B.C. conservation groups argued that the Forest Practice Code was a step in the right direction, but that Code reserve zones were much too narrow to be effective. They were particularly critical of the fact that small fish-bearing streams less than 1.5 metres and streams that feed into fish streams were given no protection whatsoever. Both the T. Buck Suzuki Environmental Foundation and the UFAWU-CAW took the same position. Fisheries and Oceans Canada has echoed these sentiments in letters sent to all Ministry of Forests Regional Managers stating that lack of reserve zones on small salmon streams and feeder streams is contrary to the federal *Fisheries Act*, calling for action to bring forest practices in line with habitat provisions in the *Act*. In an evaluation by Fisheries and Oceans Canada of their involvement in land use planning in 1999 it was stated that the *Forest Practices Code* was widely perceived by Fisheries and Oceans Canada staff “as not providing an adequate level of protection for fish and fish habitat.”

These criticisms should in no way lead to the conclusion that the preventative standards-based approach of the *Forest Practices Code* is the wrong approach for fish habitat protection. Indeed, all evidence would lead to the conclusion that it is the only approach that has proven effective in B.C. and in other jurisdictions in the Pacific northwest. The approach should be retained and fish habitat protection measures made stronger to properly compliment the intent of the federal *Fisheries Act* and to reflect more recent science showing the need for large riparian reserve zones.

**Proposed riparian “results”  
are reactive and ineffective**

The approach set out in the draft “results-based” forest regime ensures failure for riparian protection by setting out “results” that have little more substance than the federal *Fisheries Act*. “Protection of fish and fish habitat” and “assurance that deleterious substances are not introduced to streams” are simply re-statements of similar sections in the federal *Fisheries Act*. Like the *Fisheries Act*, they are a reactive form of regulation and would presumably only trigger enforcement action after fish habitat has been destroyed. There are no specific standards set for these “results” so forest companies and enforcement staff would have no goal post to measure success or failure, compliance or non-compliance. At least with the federal *Fisheries Act*, extensive policy and guidelines have been established to give meaning to the relevant sections of the *Act* and decades of court precedents have brought clarity to proponents and enforcement staff alike.

Does “protection of fish and fish habitat” include: areas for stream channel migration, including the active floodplain; intermittent streams; seasonally wetted areas; side channels; small streams that may provide fish habitat at some time of the year but do not necessarily have fish present at the time of a stream assessment; non-fish bearing streams that provide water, food and nutrients to a downstream fish bearing stream? If these issues are not made clear, how could a forest company possibly make timber plans that take these forms of fish habitat into account? How could charges be laid that the courts could uphold if the “results” are so poorly defined? We could spell out dozens of problems such as these for every “result” listed under Riparian Management in the proposed “results-based” regime. In the end, most damage to fish habitat will never result in enforcement action because the proposed wording gives insufficient clarity as to what the result would look like.

This is compounded by the problem that the time frame for the “results” is not defined. If poor roadbuilding practices lead to landslides in 15 years causing harmful sedimentation of a salmon stream, will there be any ability to charge a company for this “result” and prove that forest practices were the cause? Not if we look at the effectiveness of the federal *Fisheries Act* at dealing with such long-term problems.

In the end, if due diligence is allowed as a defence with any “result-based” regime, as the proposal suggests, there will be no ability to enforce anything. This would be a complete contradiction and should be re-thought entirely.

**Proposed riparian “rules”  
are vague and unenforceable**

Similarly, the “rules” set out for riparian management have loopholes large enough to drive a logging truck through. Riparian reserve zones will “reflect” current reserve zones, but there is no assurance that they will be identical. In any event, current science on riparian reserves indicates that the Forest Practices Code has wholly inadequate reserve provisions and application of the federal *Fisheries Act* to forest land would entail full reserve zones around all fish bearing streams and streams feeding into fish bearing streams.

The “rules” allow exemptions to full reserve zone retention and allow for yarding and skidding through a stream itself. This is contrary to the “result” named of protecting fish habitat and maintaining natural waterflows and water temperatures. Tree retention must be sufficient to maintain natural water temperature regimes in “temperature sensitive streams,” but these are not defined. In

fact, all fish bearing streams are temperature sensitive. Instead of acknowledging this, temperature-sensitive streams are to be “designated” by the Regional Manager of Environmental Stewardship. If recent provincial actions are the test of probable effectiveness, this will guarantee failure. When the provincial *Fish Protection Act* was passed in 1997 it called for streams with inadequate waterflows to be “designated” as “sensitive streams” under the *Act* thereby receiving special protection. Five years later 96% of the streams determined by DFO and the province to have inadequate waterflows have not been designated as “sensitive streams” and have no special protection, nor is there any plan to expand on current designations.

### **Inadequate baseline data or long-term monitoring**

Without extensive baseline data gathering the results of poor logging practices will never be known. This will be compounded by the fact that long-term monitoring of logging impacts is not spelled out and is highly unlikely to cover the kind of damage to fish habitat that can take decades to emerge. This is precisely why we need preventative standards, not reactive standards.

### **Staff and budget cuts make enforcement impossible**

Because of the difficulties of proving how complex habitat requirements have been harmed by logging, a higher level of pre-assessment and post-logging monitoring would be needed. Current audit levels are only uncovering a fraction of the impacts from logging and generally only happen when trouble has been spotted. The workload of provincial enforcement staff is already so heavy there is inadequate time to do thorough investigations or to cover all logging activities. A survey of provincial staff two years ago found that staff overwhelmingly do not believe that the environmental is being adequately protected from forestry impacts.

All Ministries have since faced further downsizing, as has Fisheries and Oceans Canada. The need for more monitoring within a “results-based” forestry regime will mean less time for investigations and enforcement action, unless government is willing to reverse the last decade of staff cuts.

The province is currently in the process of cutting 14% of its existing Compliance and Enforcement staff, from 325 to 279, forcing them to cover about 179,000 hectares of forest land each, clearly an impossible task.

### **Recommendations**

A “results-based” reactive forestry regime will not protect fish habitat or riparian ecosystems. It has been a proven failure with the federal *Fisheries Act* despite the good intentions and hard work of habitat enforcement staff at Fisheries and Oceans Canada. There is no scientific evidence to show that a results-based approach can protect fish habitat and until such science is established the approach should be abandoned.

- 1. Retain a preventative approach to habitat protection through a detailed set of enforceable, measurable standards for logging practices and related logging activities.**
- 2. Expand on riparian reserve zones in the current Forest Practices Code to include two tree-length reserve boundaries, including adequate reserves on all fish-bearing streams without exemption and on all streams feeding into fish-bearing streams.**
- 3. Ensure a rate-of-cut based on ecosystem sustainability, not lumber production needs. Timber supply impact caps must be eliminated.**
- 4. Ensure meaningful public involvement in ecosystem-based forest development planning.**

- 5. Establish a qualified, independent science panel to look at alternative models for forestry regulation that ensure full environmental protection based on proven science with options to be presented to stakeholders, First Nations, environmental groups and concerned citizens in an extensive public consultation on future directions for forestry in B.C.**