

Fish and Logging: What Fish Tell Us

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Alberta is faced with progressive, continuing and potentially irreversible declines and losses in native fish populations.

- Westslope cutthroat trout, once abundant in the Bow watershed to below Calgary and in the Oldman watershed to Lethbridge are now at 5% of their former range. Populations are fragmented, have a small distribution and only 39 genetically pure populations still exist. WSCT have been designated as “threatened”.
- Rocky Mountain Whitefish, once so abundant catch limits were measured in pounds and tens of fish, are in alarming decline. In 1980 population estimates in the Crowsnest River were 3000 RMW/km; recent estimates from float observation are 3000 RMW in the entire upper Crowsnest River.
- Bull trout have declined 70% from their historic range in the Oldman watershed and similar declines are noted over their range in Alberta. In 1995 angler catch limits were reduced to zero to aid recovery. Seventeen years of monitoring bull trout populations provincially shows a disappointing result. The diagnosis is dire and the prescription provides faint hope for bull trout. Population trends indicate 61% of bull trout core areas (there are 51 in the province) show declines and 39% are stable or increasing. “Stable” populations are still below their historical levels and the word doesn’t imply the population is healthy, only that there have been no changes in survey results over the short time of monitoring. Only three populations were shown to have increased in numbers over time. Redoing the math leads one to a conclusion 94% of the provincial bull trout population is in trouble. Bull Trout have recently been designated as “threatened”.

Provincial fisheries managers have but one lever, that of angling regulations, to pull to aid fish populations. That lever, of zero harvest, has been pulled

for 17 years in the case of bull trout. It hasn't worked- it never had a chance to work- given that an accompanying response in land use activities didn't happen.

- The bull trout population of the upper Crowsnest watershed was extirpated in the span of one human life. Although angling and poaching were extreme factors it was the additive features of land use- logging, mining, grazing, roading and urban development- that cumulatively resulted in the loss of the population.

Native fish are indicators and integrators of what we do (or fail to do) in watersheds. They are the ultimate “gold seal” of water quality and landscape integrity.

- Every land use decision, especially related to logging in the southern Eastern Slopes is a decision about water quality, fish, wildlife and stream flow.
- The fish, or more to the point the declines in fish, the disappearance of fish, tell us about the additive, synergistic combination of roads, logging, mining, culverts, motorized recreation, grazing, dams, diversions, poaching and climate change.

The Eastern Slopes have become a very busy landscape. The biggest footprint is that of logging and of associated roading.

- A real recovery effort, honestly and diligently pursued requires the use of watershed disturbance thresholds that guide decisions about land use and are not exceeded. In many watersheds the limits have already been exceeded. There, for those degraded habitats, a recovery and restoration effort is urgently required.
- In 1950 there were 177 stream crossings in the entire upper Oldman watershed (upstream of the Livingstone Mountain range); by 2001 this had increased to 2803 crossings.
- Research indicates a threshold for road density to maintain bull trout (and probably WSCT) ranges from 0.1 to 0.5 km/ square km.

- Current road densities for much of the Castle, Crowsnest and Oldman watersheds exceed these thresholds by several orders of magnitude (8 to 40X's).

The relationship between logging and watershed integrity is both site specific and one of scale. Commercial, clear-cut logging alters stream flow, nutrient runoff, stream bank stability, instream habitat for fish and aquatic invertebrates, erosion and sediment movement. These effects are additive and exceed the range of natural variability to which native fish have adapted.

- A recent U of A study of paired watersheds showed the logged one had 160% more imbedded sediment in the substrate compared to an unlogged basin.
- As little as a 10% increase in fine sediments has been shown to decrease spawning and rearing success for fish.
- Many smaller tributaries in the Oldman watershed show signs of “imbeddedness”, a cementing of the substrate together by fine sediments that originate from clear cuts and roads that are unrestored. This condition inhibits spawning and limits aquatic insect populations.
- The legacy of about 60 years of commercial logging in the Oldman watershed is a landscape of roads, trails and clear cuts that still bleed sediment into receiving waters on an annual basis, reducing the capacity and capability for the survival of native fish.

In the administration of logging the process is paramount and takes precedent over the outcome.

- The Forest Service allocates, then plans.
- There is abundant policy, guidelines and rules yet the outcomes for other forest values are unsatisfactory.
- Process is “rules” based rather than performance based.
- Logging is a largely uncontrolled, unmonitored landscape scale experiment.
- There are few, or no biological benchmarks established, from which one could realistically measure effects. Any environmental

monitoring done is flawed because of the lack of benchmarks. Anything that has been done is short term, poorly executed and lacking in statistical rigor. Some of it is incoherent and mostly inconsistent. Most monitoring is of the “windshield survey” variety.

- The process and the outcomes are strongly weighted to fiber production, despite a policy that prioritizes watershed protection.
- Despite a policy that puts watershed protection as a paramount goal no significant road reclamation happens because of a reluctance to anger the OHV lobby.
- A compartmentalized, “silo” approach to forest management has led to rancor within ESRD and frustration from the outside.
- The Forest Service inventories timber, protects it from fire and disease, allocates timber, regulates harvest, supports the timber industry and enforces timber policy and regulations. It is vested in timber management and aligned with industry, not with forest ecosystem management.
- Many Forest Service staff lack a background in ecosystem science but most problematically in ecosystem thinking.
- Public consultation skills are poor and are characterized by “too little- too late”.

An ecosystem, science based approach would tend to treat sensitive watersheds in a much different manner. Unfortunately this does not happen.

- Hidden Creek is a small tributary of the Oldman River. Extensive trapping over a two year period by the Alberta Conservation Association indicates that amid all of the tributary streams Hidden Creek is the hands down bedroom of choice for nearly 8 out of every 10 bull trout. Hidden Creek is the epicenter for about half of all bull trout reproduction in the upper Oldman River watershed.
- Logging of the watershed was permitted despite a pending designation of the stream to a Class “A” status, which confers the highest degree of protection available (this still represents a minimal standard for streams like Hidden Creek).

- Class “A” standard for buffer zones on both the main channel and tributaries was consistently violated. The construction of a new logging road was allowed within the buffer (2 km of a 5km road are within the buffer and a section is within 10m of spawning areas in the stream).
- The Forest Service “calls” Hidden Creek a Class ”A” stream but “treats” it as a normal logging operation. There seems to be a reluctance to mitigate the impacts of the logging operation in ways that would ameliorate future erosion, slope failure, OHV activity and sediment addition.
- Recent logging of the Beavermines watershed required construction of a new logging road. Within the first year sediment containment devices were ineffective at preventing movement of sediment into streams at three crossings. Little evidence of monitoring or compliance was noted.
- Future logging plans include 12 sensitive watersheds, many of which contain either WSCT or bull trout, or both. One is Mill Creek in the Castle watershed that is central to spawning for the Castle Bull trout population.
- A cumulative effects assessment of the Oldman watershed is critical to establishing a benchmark, understanding current status, designing restoration plans for the existing footprint and determining a sustainable level of timber harvest.

Different outcomes are required to maintain native fish populations.

- Recognition is required for the priority of habitat protection for native fish species.
- A focused, integrated approach is required to restore and maintain watershed integrity.
- Watersheds with remnant, resident native fish populations and key spawning streams require appropriate protective status that eliminates future industrial and motorized access footprints.

It is probably human nature that we are more inclined to listen for the bang of things going seriously, quickly and irrevocable wrong, but tend to be deaf to the whimper of the incremental, cumulative pathway to the same end.

- Fish do not immediately die from a logging operation but the legacy of poorly planned cutblocks, inappropriate roading and a lack of timely, effective restoration of the logging footprint creates a legacy of problems. These inevitably lead to population fragmentation, spawning failure, habitat loss and population declines. Once the population dips below a critical mass, any of a number of factors, natural and/or human, cause populations to disappear.
- Native fish have been entrusted to our care, not for our exclusive use and disposal but to ensure viable populations are passed on, unimpaired, for subsequent generations. So far we have largely failed at this responsibility. It would be a blot on our record as stewards of shared resources to allow species like cutthroat, bull trout and mountain whitefish disappear through apathy, ignorance, inaction or greed.