Genuine Ecosystem-Based Forestry:

Impossible in Alberta?

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The way forests are perceived and managed has changed throughout human history. Forests have been feared, loved, hated, and revered. They have been viewed as a home for evil spirits, a symbol of purity and unspoiled nature, and an obstacle to development. Along with natural disturbances, humans have shaped forests and relied on them for all basic survival needs and many psychological needs. Long before Europeans arrived, many First Nations managed forest growth with controlled burning to regulate plant and animal life. For several hundred years before the advent of industrialized commercial forestry, European settlers in Canada viewed the forests as inexhaustible and continuously cleared trees for more desirable land uses, mostly homesteads and agriculture. Since large machinery and technology was employed to log forests on a much larger scale, our seemingly unlimited forests across the country were shrinking rapidly. By the mid-1900s, Alberta was one of many provinces in Canada that adopted the 'sustained yield' model (SYM) that emphasized timber production as the primary forest value. Forest practices under SYM normally utilize clearcut harvest systems with zero retention so that all forested land is sustaining a perpetual yield of timber to the fullest degree of its productive capacity. In more recent years recognition has grown that sustained yield principles fail to adequately address the maintenance of ecosystem functioning, species diversity, wildlife habitat, and ecological services.

The Alberta Forest Conservation Strategy (AFCS) was a process developed during the 1990s to resolve a lack of clear social expectations of forest management, a growing public interest in non-timber forest values, and national and international commitments to environmental protection. The AFCS promised both collaboration between different industry users to minimize the impact of human activity on the landscape and the implementation of ecosystem-based management (EBM). Despite the potential for a new management paradigm, policies such as AFCS were heavily criticized because they lacked regulatory mechanisms to ensure proper implementation and accountability. Without these elements, forest management in Alberta remained largely driven by sustained timber yields.

The term ecosystem-based management is now used frequently, and seems to be the preferred greenwashing term for the government's forestry division and logging companies alike. But what does it actually mean? The Silva Forest Foundation characterizes EBM as using the precautionary principle and adaptive management. It recognizes that healthy forest-based economies and cultures depend on healthy forest ecosystems and focuses on what to leave behind instead of what to take out. It is a more holistic and integrated approach to managing any landscape.

The shift from SYM to EBM may have occurred to some extent on paper as more policies adopt the language but whether it has happened in Alberta's forests as opposed to on bureaucrats' desks is not always apparent. Many believe practices under current policies like Forest Management Agreements (FMAs) and the *Alberta Forest Products Roadmap to 2020* are still based on the foundation of securing a continuous supply of fibre. Ecosystem functions are a far less important priority. Relying on logging companies to manage forests creates a conflict of interest when it comes to respecting ecosystem functions. Companies are unlikely to make decisions that will adversely affect their financial bottom line and, ecosystem functions are not a high priority.

Ecosystem-based Management (EBM): strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

Decisions Adopted By The Conference Of The Parties To The Convention On Biological Diversity At Its Fifth Meeting, Nairobi 15-26 May, 2000 (UNEP/CBD/COP/5/23)

Poor logging practices, seen here in the absence of any vegetation buffer along a road built by Spray Lakes Sawmills in the Porcupine Hills, leads to erosion into the adjoining stream. PHOTO: © G. RIDDELL

Taking a look at government websites can be deceiving because they might not give you the best picture of what is happening on the ground. The Alberta Government website likes to use the phrase "world class" in many of its statements around forest management. They claim to maintain sustainable, world class management. Peter Lee, Executive Director of Global Forest Watch (GFW), paints a much drearier picture with the new GFW report released on global forest loss. According to the report that uses satellite information from Google and the University of Maryland, industrialization of Alberta's eastern slopes has resulted in extensive forest loss between 2000 and 2012, more than double the Canadian forest loss average. In a recent AWA presentation, Peter gave Alberta a score of five out of twenty-five in forestry using four indicators: information (availability, transparency, and reliability), conservation (protected vs. harvested, and threatened species recovery), stewardship (forest loss vs. gain), and First Nations (cumulative impacts, meaningful consultation). Alberta may benefit by looking at other jurisdictions to see how they are managing forested public lands.

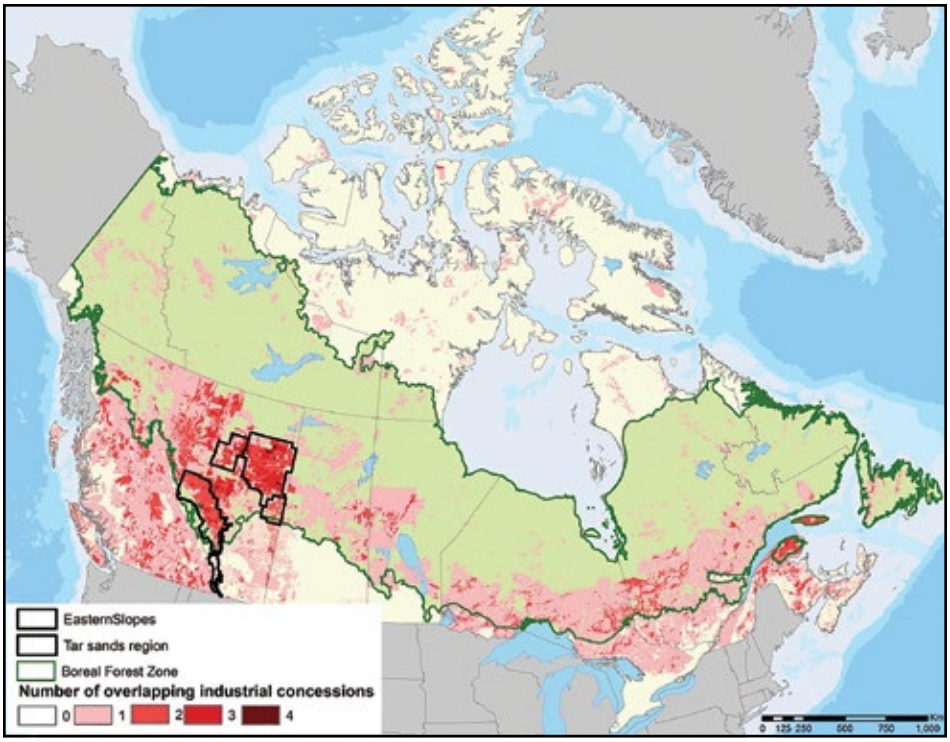
British Columbia: A Community Forest Model

The Harrop-Procter community forest tenure is situated in southeastern BC, adjacent to West Arm Provincial Park in the West Kootenays. It takes its name from the two villages, Harrop and Procter, that are encompassed by the forest tenure. Its 11,300ha area is mostly mature forest composed of cedar, hemlock, and Douglas fir, with fairly homogenous stands due to a large fire about 100 years ago. In the 1970s, community members became concerned about the quality and quantity of their domestic water source yet commercial logging plans went ahead and their concerns were ignored. After many years of battles, blockades, meetings, and park proposal rejections the BC Government granted seven pilot community forest tenures across the province. Harrop-Procter was one of them. The governance was set up as a community cooperative with board members to run the logging operations and an arms-length watershed protection society.

Of course not everyone agreed on all aspects of an EBM model but there was wide agreement that watershed protection was the absolute top priority. They wanted to maintain large areas of intact forests for non-timber uses, headwater security, and to provide wildlife habitat. Their principles included mimicking natural disturbances by maintaining ecological integrity and establishing a protected areas network with connectivity for wildlife. Years before harvesting, rigorous ecosystem-scale monitoring and inventory occurred.

A major difference between timber-based forestry and ecosystem-based forestry rests in the planning processes. EBM planning doesn't ask how much can we log but instead bases the extent of logging according to what is left to log once all protection values are met – set aside all ephemeral and permanent surface water, wetlands, and ground water recharge areas, sufficient riparian buffer strips, species at risk critical habitat, old growth areas, and wildlife corridors. By doing the mapping and planning

this way, Harrop-Procter protects 70 percent of the landscape which means 30 percent is the harvestable area. They employ alternative harvesting methods to clear cutting in order to reduce the harvesting footprint. They also wanted to create a value-added piece to their business model so they built a small mill which has created one job per 1000m^3 compared to the BC average of 0.7 jobs per 1000m^3. Because it is community run, town people take great pride in the balance they're able to strike between the forestry business and forest preservation and enhancement. This community forest is a "win-win" proposition. It's following a business model that is generating a high ratio of jobs per wood harvest volume to support the local economy and is ensuring the long-term sustainability of healthy forest headwaters. Throughout their approach to tenure management to date, economic growth has been pursued very cautiously to ensure their underlying ecosystem principles are not compromised.



Alberta's Eastern Slopes compares poorly with the rest of Canada with respect to the extent to which industrial tenures overlap. Photo ©: GLOBAL FOREST WATCH CANADA (Retrieved from http://www.globalforestwatch.ca/node/204)

Fish, Forests and Flood Resiliency Forum

On June 26, 2014, AWA hosted a forum to bring together conservation community colleagues and experts from several disciplines including biology, forestry, ecology, law, land use planning, economics, and strategic modeling. The focus of the forum was to discuss past Eastern Slopes land use decisions, the present state of Alberta's forested headwaters, and future opportunities to improve land use management. The forum combined three broad topics – Fish, Forests, and Flood Resiliency – to demonstrate that they are intrinsically linked and should not be discussed in isolation.

Ryan McDonald, a forest hydrologist and speaker at the forum, told us that in general, forest harvest changes the soil's moisture regime and increases runoff, sedimentation into waterways, peak flows, and water temperature. Yet each watershed can respond uniquely to logging due to local characteristics such as slope, elevation, size, geology, drainage density, groundwater contribution, and runoff timing. Extensive monitoring and inventory should be completed around each watershed when forest harvest is proposed.

David Mayhood, an aquatic ecologist, emphasized in his remarks the need to move infrastructure away from Eastern Slopes water systems and maintain connectivity between stream flow and its landscape. Without intact riparian vegetation in forested headwaters, water quality degrades and flood risk increases.

Dr. Marty Luckert, a University of Alberta forest economics professor, told us the global forestry industry is increasingly based on large plantations in climates that grow trees quickly. This places Canada at a disadvantage that increases the farther north that logging occurs, yet research continues into the viability of poplar plantations in Alberta. He challenged the forum to consider introducing exotic tree species on public lands in Alberta and argued that a move in this direction could have substantial ecological benefits through reducing the size of forestry's footprint and lowering the costs of caribou preservation.

One major theme of the forum was the need to limit total land use impacts on our forested headwaters. The status quo of forestry operations along Alberta's eastern slopes may not have as severe implications on the ecological stability of the landscape if that was the only human disturbance occurring. The reality is that forest harvesting is one of many land uses occurring on the same landscape. Both Brad Stelfox and Peter Lee, two presenters during the forum, reported that Alberta has one of the highest rates of overlapping land tenures in Canada. It is essential to consider cumulative impacts on this landscape. For decades, AWA and other environmental non-government organizations have advocated for reducing industrial development along the Eastern Slopes and emphasizing responsible low impact recreation and a large protected areas network. But, as Brad Stelfox pointed out, the decisions Alberta's growing population will make about where to live may put another very significant pressure on the Eastern Slopes. More and more people building permanent homes in the Eastern Slopes will present a very significant policy challenge.

The day and the evening of the forum ended off on an inspirational and positive note. Pamela Dykstra shared the history and success story of the Harrop-Procter Community Forest discussed above.

Priority Eastern Slopes Management Principles

Throughout the one-day forum, the following principles were discussed: they should play a key role in guiding decision making around Alberta's forests. None of these principles are new but they need to be in the forefront of decision makers' minds.

- Human vulnerability and damage risk from flooding is a land management problem and we need to treat it as such.
- We need to emphasize science-based outcomes with practical solutions.
- The pace at which we better understand ecosystems is incredibly slow compared to how fast we change them. The precautionary principle should therefore be applied in all land use decisions.
- Limits to human access and development should not be seen as negative but rather as opportunities to preserve our natural capital.
- Climate change will have significant impact on the function of our forests and needs to be an important consideration in any present and future decision making.
- Full cost accounting is critical when evaluating development along the Eastern Slopes; too often ecosystem services are undervalued or disregarded completely.
- Alberta needs to learn from other jurisdictions; we must discover and implement better management options that have been successful elsewhere.

Opportunity in Alberta for Community Forest Pilot Projects

Based on a model similar to the Harrop-Procter Community Forest AWA believes ecosystem-based community forest pilot projects can and should be established in Alberta. The Harrop-Procter Community Forest has accomplished true ecosystem-based community forestry with high job creation as a successful alternative to the timber supply-based forestry currently entrenched along the Eastern Slopes. This community forest model would allow watershed protection and forest ecosystem integrity to be the top priorities while still creating local jobs. The area under the community forest agreement would undergo ecosystem-based conservation planning to understand the dynamics of the specific area, with extensive sampling, mapping, inventorying, and monitoring prior to any harvesting. Areas within the tenure would then be set aside to establish and protect buffers around surface water, groundwater recharge areas, species at risk critical habitat, wildlife corridors, old growth trees, and steep escarpments. What is left over would become the total allowable forest harvest area. The precautionary principle would be applied when proceeding with growth and development of timber harvesting. Using the Harrop-Procter model may be the best way to achieve true ecosystem-based management and would help fulfill the mandate for EBM that Albertans believe the Government of Alberta must uphold.

Pamela Dykstra, from the Harrop-Procter Community Forest, speaking at the Fish, Forests and Flood Resiliency Forum about ecosystem-based community forestry. Photo ©: C. OLSON

Marsh Marigold. PHOTO: © G. FOSTER

Lady Slipper Bud. PHOTO: © G. FOSTER