

The Challenge of Cumulative Impacts – Conserving and Managing Wildlife Habitat¹

Those familiar with natural resource management in BC are becoming increasingly aware of a new term on the policy landscape: “cumulative impacts”. Admittedly, this isn’t actually a new term. Since the mid-1990s, cumulative impacts have been a required consideration during federal, and in some cases provincial, environmental assessments (EA). For nearly as long, the approaches – including the legislative tools designed to address those impacts – have been harshly criticised. Change, however, is on the horizon. Governments are now attempting to manage a more complete, but complex conceptualization of cumulative impacts. This includes an accounting of activities from multiple resource sectors that range in intensity and geographic scope from the smallest exploration activities to the largest mega-project. This realization is an inevitable outcome of an expanding resource economy, driven by conventional and nonconventional energy, rapid salvage logging in response to the mountain pine beetle, and the observed and predicted impacts of those activities for human and ecological communities (Gillingham *et al.* 2016).

Depending on the study or legislative context, the terms “cumulative impacts” and “cumulative effects” are used interchangeably. There is some clarity, however, to be gained by differentiating impacts from effects, with an emphasis on understanding and limiting impacts. Cumulative effects are the alterations to the environment resulting from human or natural disturbance; effects are the footprint of the activity. Cumulative impacts are the consequences of that footprint for some valued component of the environment, such as the habitat for a listed species.

Research is revealing how the cumulative effects of forest harvesting and other human activities are resulting in a reduction in the distribution and abundance of old-forest dependent species. Many populations of woodland caribou, a species listed as “threatened” across central and southern BC, are in rapid decline. The causal factors are a complex mix of human activities that have facilitated habitat change and altered predator-prey dynamics. The loss of caribou from BC

isn’t the result of one development by one industrial sector. If this were the case, the challenge of recovering caribou would not be nearly as daunting. Caribou populations are declining, and in some locations being extirpated, because of the cumulative landscape change that has occurred over decades as a result of numerous large- and small-scale development activities, from the seismic line to the clearcut, to the coal mine (Johnson *et al.* 2015).

The habitat story looks to be equally grim for furbearers, a species of cultural and ecological significance. Recent research focused on the central interior of the province, an area with rapid and expansive salvage logging, has found that the highest quality habitats of American marten, fisher, and Canada lynx have nearly disappeared (Bridger *et al.* 2016; Figure 1). As with woodland caribou, this isn’t just a story of changing habitat. Trapping success is declining, suggesting a reduction in the populations of marten. One only needs to consider the massive area of forest harvesting, and the resulting transition from old to young forest, to understand that there will be negative impacts of these activities.

For many in the policy and decision-making arena, cumulative equates with additive. Thus, one cutting permit might not be a problem for a species dependent on old forest conditions, but many cutting permits could result in impacts that lead to a change in the distribution or abundance of that species. The problem becomes much less tractable when considering the effects of multiple resource sectors: how does one consider the habitat implications of an eighty-year forest rotation period with concurrent increases in agriculture, the construction of pipelines to export natural gas, and the expansion of wind energy and coal mining? This is not a hypothetical scenario, but the reality of the South Peace region of BC where some caribou populations are demonstrating an unprecedented rate of decline: of course we are assuming that these various effects will result in incremental impacts. The cumulative impacts of cross-sectoral landscape change can be synergistic and nonlinear, resulting in a highly challenging environment for

natural resource professionals that are attempting to respond to changing ecosystems.

The loss of habitat and populations is not just the concern of the wildlife ecologist or the conservation biologist. Cumulative impacts are now a prominent issue for natural resource professionals of all stripes, as well as for higher-level decision-makers attempting to balance resource development with responsibilities to meet commitments under the *Species at Risk Act*, the concerns of vocal hunting and trapping organisations, and the treaty and constitutional rights of First Nations. Currently, the provincial government is facing a claim from the Blueberry River First Nations that alleges that the cumulative impacts of industrial development have violated their treaty rights². Where cumulative impacts were once relegated to the application of EA legislation, the changing face of First Nations participation in natural resource management suggests that the province will have no choice but to confront the cumulative impacts of past and present land-use decisions.

Recognizing the urgency of cumulative impacts as an ecological and policy driver, the province is working to develop a Cumulative Effects Assessment Framework. With the goal of tractability and prioritization, the framework is focused on key values, many of which are "Priority Fish and Wildlife Species". Recently, however, the BC Auditor General reported that the Ministry of Forests, Lands, & Natural Resource Operations was not adequately addressing cumulative impacts and the full implementation of the framework should be accelerated to exceed the distant completion date of 2021³.

Much of the province's efforts to address cumulative impacts appear to be focused on decision support tools, including data collection and monitoring. Certainly there is much work to be done on that front. However, calculating cumulative effects and the resulting impacts is only the start: the challenge is in taking action when we realize that we have exceeded some threshold in landscape change and resulting impacts for a threatened or high-value species. How and when do we decide that forest

harvesting or oil and gas development must slow down to accommodate other values? This is a conversation that exceeds the technocratic realm and requires broad participation from local communities, First Nations, industry, and governments. Such conversations will be guided by a vision of how much future development is needed to provide jobs and tax revenue, while recognising the current and future impacts of past and present decisions. As noted by Bardecki (1990) 25 years ago, "Assessing and managing cumulative impacts is planning." Data and models can inform such planning processes, but will not provide decisions for maintaining the diverse flora and fauna we find across BC's landscapes. 

Respectfully submitted,
Chris J. Johnson, PhD, RPBio



1) This article was originally presented in the September-October 2015 issue of the BC Forest Professional.

2) http://www.ratcliff.com/sites/default/files/news_articles/2015-03-03_Note_of_Civil_Claim.PDF

3) <http://www.bcauditor.com/pubs/2015/managing-cumulative-effects-natural-resource-development-bc>

College members are responsible for upholding the *Principles of Stewardship* in their practice and ensuring compliance with relevant legislation in all aspects of their work.

Additional resources to help guide member practice are on the website: <https://www.cab-bc.org/news/files>