

Response to the Draft *Nova Scotia Silvicultural Guidelines for the Ecological Matrix Lands*

While the *Nova Scotia Silvicultural Guidelines for the Ecological Matrix Lands (SGEM)* offers certain improvements over previous forest management guides, it does not rise to the standard of ecological forestry.

As a fifth-generation woodlot owner and an avid hiker, I care deeply about the state of our forests.

Industrial forestry is contributing to the degradation of our soils, habitat fragmentation, the extirpation of species at risk, and the global climate crisis. In addition to the environment, unsustainable forestry practices are also adversely impacting recreation, tourism, and private woodlot owners.

In contrast, ecological forestry would offer more jobs, non-timber forest products, fair prices for private woodlot owners, higher-value wood products, and a more diverse and sustainable forest economy. Most importantly, ecological forestry would support continued (*and improved*) ecosystem services. Sustainably managed forests would provide “critical and diverse services and values to human society.”¹ Indeed, ecosystem services are *the most* valuable contributions that forests have to offer.

Unfortunately, the SGEM has failed to embrace this necessary paradigm shift.

The SGEM perpetuates an extractive – rather than ecological – mindset. The Guide continues to prioritize volume over value. The SGEM purports to recommend “appropriate silvicultural methods intended for use in the Ecological Matrix zone of the triad in which biodiversity priorities and timber objectives are both applicable and combined.”²

Treating biodiversity and timber objectives as if they were of *equal* importance within the Ecological Matrix undermines the credibility of the guide. The failure of the SGEM to embrace ecosystem health as the primary consideration also contradicts William Lahey’s paramount conclusion:

Protecting ecosystems and biodiversity should not be balanced against other objectives and values as if they were of equal weight or importance to those other objectives or values. Instead, protecting and enhancing ecosystems should be the objective (the outcome) of how we balance environmental, social, and economic objectives and values in practising forestry in Nova Scotia. A number of reasons are given for this conclusion, but the primary reason is that ecosystems and biodiversity are the foundation on which the other values, including the economic ones, ultimately depend.³

The government of Nova Scotia has already committed to honouring Professor Lahey’s Report as well as the “spirit and intent of his recommendations.”⁴ Specifically, the government of Nova Scotia has pledged to “protect and enhance ecosystems and biodiversity as the overarching policy priority, as they are the foundation for other values.”⁴ Therefore, the SGEM must be revised to reflect biodiversity as the primary

consideration. Failure to do so will only exacerbate the pervasive loss of trust in the Department's ability (or intent) to enact ecological forestry.

Degraded Landscapes

A long history of indiscriminate harvesting has led to widespread habitat degradation across Nova Scotia. The Forest Panel of Expertise, led by Bancroft & Crossland, highlighted the urgent need to implement ecological forestry back in 2010:

Nova Scotia has already surpassed the threshold of ecologically sustainable forest harvesting and is now faced with resolving major restoration issues to sustain viable populations of many forest species. Our forests are much younger, trees are correspondingly smaller, and abundances of high-quality tree species have been replaced by low-grade stands. **These changes have created a forest that is more susceptible to the stresses of climate change**, such as insects and weather damage; less able to provide the ecosystem services required by society; and less economically valuable.⁵

The Healthy Forest Coalition points out, "most of the Matrix lands have already been subjected to intensive clearcutting and have sustained damages that will endure for centuries."⁶

Ecological forestry must then strive to not only protect – but also improve – the ecology of each site.

The SGEM must take into account the results of *cumulative* forest removals and anthropogenic disturbances. The SGEM must also consider that our forests today are at higher risk from climate change and invasive species. Simply put, our forests – and our province – need ecological forestry more than ever before.

To reflect the priorities of ecological forestry, the SGEM should shift the metrics used from minimum *retention levels* to maximum *extraction levels*. In order to give degraded ecosystems an opportunity to recover, the SGEM should only authorize moderate to high-retention forestry within the ecological matrix. Furthermore, the SGEM should take steps to maintain or enhance each of the following:

- The regeneration of Late successional Intermediate to Tolerant (LIT) Species
- The retention of species that are projected to fare well in a warming climate
- The retention of old-growth forests/trees
- Mutli-aged structure in forest stands
- Biodiversity
- Diverse wildlife habitats
- Habitat connectivity (including wildlife corridors)
- Carbon sinks (both trees and soil)
- Soil quality and nutrient sustainability

This ecological model should be retroactively applied to all previously approved harvests that have not yet been completed.

I strongly support the Healthy Forest Coalition's stance, "The Current status of our forest must not be used as a means to perpetuate even-aged forests where a true, uneven-aged Acadian forest ecosystem would have historically existed, or where the site has potential to support one." ⁶

Quite simply, the fact that we have repeatedly degraded our environment through unsustainable practices is no excuse to indefinitely continue that damage. Instead, we must focus on *restoring* diverse values and ecosystem services across the province.

Degraded Soils

Like the broader forest ecosystems, soils across Nova Scotia have been degraded by anthropogenic disturbances, such as clear-cutting, plantations, wildfires, herbicides, and acid rain.

Furthermore, soil quality and forest health are intrinsically linked. The Food and Agriculture Organization explains, "Soil is an important component of forest and woodland ecosystems as it helps regulate important ecosystem processes, such as nutrient uptake, decomposition, and water availability. Soils provide trees with anchorage, water, and nutrients." ⁷

Ecological forestry (and by extension, the SGEM) necessitates a scientific approach to restore nutrient-deficient soils. *A Simple Geospatial Nutrient Budget Model for Assessing Forest Harvest Sustainability across Nova Scotia, Canada*, by Keys et al., states:

"Harvesting and acid depletion lead to nutrient losses from a site, thereby reducing soil/site nutrient pools (Tew et al., 1986). If these exports exceed primary nutrient inputs, then repeated harvesting coupled with soil acidification stress would be expected to cause nutrient deficiencies (de Vries et al., 1995; Oja & Arp, 1996) leading to declines in forest health and productivity (Ouimet et al., 2001)." ⁸

In order to help restore soil nutrients, the SGEM (and forestry in general) needs to:

- Appreciate the role of bacteria, fungi, earthworms, and insects
- Retain a higher number of hardwoods
- Implement longer rotations
- Retain more coarse woody materials
- Carefully assess soil quality during the pre-treatment assessment process
- Implement the Nutrient Budget Model

I strenuously object to the Guide's recommendation that azonal, nutrient-poor sites would be "more appropriately managed with simpler silvicultural systems with lower retention levels." ² This would only perpetuate the issues at hand and must be struck from the guide immediately.

Research from Keys et al. demonstrates, "Nutrient assessments are even more important in areas that have been impacted by long-term acid deposition since harvest removals can

exacerbate declines in base cation levels (especially Ca) in affected soils.”⁸

As is the case with degraded landscapes, prior unsustainable practices do not justify the conscious continuation of that damage. The SGEM must therefore remove the “azonal” classification entirely in order to restore diverse values and ecosystem services across the Ecological Matrix.

Forest Carbon: Friend or Foe?

Sustainable forest management across the province is integral to Nova Scotia’s climate change adaptability. I was therefore surprised that the word “carbon” only appeared in the SGEM once. This token reference does not signal a genuine interest in managing Ecological Matrix forests as carbon sinks.

In the era of climate change, business as usual is no longer acceptable. Survey data from 2019 revealed: “A total of 83% of Canadians say they are quite (26%), very (30%) or extremely (27%) concerned about climate change.”⁹ “A majority of Canadians in every single riding believe the climate is changing. The highest beliefs [in Canada] are in Halifax, where 93 per cent of the public believe climate change is happening.”¹⁰

While politicians are supposed to represent their constituents, it’s evident that the interests of our government diverge from those of the public when it comes to industrial forestry.

The Department of Lands and Forestry has lost its social license to clear-cut, and for good reason. The International Union for Conservation of Nature explains, “Forests’ role in climate change is two-fold. They act as both a cause and a solution for greenhouse gas emissions.”¹¹

Nova Scotians want – and expect – our forests to play a key role in *mitigating* the climate crisis.

Using the best available science, we need to assess (and make public) the amount of carbon our forests are sequestering. We also need to appraise (and make public) the amount of carbon being released through our current forestry practices.

Natural Resources Canada compares forest carbon absorption and emissions to determine the net emissions of carbon dioxide equivalent from Canada’s managed forests (and forest products): “Data from 2018 suggest that overall the forests were a source of CO₂.”¹² Specifically, Natural Resources Canada acknowledges that managed forests in Canada produced net emissions of 243 million tonnes of carbon dioxide equivalent (CO₂e) in 2018.

These calculations show that our managed forests are actually net emitters of greenhouse gases. It’s egregious that our managed forests are exacerbating – rather than mitigating – the climate crisis.

A Tree Farm is not a Forest

Politicians often point to planting trees as a climate change solution. But replanting trees does not justify indiscriminate harvesting.

Older trees/forests sequester more carbon than younger forests/trees do. *(Older forests also support many other conservation values and deserve to be enthusiastically protected by the Department of Lands and Forestry.)*

The negative effects of planting trees – as opposed to retaining healthy forests – are exacerbated by the government’s ill-advised focus on boreal species. Species such as Balsam fir, red spruce, black spruce, white spruce, and Norwegian spruce aren’t projected to fare well in a warming climate.

It appears that the Department of Lands and Forestry has contrived a method to turn lands in the “Ecological Matrix” into softwood plantations. This is an unacceptable breach of trust that will further degrade public confidence in the department.

As a result of this and other pro-industry protocols, the Restoration Keys in the SGEM must be removed, reassessed, and rewritten. I suggest that the SGEM would benefit from the proficiency and objectivity of an outside expert on this matter.

Habitat Connectivity

Habitat connectivity is an essential consideration in all managed forests, but especially those within the Ecological Matrix.

- Implement biodiversity landscape planning across the province
- Immediately increase watercourse buffers to a minimum of 100 metres
- Identify and protect wildlife corridors
- Identify and protect the core habitat of all species at risk in a timely fashion
- Present responsible protocols for logging road construction
- Avoid damaging wetlands or endangered species’ habitat during road construction
- Dismantle old logging roads so that the ecosystem has an opportunity to recover
- Take adjacent protected areas into consideration during the pre-treatment assessment

Forest fragmentation, often caused by even-aged harvesting, degrades the remaining habitat, and isolates populations of flora and fauna. This restricts breeding, gene flow, population health, and ultimately results in population decline.

Nova Scotia cannot isolate small populations of wildlife without risking inbreeding and local extinction of those species. Defining and protecting wildlife corridors has been proven to considerably enhance species richness.

In contrast, the destruction of habitat is linked to the extirpation of species at risk and the spread of zoonotic diseases. The current pandemic has made it clear that we can no longer afford to view ecosystem health as separate from human health.

Wildlife

I was very disappointed in how little value the SGEM attributed to wildlife, especially in light of the biodiversity crisis.

The sixth mass extinction is an *ongoing extinction event* caused by anthropogenic disturbances. The Center for Biological Diversity reports, “The current rate of extinction of species is estimated at 100 to 1,000 times higher than natural background rates.”¹³

World Wildlife Fund’s “Living Planet Report Canada 2020” revealed that populations of Canadian species that are of **global** conservation concern have declined (in Canada) by an average of 42% between 1970 and 2016. Populations of Canadian species that are of **national** conservation concern have fared even worse, declining by an average of 59% between 1970 and 2016.

Wildlife contributes to critical processes such as pollination, seed dispersal, nutrient cycling, soil generation, and habitat maintenance. Wildlife supports recreation, such as bird watching, wildlife photography, hunting, and fishing. But our wildlife species are also *inherently* valuable.

Nova Scotians are passionate about protecting endangered species. Regrettably, protecting species at risk still doesn’t appear to be a priority of our government.

The study “Decline of the North American avifauna” reported that there are a staggering 2.9 *billion* fewer birds in North America than there were in 1970. Migrating species have been hit particularly hard, with their populations declining by 2.5 billion individuals.

It’s crucial that Nova Scotia enforces a no-harvest period on all Crown Lands during the spring breeding period (from early May to the end of July). The 2018 study “An Estimate of Nest Loss in Canada Due to Industrial Forestry Operations” estimated that Nova Scotian forestry operations conducted during the breeding season led to an annual loss (incidental take) of approximately 50,000 birds in Nova Scotia. This directly contravenes Nova Scotia’s commitments under the 1994 Migratory Birds Convention Act.

Ecological forestry must embrace the preservation of wildlife species and habitats, rather than viewing them as a hindrance to industrial forestry.

The SGEM must:

- Identify and protect wildlife corridors
- Immediately increase watercourse buffers to a minimum of 100 metres
- Have independent experts emend the special management practices for each species at risk
- Hire more experts to map the core habitat of species at risk
- Protect core habitat of all species at risk in a timely fashion
- Implement a silent season (no harvest period) from early May to the end of July
- Ensure adequate shelter for endangered species, such as the Eastern moose
- Dictate that wildlife biologists or ecologists visit each proposed harvest site to search for signs of wildlife

The Coarse-filter approach to wildlife biology will not be successful without biodiversity landscape planning, strict adherence to the Endangered Species Act & the Migratory Birds Convention Act, and comprehensive Special Management Practices for each species at risk.

The Department of Lands and Forestry's continued failure to adequately protect endangered species leads me to believe that the responsibility for wildlife and species at risk should be transferred out of the forestry portfolio.

Paradigm Shift

When *forests* are seen as secondary to *forestry*, true ecological forestry is not being implemented.

The Department of Lands and Forestry must retire the outdated forestry model of single-aged silviculture, habitat fragmentation, and the spraying of herbicides. We need to shift our primary focus from timber, pulp, and biomass to the *non-marketed* value of our forests. Ecosystem services are far more valuable than stumpage fees.

Citizens and scientists recognize that ecosystem services are the most important contributions of our forests, now and for the future. The Healthy Forest Coalition, the Minister's Advisory Committee on Forestry, and an extensive list of environmental groups have been advocating for true ecological forestry reform. Most notably, The Assembly of Nova Scotia Mi'kmaq Chiefs has called for the Department of Lands and Forestry to embrace this necessary paradigm shift:

"The Mi'kmaq of Nova Scotia support forestry practices representative of Netukulimk. Netukulimk in forestry means to achieve adequate standards of community nutrition and economic well-being without jeopardizing the integrity, diversity, or productivity of our environment. All eco-forestry activities must meet this standard." ¹⁴

With the appropriate revisions, the SGEM could ensure that our managed forests start to mitigate – rather than exacerbate – climate change and biodiversity loss. Ecological forestry must embrace the preservation of habitat connectivity, climate sinks, and species at risk, rather than viewing them as an impediment to industrial forestry.

In order to ensure ecosystem integrity and restore public trust, the Department of Lands and Forestry needs to start valuing restoration over rhetoric, biodiversity over buzzwords, and community values over corporate interests.

Lindsay Lee

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