

September 18, 2017.

To: Prof. William Lahey,

Project Leader for the Independent Review of Forestry in Nova Scotia

Cc: Nature Nova Scotia (Federation of Nova Scotia Naturalists)

Halifax Field Naturalists Conservation Committee

Labi Kousoulis, MLA

From: David Patriquin

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Comments on NSDNR forestry science and a suggestion for a science expert to assist in the Independent Review

I have a PhD in marine sciences from McGill (1973), I was a professor in the Biology Department at Dalhousie University 1975-2008. Beginning about 2005, I have attempted to become as knowledgeable as I can about forests and forestry, the former from a natural history perspective, the latter with a focus on the science underlying forest management in Nova Scotia.

In April of 2017, I drafted a document for the Conservation Committee of the Halifax Field Naturalists (HFN) on [Impacts of forestry in Nova Scotia on conservation of biodiversity: Concerns and Questions](#). After review and input from other members of that committee, we forwarded the document to Labi Kousoulis, the MLA for Halifax Citadel-Sable Island as two of us (myself and Richard Beazley) had been meeting with him over the previous 6 months to discuss forestry issues. Labi arranged a meeting with then Minister of Natural Resources Lloyd Hines, the premier's executive assistant, Labi and MLA Joachim Stroink to discuss our concerns. Lloyd Hines forwarded the HFN document to NSDNR, directing them to respond. We received a reply on Aug 24, 2017.

I have attached the original document, and the reply, marked up with some of my initial comments. (It is still under review by the HFN Conservation Committee.)

The exercise was helpful in clarifying some of the issues, for example, why NSDNR figures for clearcutting as a percent of total harvests are consistently lower than the figures given on the National Forestry Database, the latter being figures that critics commonly cite, and the former the figures the government/NSDNR cite. An example: in 2014, the % of clearcutting on Crown land was 68.7% by NS government figures while it was 88.1% by the National Forest Database figures. The two sources use the same data but apply different definitions of clearcut. For more about this, please see my blog post at <http://nsforestnotes.ca/2017/01/23/whats-a-clearcut-and-whats-not-a-clearcut-in-nova-scotia/> and Question 2 in the HFN document/NSDNR response (attached).

NSDNR and accordingly The–Government-of–the-day have consistently maintained that their harvest decisions are “science-based”, the more recent assertion (Aug 2016, and subsequently) being that “all harvest treatments are aligned with the nature-based requirements of Nova Scotia’s lands”. In the HFN document, we asked “**Can NSDNR justify the claim that: “all harvest treatments are aligned with the Nature based requirements of Nova Scotia’s lands” or should that be stated as a goal?”**

The NSDNR scientific staff continue to stand by that statement when from a scientific perspective - or even looking just at the logic of DNR’s response - it seems clear that simply is not true.

The major scientific issues from my perspective are:

- (i) **Nutrient depletion.** Approximately 60% of the NS landscape is nutrient deficient and excessively acidified due to the extremely poor buffering capacity of the soils combined with acid rain, a condition further exacerbated by clearcutting. One result: we have some of the most acidified surface waters in North America, we have already lost salmon from many systems and now other aquatic life is threatened. NSDNR has done some rigorous, published science on the nutrient status of our forest soils, but has yet to apply it in any significant way, to the detriment of both biodiversity conservation and future productivity.
- (ii) **Lack of landscape level planning for biodiversity conservation/short rotations.** Harvest decisions are based on stand level assessments and landscape level planning for biodiversity conservation comes into the process only late via the Integrated Resource Management teams, if at all. Combined with the short rotations, this is leading to massive loss of mixed, multi-aged Acadian forest and associated biodiversity.
- (iii) **Carbon sequestration/GHG emissions.** Research in Nova Scotia has shown that clearcutting results in large losses of soil carbon and nitrogen which can require more than 100 years to recover; combined with short rotations this is resulting in greater carbon emissions, much less carbon sequestration and overall poorer soils than would occur if the forests were managed to maintain mixed, multi-aged Acadian forest. There is a strong push to develop forest bioenergy and bioenergy products such as ‘Green Fuels’ as a way to compensate for the declining prospects for pulp and paper. The use of primary forest biomass (rather than sawmill wastes) for such purposes results in large net carbon emissions over the next 50 years, a period when we most need to reduce carbon emissions.

The relative isolation of the science staff in the NSDNR Resource Management Division is an overarching issue. There is very little interaction of the science staff in the NSDNR Resource Management Division with the larger scientific community or with the public, e.g. key scientific staff rarely participate in seminars or forums at our Universities, or give public talks. Very little of the critical NSDNR research is published in academic journals. One exception is a paper on the state of the soils/n=forest nutrient budget model which was published last September; it paints a rather dire picture. Yet this important research is not even mentioned in the State of the

Forest report, or otherwise on the NSDNR website, while their non-peer reviewed research figures prominently. Often in-house documents that have not been submitted to journals are credible none-the-less and cited in regular scientific publications, but I have not seen any reference in journal papers to key NSDNR in-house documents. A draft of NSDNR's 2008 document **Mapping Nova Scotia's Natural Disturbance Regimes** was strongly criticized in peer reviews conducted in-house (but including external reviewers) as revealed by a FOIPOP, but NSDNR made few or no changes in response. There are no annual reports (at least none that are available to the public) describing what projects are underway, who is involved etc. Many or most of the documents related to strategic planning based on NSDNR science are not available publicly. It is very difficult to find out who does what at NSDNR. A Forest Biodiversity Science Advisory Committee was set up in 2015 but except for a statement announcing the committee, there is no information about its functioning available to the public. Most communication is filtered through the DNR media office.

I have found some of the DNR staff to be very cooperative in one-on one communications, for example the people who are involved with the Harvest Maps. The comments above apply to science conducted within the Resource Management Division. Some of the other Divisions or subdivisions seem to have a much better reputation and interaction with the public. It appears from the outside that there is some lack of communication or lack of effective, equitable interaction between the five Divisions.

I had a meeting with some of the scientific staff in October of 2016 to discuss the status and application of the Forest Nutrient Budget Model and asked a colleague to participate (with NSDNR's approval). It was a long route to get there and we were repeatedly reminded not to stray from the topics we had identified coming in. Other staff in the Research and Planning unit have said they would meet with me individually, which I appreciate. (Before I became more public in my critique of NSDNR science by beginning a blog on NS Forest and forestry in June 2016 my lengthy referenced letters or submissions to NSDNR were met only with form replies from the Minister of Natural Resources.) However, what is lacking most is communication of the NSDNR science staff within a larger context, where DNR scientific staff both communicate and defend their science publicly (e.g. in an academic forum) and modify it accordingly. Operating within such a closed context does not make for good science, good forest management or good PR.

Recommendations

I suggest it is critical that the scientific basis for DNRs harvest decisions and overall forest management be critically reviewed by recognized individuals or groups. **I suggest that an excellent person would be Yves Bergeron, Professor, Université du Québec, Montréal Forest Study Centre, or someone within his group as might be recommended by Dr. Bergeron. I don't know him personally, but I have read many of his papers. He is obviously well recognized and his research, e.g. on natural disturbance regimes, relates well to the research conducted by NSDNR and includes research on both boreal softwood and southern hardwood forests in Quebec.**

View:

https://www.researchgate.net/profile/Yves_Bergeron/publications
http://chaireafd.uqat.ca/chercheurs/bergeron/ybergeron_f.asp

I suggest that it would be very appropriate to look to Quebec and Ontario for models of forest management that might be adopted/adapted for Nova Scotia. In particular I am thinking of the operation of the Quebec Sustainable Forest Development Act (RSQ, c. A-18.1), and the Tree By-law act in Ontario. The Quebec Act requires much more consultation than occurs in Nova Scotia, while the Tree By-law Act in Ontario allows municipalities to regulate tree harvesting where they wish to. I have noted that in the U.S., there are many local forest ordinances. (A request from Annapolis Co. to be exempted from the WestFor Agreement has been denied, other counties have also expressed concerns.)

Since June 21, 2016, I have maintained a “forest blog”. Below I have cited some of the posts or pages that elaborate on issues I raised above.

I am grateful for your consideration of these comments.

David G Patriquin

Cc: [Nature Nova Scotia](#) (Federation Nova Scotia Naturalists)
[Halifax Field Naturalists](#) Conservation Committee

Some posts or pages related to issues discussed above on [Nova Scotia Forest Notes](#)

[NSDNR's nature-based forestry](#)

“We have now developed tools that ensure that all harvest treatments are aligned with the nature-based requirements of Nova Scotia’s lands.” – Statement under Goal 13 in the [Five-year Progress Report on the 2011-2020 Natural Resources Strategy](#) released Aug 16, 2016 by NSDNR.

I wish it were true, but I don’t buy it. Here’s why. (Webpage)

[Show us the science behind clearcuts on Crown land close to the pending Shingle Lake Nature Reserve, Nova Scotia](#)

[Clearcutting close to the pending Shingle Lake Nature Reserve illustrates transparency issues & raises questions about landscape level planning for biodiversity conservation in Crown land harvest decisions](#) (Post, Aug 9, 2017)

[What’s a clearcut and what’s not a clearcut in Nova Scotia?](#)

[The answer depends on who you ask.](#) (Post Jan 23, 2017)

[The Nova Scotia Forest Nutrient Budget Model surfaces](#) Post, Nov 13, 2017

[What's good for salmon is good for trees in Nova Scotia...and v. versa!](#)

For the sake of the forests and salmon, it's time for NSDNR/Westfor to heed the science and put the brakes on clearcutting in SW Nova Scotia. (Post Dec 13, 2016)

[Feb 12, 2014 Letter to NSDNR and Replies, re: clearcutting and nutrient budgeting](#)

Separate from the blog site, the letter illustrates my effort to initiate a discussion with NSDNR re nutrient budgets.

[Natural Resources Canada GHG Calculator confirms Nova Scotia forest bioenergy schemes are worse than coal](#)

Post, Jan 3, 2017

[Protected Areas in Nova Scotia help to mitigate climate change, clearcuts do not.](#)

A modelling study shows that Protected Areas increase carbon storage, clearcuts reduce carbon storage (Post, May 26, 2017)

[Are biofuels from Nova Scotia forests good for the environment? Show us the science!](#)

Post, may 4, 2017

[Stats & Regs – Other Jurisdictions](#)

[Annotated Links.](#)

About Maine "...As I see it, the Maine experience illustrates that it is very difficult if not impossible to maintain high levels of harvesting for pulp and paper (or equivalent levels of harvesting for bioenergy or other products which involve low value wood/short rotations) and resolve ecological issues associated with such harvesting whether in fewer large patches or many small patches."

[Tree Marking – why not in Nova Scotia?](#)

Post, Nov 10m 2016. & Why Minga O'Brien says forestry practices in central and southern Ontario are miles ahead of the rest of the country.

[Who does what \[at NSDNR\]](#)

The [NSDNR website](#) does not provide much detail about who does what at DNR beyond listing some of the staff in various sections. There is next to no information about the qualifications and backgrounds of directors and staff. There are no annual reports describing activities and outcomes over the previous year in any detail. Below is what I have been able to find out about who does what related to forestry. (Webpage)

[Neal Livingston: We need good public policy to drive the transition to better forestry in Nova Scotia](#)

Specifics are given in an 8-stage plan to transition from clearcutting to a selection cutting forest economy (Post, May 22, 2017)