

**Testimony for UARB Hearing (P-172)
submitted by Jamie Simpson on behalf of
Ecology Action Centre**

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1.0 BACKGROUND

Through our forestry program, the Ecology Action Centre actively promotes a better understanding of our forests and forest resource, and a forest policy that respects the ecological limits of our forest, promotes high-value trees and value-added products, and viable rural livelihoods.

I am a forester with a background in forest ecology and woodlot management. I recently completed a book for landowners about the Acadian Forest (our native forest) and how to restore its ecological and economic values. I represent the EAC on various boards and committees including

- Provincial Forest Biomass Working Group;
- Minister's Forest Technical Advisory Committee;
- Association for Sustainable Forestry Board;
- Association for Sustainable Forestry, Quality Improvement Silviculture Committee; and
- Nova Scotia Woodlot Owners and Operators Association Board.

The EAC does not oppose energy production from forest biomass per say; we recognize the role of biomass in the transition away from fossil fuel use, and the social and economic benefits of purchasing fuel domestically.

Nonetheless, we strongly contend that Nova Scotia has insufficient policy or guidance in place, or in development, to provide even a modest assurance that forest biomass harvesting on the scale proposed by NPPH will not result in extensive ecological damage and forest productivity decline.

NPPH states it will require 655,000 tonnes of fuel per year for the proposed operation, 400,000 of which will be biomass cut from the forest. Of the 400,000 tonnes, some 200,000 will be sourced from the small private woodlot owner sector. For the sake of perspective, NPPH's current annual harvest level is approximately 400,000 tonnes, thus this project will essentially double NewPage's wood consumption level.

2.0 SPECIFIC CONCERNS WITH THE NPPH PROPOSAL

2.1 Clearcutting

At present, some 90% of wood cut in Nova Scotia each year is by clearcutting; from a forest health perspective, this rate is far too high. The Department of Natural Resources suggests that clearcutting should be substantially reduced to meet the natural limits of our forest type. The results of surveys demonstrate that the public (urban and rural alike) want clearcutting to be curtailed.

Given that there are no limitations on clearcutting in Nova Scotia, the development of the NPPH facility, with its large market for a low-value product, will most certainly increase the amount of clearcutting in eastern Nova Scotia on private land. There is no assurance in the NPPH proposal that this will not be the case.

Assuming a harvest level of 30 green tonnes of biomass per hectare, NPPH would require 6,667 hectares (16,467 acres) of clearcut private land each year within feasible hauling distance of the NPPH mill to generate 200,000 tonnes of biomass.

Furthermore, there is no provision in the NPPH proposal that accounts for the not-unlikely possibility of legislated restrictions on clearcutting within the next 5 years, which would change the dynamics of biomass harvesting, likely increasing the cost of biomass.

2.2 Whole-Tree Harvesting and Nutrient Loss

Soil is a fundamental component of our forests, and thus of all the economic, social, and ecological values they provide. Forest soils are a complex and dynamic mix of life, dead organic matter, nutrients and minerals, which combine to form a medium that allows our forests to grow. Our forest soils in Nova Scotia are by and large relatively thin and not well-developed; they are easily damaged and depleted through poor management.

Critically, soil health and productivity depends on the regular addition of nutrients and organic matter from trees and other plants. For this reason, whole-tree harvesting (removing the whole tree from the stump up, including branches and top) has the potential to quickly deplete our forest resource through the loss of nutrients, organic matter, and forest floor protection.

I have discussed the effects of whole-tree harvesting with Dr. Taumey Mahendrappa, a retired soil scientist from the Canadian Forest Service who spent much of his career studying the effects of forest biomass harvesting on soil. Dr. Mahendrappa's professional opinion, formed through his own research and that of others around the world, is that whole-tree harvesting should not be used if we wish to ensure the long-term productivity of our forest soils in the Maritimes. Although soils have varying levels of nutrient stores, Dr. Mahendrappa contends that even our richer soils can be depleted to the point of becoming barren-land within 4 or 5 harvest rotations when whole-tree harvesting is used, and that our poorer soils can be depleted after 1 whole-tree harvest. Dr. Mahendrappa reports that studies from Finland, Sweden, Scotland, New Zealand, and Australia demonstrate up to 20% declines in forest growth following 1 biomass harvest. Unfortunately, there are no such long-term studies (>15 years) in Canada or the USA.

In a recent editorial for the *Atlantic Forestry Review*, former Department of Natural Resources employee and soil scientist Kevin Keys states that

There are numerous unanswered questions with respect to forest management impacts on soil and site productivity in Nova Scotia – on topics such as ... biomass harvesting.... ... when it comes to questions surrounding soil and site productivity, for the most part we aren't even trying to find the answers. Indeed, in many cases we haven't even

adequately framed the questions. ... If we continue merely hoping that we're doing the right thing in forest management, we're setting ourselves up for a big fall.

The Department of Natural Resources has drafted provincial Guidelines for the Retention and Removal of Forest Biomass. These guidelines legitimize whole-tree harvesting on the entire operational forest land base, with some three-quarters of the land available for 75-90% removal of logging "waste", that is, tops and branches, and the remaining 25% available for 50-75% removal. Notably, these guidelines will apply only to Crown land; there are no guidelines specifically governing biomass harvesting on private lands.

NPPH does not rule out the possibility of purchasing material from whole-tree harvests, or from carrying out whole-tree harvests itself. Furthermore, NSPI reserves the right to purchase biomass material to supply NPPH should it procure biomass at a less expensive price than what NPPH pays; this material could be generated from whole-tree harvesting, especially considering that NSPI has no legal or certification requirement to avoid whole-tree harvesting.

Given this, there is no assurance whatsoever that the proposed 60MW facility will not result in extensive whole-tree harvesting in eastern Nova Scotia, with unprecedented negative ecological and forest productivity costs.

2.3 Carbon Storage and Carbon Neutrality

The RES regulations do not give any confidence that forest carbon stores will be maintained. Biomass harvesting reduces the amount of carbon stored in the forest, particularly when combined with clearcut harvesting.

Biomass in the forest, if not harvested, tends to end up as soil organic matter, which holds two-thirds of all terrestrial stores of carbon. Removing biomass thus reduces this store of carbon in the forest, due both to the removal of harvested trees and to the loss of soil carbon caused by accelerated rates of decomposition that result after a clearcut harvest. A study in Maine, for example, showed that the soil of sites clearcut for a biomass harvest contained 36% less soil carbon than control sites even 17 years after the harvest. Modeling of soil organic matter levels in the Acadian Forest has predicted that soil organic matter decreases for 15 to 30 years after whole-tree harvests and that it would take 60 to 80 years for those levels to recover to the pre-harvest amount, provided that no additional harvesting takes place.

2.4 Effect of Biomass Harvesting on Forest Biodiversity

Experience in Sweden demonstrates the potential harm to biodiversity of biomass harvesting. In 1890, distribution of woody debris in central Sweden was approximately 13 cubic metres per hectare. Intensive logging and the development of bioenergy systems reduced this amount to 0.1 cubic metres per hectare. This dramatic reduction in woody debris was correlated with a rapid decline in biodiversity: some 800 species that depend on deadwood are on the country's Red List of threatened and endangered species. All across Europe, the species that depend on deadwood make up the largest single group of threatened species. Introducing a large market for biomass in Nova Scotia, in the absence of enforced regulations to protect forest biodiversity, will add a large additional strain on our native forest biodiversity.

2.5 Biomass Harvesting in the Context of Climate Change

Climate change is adding increasing stresses to our Acadian Forest ecosystem in the form of increased insects and weather disturbances. According to a recent report (2008) by Canadian Forest Service scientists,

The future fate of the already highly stressed ecosystems of the remnant Acadian Forest remains uncertain. Shifts in the abundance of insects, pathogens and herbivores have the greatest potential to adversely affect forests.

~ Vasseur, L. and N. Catto. 2008. From Impacts to Adaptation: Canada in a Changing Climate: Atlantic Canada. Government of Canada, Ottawa, p. 119-170.

A new, large market for biomass will only serve to compound the stress on the forest ecosystem due to climate change. The increased clearcutting and whole-tree harvesting that will result from a massive new market for biomass will reduce the resiliency of the forest in the face of climate change.

2.6 Effect on Private Owners of Small Woodlands

NPPH estimates that some 200,000 tonnes per year of biomass will be sourced from the small private woodlot sector.

The mill-gate projected cost of biomass material (\$45/tonne) is extremely low, and would require fully mechanized, capital-intensive, clearcut harvesting. While the harvest of biomass may create jobs for harvesting contractors, landowners and their lands will bear the costs of ecological degradation and reduced soil productivity. The return to woodlot owners for harvested biomass is small, ranging from \$0 to \$2 per tonne. Indeed, the NS Woodlot Owners and Operators Association does not recommend woodlot owners to allow biomass harvesting on their lands.

As previously mentioned, assuming a harvest level of 30 green tones per hectare, NPPH would require 6,667 hectares (16,467 acres) of clearcut private land each year within feasible hauling distance of the NPPH mill to generate 200,000 tonnes of biomass.

2.7 Project Size

The EAC contends that regionally dispersed, and community-based and controlled biomass energy operations are far more appropriate and environmentally benign than massive-scale operations such as the proposed NPPH facility. A system of regional, smaller facilities would take advantage of reduced transportation costs, and would present a far less concentrated environmental impact on forest health.

3.0 IMAGES OF CLEARCUTTING AND BIOMASS HARVESTING IN NOVA SCOTIA

Fig. 1: Satellite Imagery of Clearcutting in Nova Scotia in the past 17 years.

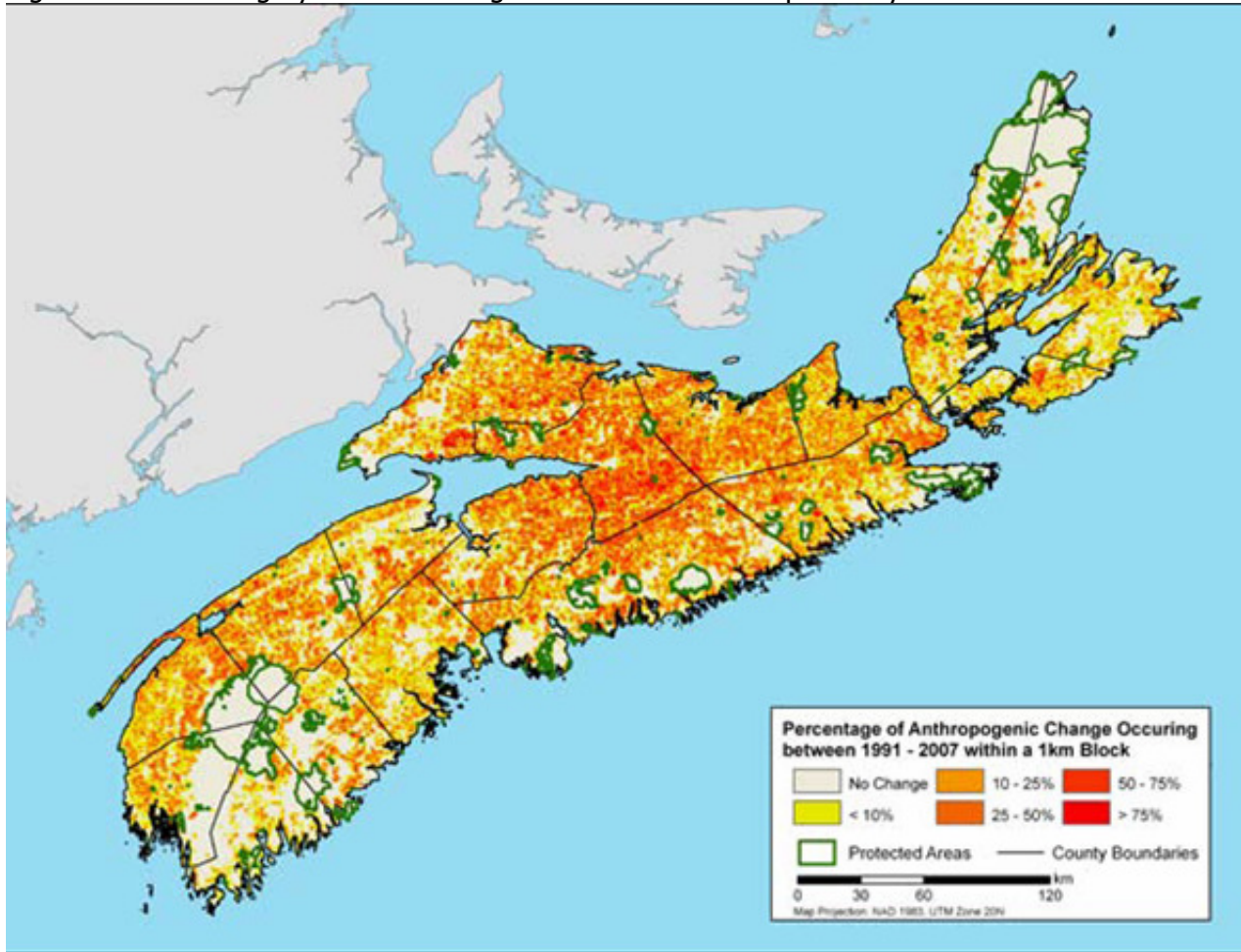


Fig. 2: Whole-tree Biomass Harvest in Nova Scotia (a)



Fig. 3: Whole-tree Biomass Harvest in Nova Scotia (b)



4.0 CONCLUSION

The risks to biodiversity, forest productivity, carbon stores and private woodlot owners associated with introducing a massive, new market for low-value wood that will most likely involve a significant increase in clearcutting and whole-tree harvesting are clearly inadequately addressed by both Nova Scotia Power Inc. and NewPage Port Hawksbury Corp. The Ecology Action Centre strongly recommends that this proposal not be supported on the basis that neither NPPH nor NSPI can assure a sustainable fuel supply that will avoid new and significant ecological degradation of our forest resource.

Attachments:

- 1) editorial by soil scientist Kevin Keys, Atlantic Forestry Review, May 2009*
- 2) Ecology Action Centre's position paper on forest biomass energy in Nova Scotia*
- 3) selection from the book Restoring the Acadian Forest, 2009, by Jamie Simpson on forest soils*
- 4) selection from the book Restoring the Acadian Forest, 2009, by Jamie Simpson on whole-tree harvesting and forest biomass energy*

The Ecology Action Centre

The Ecology Action Centre has acted as a voice for Nova Scotia's environment for over 37 years. In 2009 the EAC won the national Arthur Kroeger Awards for Public Affairs in the category of Citizenship and Community Affairs. Since 1971, the EAC has been working to build a healthier, more sustainable Nova Scotia. Today we have over 1100 members, 250 volunteers and staff, and seven active teams and committees.