

Presentation to NB Select Committee on Wood Supply

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In preparing this brief, I conferred with 8 UNB Forestry Professors, representing expertise in forest ecology, management, inventory, socio-economics, and silviculture. Overall, we think that there are some good parts of the Jaakko Pöyry report, while other parts should be changed or need further work.

We agree with the Jaakko Pöyry report that:

1. there are opportunities to increase timber supply from Crown licenses in NB, while still maintaining desired non-timber, habitat, water and other values;
2. having planted stands make up a portion of the forest landscape has several benefits;
3. a timber supply objective should be set for each Crown license in NB;
4. the industry and DNR should jointly fund and support research and development of science-based forest management practices;
5. the public should participate in reviewing objectives of management for Crown land.

We disagree that doubling the wood supply is necessarily the best objective for NB Crown land. The Jaakko Pöyry report does not provide sufficient quantitative analysis to make such a sweeping change to forest policy. Further analysis of alternative strategies is needed, including:

- amount and role of planted stands;
- potential of ‘zoning’ of the forest to define maximum permissible amounts of intensively managed, extensive, and protected forest areas on a given license;
- the role and requirements for special management zones;
- comprehensive evaluation of tradeoffs; and
- explicit goals of minimum areas to be maintained of all natural forest types (species groups, age classes, and stand sizes), by ecological district and license.

Twenty years ago, New Brunswick became a world leader in forest management with the Crown Lands and Forests Act, an effective Forest Research Advisory Committee structure, and active applied research. Advances have since been made in habitat and conservation, forest protection, certification, and other areas. Now is the time to move to become a forest management leader for the 21st century. To do this, we believe it is critical that New Brunswick establish a Forestry Advisory Board, with the mandate to provide advice to the Minister of DNR to improve Crown and private woodlot management. Comprised of government, forest managers, NGOs, and researchers, this coordinating advisory Board should examine forest management policy and practices, and coordinate monitoring and applied research.

I will expand upon these points related to the three themes timber supply and planted stands; forest policy; and monitoring and applied research.

1. Timber Supply and the Benefits of Planted Stands

There are opportunities to increase timber supply from Crown licenses in NB, while still maintaining desired non-timber, habitat, water and other values. Average timber productivity

in NB can be substantially increased (probably by a 5 to 10X increase of mean volume produced per hectare per year) by increased use of cultural activities like planting, species-site matching, using genetically improved seedlings (NOT the same as ‘genetically modified organisms’), cleaning, thinning, and multiple-entry partial harvesting.

‘Zoning’ of the forest into portions with a focus on enhanced timber production (‘intensive forest management’), more extensive forest management, and protected (unmanaged, natural) areas offers potential to increase timber supply, reduce pressure on a portion of the forest, and maintain a broad suite of timber and non-timber values. Determining how much of each is permissible, and where it is located on specific licenses, should be based upon rigorous quantitative analyses of a range of scenarios of alternative portions of the landbase in intensive, extensive, and protected classes. Socio-economic evaluations and dollar value (e.g., value of standing forest, of timber flows, or of return to taxpayers) and broad public input are needed.

Silviculture strategies for planted stands being used by forward-looking companies have evolved considerably over the last decade. Where formerly J.D. Irving, Ltd. had road-side signs stating “*Forests planted in 1980 for harvest in 2020*” (or similar), targeted at planting trees for production of relatively short rotation pulpwood, these same stands nowadays have a target of producing sawlogs on a multiple-entry, much longer rotation. For example, stands planted in 1980 now might be commercially thinned in 2005, again in 2020, and once more in 2035, with a final felling planned for 2050 or 2060. Each thinning removes trees that would otherwise stagnate and often die naturally; the best trees are left and the size and value of residual trees (and products produced) rapidly increases. As the stand opens up with each successive thinning, other vegetation and seedlings proliferate, and this regeneration offers a silvicultural option to produce the next stand without a clear-cut final felling, if desired. We see no problem with having a portion (not all) of NB’s Crown forests following this type of ‘intensive management’ regime.

There are benefits to having a portion of the forest landscape made up of planted stands.

These include increased timber production, but also reduced vulnerability to insects, reduced pressure on the remaining (extensive) forest area, and utilizing forest lands to their full potential (rather than understocked stands). Spruce budworm is the primary insect pest in NB. While it has been at low population levels since 1993 (longer in southern NB), forests of eastern Canada are known (from tree ring analyses) to have sustained at least six budworm outbreaks over the last 2-3 centuries. It is not a matter of if budworm will be back, but rather when, and it will likely be during the next decade. Budworm outbreaks without insecticide spraying kill on average 85% of mature balsam fir, about 35-40% for mature spruce and immature balsam fir, and 15% of immature spruce. An analysis for all land in NB indicated that without insecticide protection during the next budworm outbreak, forests potentially could lose 83 to 195 million m³ of timber, under scenarios similar to previous budworm outbreaks in the region (MacLean et al. 2002). In contrast, black spruce, the primary planted species, is much less vulnerable to budworm than balsam fir. NB forests have much more balsam fir currently than they did historically, because fire protection, clear-cutting, and budworm spraying all promote fir. This has been a primary reason, along with desirable fiber characteristics, in planting spruce.

Planting in NB has not created monoculture forests. A total of 265,000ha of planted stands have been established since the 1970s, or about 8.5% of Crown forests. At current planting rates, this will increase to 17% by 2030. Erdle and Pollard (2002) determined that NB plantations differed little in terms of total softwood content from natural forests, but had higher jack pine and lower red spruce

content. Few plantations were true monocultures and the high single species dominance of plantations was very similar to that of the natural forests they replaced. Erdle and Pollard noted that planting could reduce the degree of difference between planted and natural stands by broadening the mix of species used (especially less jack pine and more red spruce and cedar); by using a mix of species within stands; and considering more fully the site conditions and natural species composition of ecological zones.

2. Forest Policy

The primary policy instruments would be to set goals for timber supply by license, and to review guidelines and policies that limit intensive forest management. For example, planting should be permitted up to a specified maximum area per license (determined based upon quantitative, license-specific analyses of timber and non-timber values). Productive forests make up about 85% of NB, and support our most important industry and primary export. Current management for Crown licenses does not set goals for minimum wood supply to support this industry, but rather applies all the other requirements for management as constraints, and lets the wood supply be whatever is left over. We can and should do better than this. **Explicit goals for wood supply should be set for each license.**

Policy and guidelines should also set explicit goals for minimum areas of all natural forest types, by ecodistrict. We must maintain the full variety of species and stand types that occur in NB's forests. Maintenance of habitat for the variety of species that require forest habitat is very important. The current DNR habitat guidelines in this regard are excellent, and there is clear 'adaptive management' going on, such that new information on habitat requirements gets injected back into the planning process. Maintenance of older forest habitat, in sufficient sized stands to provide 'interior' forest for species that need it, is the key in this. Long-term forest management planning can produce these forest habitats in perpetuity (not in one location, but as one stand is harvested or naturally dies and converts to another type, another is ready to take its place through explicit, spatial planning).

Objectives for maintaining minimum amounts of each required type of habitat are in place for Crown land. Planted stands with a specific, targeted management regime can produce many of the biological requirements to qualify as habitat, perhaps not now as they currently exist on the landbase, but in the future. The key in this regard is defining the biological structural characteristics needed, whether they be 80 trees per hectare > 30 cm dbh, 10 dead snags per hectare above a certain size to provide nesting locations, or crown closure (stand density) above a certain amount. Hence, even intensive management zones can potentially provide habitat.

Crown land management guidelines should specify ecologically appropriate silviculture and harvesting treatments, by stand type and ecodistrict. We should focus on the desired future forest condition (the target mix of different forest stand types, ages, stand structures, and sizes), rather than on the treatments that are used to get there. People tend to react negatively to clearcut harvesting based upon its looks. However, no clearcut harvesting would be as bad for biodiversity as all clearcutting. Some forest types develop in the presence of natural disturbance regimes (fire and insect outbreaks) that tend to 'recycle' stands all at one time ('stand-replacing' disturbance), although with many structures ('islands' and 'connections' of surviving trees) remaining. Examples are budworm outbreaks in mature balsam fir and fire in jack pine or black spruce; the closest

silvicultural approximation is clearcutting. Other forests never develop this way, but rather by single trees, patches, or parts of the stand dying from old age, disease, wind, or budworm in spruce. Single-tree selection cutting or patch cuts are appropriate here; clearcutting is not. It is not one-size-fits-all; all or no clearcutting are equally inappropriate. Understanding and appropriate management guidelines for mixedwood communities are of the most concern.

Work out suitable arrangements with respect to First Nations access to Crown land. Until resolved, considerable uncertainty will exist regarding forest management. Perhaps government should accelerate efforts to negotiate a suitable end to the “court-based” treatment of this matter.

Crown lands make up only about one-half of the forests of NB, and government should provide taxation or other incentives to promote best management practices and sustainability on private woodlots. These hearings are designed to examine Crown land management and in particular the Jaakko Pöyry report. However, this really cannot be done without considering the impact on, and potential of, the other half of forest land in NB, especially the private woodlot sector. Given that private wood makes up 60% of the wood supply in NB, government should look at taxation or other incentives to promote best management practices and sustainable wood supply from private woodlots.

3. Monitoring and Analysis

The Jaakko Pöyry report does not provide sufficient quantitative analysis to make such a sweeping change to forest policy. The JP report points to one out of many possible futures, but was restrictive in concentrating on maximizing the long-term wood supply. While this may well be feasible, it is not clear whether this is the best goal, nor at what cost. Such a far-reaching decision should be based upon thorough, quantitative timber supply and socio-economic analyses of alternative scenarios for all Crown land and individual licenses. Ideally, this should be done for each license; however, several rigorous examples may suffice. The expertise to conduct such analyses exists in NB. Done properly, they would probably take one to two years to complete.

Protected areas should be used to monitor biodiversity and determine goals for forest management. Inherent in creating the network of protected areas in NB was the intent that these were for “the precautionary principle” (i.e., we should not manage all forest, in case some unknown negative consequence was occurring), but also that protected areas should serve as unmanaged benchmarks for scientific learning, in comparison with managed forests. This has not occurred. Concerns about possible adverse effects on biodiversity are generally at the forefront of negative reaction to Jaakko Pöyry report recommendations. Given the importance of forests and forest products to NB, **a Forestry Advisory Board should be established. The province and forest industry should provide funding and actively participate in monitoring and applied research to empower forest managers.** There are opportunities to partner and use industry or provincial funding to ‘lever’ additional matching funds.

Guidelines should be developed for the management treatments necessary to have planted stands provide wildlife habitat and other non-timber values. A significant concern about planted stands is whether they can provide structural characteristics required to serve as habitat for the large variety of species that live in forests. Structural characteristics include such things as the mix of species, size of trees, presence of snags or dead trees, downed dead woody debris, lichens in the

trees, understory vegetation, etc. There is nothing inherently different between a planted tree and a naturally regenerated tree of the same species, but there may well be stand structure differences resulting from current harvest and silviculture prescriptions. Monitoring and applied research should determine the specific structural characteristics of stands needed to serve as habitat, and to formulate management guidelines to create these. These may well include maintaining 'legacy elements' from the pre-harvest stand (e.g., trees to serve as snags or downed woody debris) or leaving some trees for habitat reasons during thinning.

Recommendations:

1. A provincial Forestry Advisory Board should be established, with a mandate to coordinate and advance forest management, policy, monitoring, and applied research. This group should determine goals for forest management to keep forestry in NB at the forefront.
2. Quantitative timber supply and socio-economic analyses of alternative scenarios should be conducted at the provincial, Crown, and license level (at least two licenses, perhaps north & south, and ideally all 10). Analyses should evaluate a range of scenarios of planting, zoning into intensive, extensive, and protected areas, and other opportunities to increase timber supply, while maintaining non-timber, habitat, water, and other values. Analyses should evaluate consequences of current policy guidelines (e.g., restrictions on planting partly stocked areas).
3. More attention needs to be paid to the value and quality of forest and products produced, instead of just volume. Forest management strategy analyses should include evaluation of value-added product opportunities and employment.
4. Policy revisions and Crown land management guidelines should set:
 - goals for wood supply for each Crown license in NB;
 - goals for minimum areas to be maintained of all natural forest types (species groups, age classes, and stand sizes), by ecological district; and
 - ecologically appropriate silviculture and harvesting treatments, by stand type / ecodistrict.
5. Government should determine strategies using taxation or other incentives to promote best management practices, sustainability, and increased production on private woodlots, recognizing their importance to wood supply in NB.
6. The Forestry Advisory Board should oversee an integrated approach to monitoring and applied research, involving industry, government and universities. This should evaluate:
 - which actions can be conducted in buffers;
 - monitoring and applied research to compare protected areas vs. managed forest; and
 - guidelines for management treatments necessary to have planted stands provide wildlife habitat and other non-timber values.

References

- Erdle, T. and J. Pollard. 2002. Are plantations changing the tree species composition of New Brunswick's forests? *The Forestry Chronicle* 78: 812-821.
- MacLean, D.A., K.P. Beaton, K.B. Porter, W.E. MacKinnon, and M. Budd. 2002. Potential wood supply losses to spruce budworm in New Brunswick estimated using the Spruce Budworm Decision Support System. *The Forestry Chronicle* 78: 739-750.