New Brunswick Forest Report Card:
A Stakeholder Survey of Opinions and Recommendations on Crown Forest Management in New Brunswick in 2017

Conservation Council *of* New Brunswick
Conseil de conservation *du* Nouveau-Brunswick

By Tracy Glynn & Zachary Bourque

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Disclaimer

While every care was taken to ensure the accuracy of the report, including the selected quotes made by the survey respondents, the content, analysis and recommendations contained in this report as well as any unforeseen errors are those of the authors.

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Executive Summary

The Conservation Council of New Brunswick is publishing this New Brunswick Forest Report Card to assess the status of twelve different public values for Crown forest management. The values assessed include: public participation; transparency and monitoring; watershed protection; action on climate change; old growth forest conservation; wildlife conservation; action on threatened species; protected natural areas; silviculture; management for a diversity of forest products, services and users; revenue generation for communities and the province; and honouring treaties and Aboriginal rights.

A stakeholder survey was used to gather the opinions on how well the government of New Brunswick is doing on the twelve public values. Thirty people who have been actively engaged on forest management and conservation in New Brunswick, including researchers at the province's universities and colleges, and representatives of conservation groups, First Nations organizations, forest user groups and private woodlot owners, ranked the status of these values as either thriving, adequate, improving, worsening, inadequate, or uncertain. The respondents were then asked to explain their rankings.

The survey revealed that respondents are largely dissatisfied with the current forest management regime. Many answered "inadequate" or "worsening" for most public values. Based on the rankings and explanations of the survey respondents as well as a review of recent scientific literature on the different values, the Conservation Council has developed specific recommendations that the province should take on forest management. These recommendations include:

1. Implementation of better public participation opportunities and protection of those opportunities in an updated *Crown Lands and Forest Act;*

2. Implementation of more robust transparency and monitoring mechanisms in Crown forest policy, including the return of an annual state of the forest report that contains information that the public has repeatedly demanded, including ecological, economic and social impacts of current forest management activities and an assessment of alternative uses for Crown forest land;

3. A provincial water strategy that recognizes the role healthy forests play in protecting freshwater and forest management that uses watershed-level planning, including placing limits on the amount of forest to be harvested within a watershed in a given time frame, mapping and protecting ephemeral, intermittent streams and vernal pools, delineating no-harvest zones within riparian buffers for all rivers, lakes, and wetlands, and increasing riparian buffers near steep slopes and in floodplains;

4. Engagement on a coordinated climate change and forest management strategy that includes research and action on climate change;

5. Province-wide investments using carbon pricing revenue in the form of tax incentives, grants, and/or loan guarantees to generate emissions reductions from various sectors including forestry, as outlined in the Conservation Council's "Climate Action Plan";

6. Creation of targets and a plan for old growth forest restoration and protection;

7. Raising the area of Crown forest set aside for conservation objectives such as wildlife habitat protection to above the bottom limit of 31 per cent needed for wildlife while working towards a goal of conserving 40 per cent of the land base;

8. Better research and monitoring programs for different categories of wildlife in New Brunswick's forest;

9. Allocation of resources towards research to better understand and protect species-at-risk on our landscape, including the monitoring of populations and implementation of action plans that ensure the conservation and recovery of at-risk species;

10. Collaboration with scientists, First Nations and environmental organizations on developing a new strategy for increasing the area and function of protected natural areas as part of Crown forest management;

11. Review of the silviculture practices used in Crown forest management with a goal of modernizing the practices, and the phase out of herbicides in Crown forestry due to their impacts on forest wildlife and biodiversity, potential health impacts, and economic impacts;

12. Support for more diversity in forest products and services and protection of that diversity in a modernized *Crown Lands and Forest Act;*

13. Return to private woodlot owners, the right of primary source of supply for timber processed at the province's mills;

14. Maximize forest-based revenue generation and employment that respects ecological limits by exploring a pilot project for community forestry and allowing different tenure systems in a modernized *Crown Lands and Forest Act*;

15. Honouring of the Peace and Friendship treaties and Aboriginal rights in forest management.

Overall, the report card points to a need in the province for modernized forest legislation and regulated practices that are guided by four overarching principles: (1) respect for public trust, public participation and increased transparency; (2) respect for environmental values, including management that respects forested watersheds and better conservation practices for biodiversity in a future of climate change; (3) respect for socio-economic values that encourages a diversity of forest products, services and users, and better supports revenue generation for communities and the province, and (4) honouring of the Peace and Friendship treaties and Aboriginal rights.

Introduction

Forest management in New Brunswick has long been contested terrain, but concerns may have reached a peak in 2014 when the government of New Brunswick announced a forest strategy and the unprecedented signing of contracts with forestry companies that guaranteed a supply of wood from Crown land.

The province of New Brunswick has 6.1 million hectares of forest land, 48 per cent of which is Crown land, 30 per cent is private land, and 22 per cent is freehold. New Brunswick's mixed wood forest of 32 native tree species of leafy hardwoods and evergreen softwoods was labelled the "Acadian forest" by Environment Canada researcher Stanley Rowe in the 1970s. The Canadian Forestry Service today refers to the type of forest found in New Brunswick and the Atlantic Canadian provinces as the Atlantic Maritime forest while the Peace and Friendship Alliance and other indigenous organizations call it the Wabanaki forest. Wabanaki, meaning "Dawn land" in the Algonquin languages, covers the eastern region of North America and parts of Quebec (Assembly of First Nation Chiefs in New Brunswick, 2010). Land in New Brunswick has never been ceded or surrendered by the indigenous Mi'kmaq, Wolastoqiyik, and Passamaquoddy people.

The province of New Brunswick is responsible for managing the Crown forest in trust and for the benefit of all residents and future generations of people of the province. However, the current Crown land tenure system grants a small handful of forestry companies almost exclusive access and control over Crown lands. The government currently oversees the management of Crown land by four forestry companies that hold licenses (AV Group, Fornebu, J.D. Irving, and Twin Rivers). The companies hold 25-year renewable licenses that allow harvesting of trees. The largest Crown land license holder is J.D. Irving, Ltd. Almost 25 per cent of the province's land mass (4.4 million acres of Crown, private and freehold land) is controlled by this company.

To help address future forest management and conservation decisions in New Brunswick, the Conservation Council of New Brunswick is publishing this New Brunswick Forest Report Card, which attempts to assess the status of twelve different public values for Crown forest management through a stakeholder survey. The report card encompasses the evaluations of people who have been actively engaged on questions of forest management and conservation in the province, including forest researchers and analysts at the province’s universities and colleges, and representatives of conservation groups, First Nations organizations, forest user groups, and private woodlot owners. The public values were chosen because they were priorities for forest management highlighted in a 2007 study on public attitudes on forest management in New Brunswick (Nadeau et al., 2007). They were also concerns shared during the public hearings of the Select Committee on Wood Supply in 2004 (Select Committee on Wood Supply, 2004).

Thirty people (see Appendix A) were asked to classify the status of twelve different values that people hold for their forest as thriving, adequate, improving, worsening, inadequate and uncertain, then to explain their ranking. The values include: public participation; transparency and monitoring; watershed protection; action on climate change; old growth forest conservation; wildlife conservation; action on threatened species; protected natural areas; silviculture; management for a diversity of forest products, services and users; revenue generation for communities and the province; and honouring treaties and Aboriginal rights.

The survey (see Appendix B) revealed that respondents are largely dissatisfied with the current forest management regime. Many answered "inadequate" or "worsening" for most public values. Indicators that showed improvement include increasing the amount and size of protected natural areas, but many of those respondents also said the province needs to further increase the size of protected natural areas to the national average. This report card includes a summary of the survey responses and recent research on the twelve public values assessed. In brief, the recommendations by survey respondents to the government of New Brunswick on forest management include:

1. Implementation of better public participation opportunities and protection of those opportunities in an updated *Crown Lands and Forest Act;*

2. Implementation of more robust transparency and monitoring mechanisms in Crown forest policy, including the return of an annual state of the forest report that contains information that the public has repeatedly demanded, including ecological, economic and social impacts of current forest management activities and an assessment of alternative uses for Crown forest land;

3. A provincial water strategy that recognizes the role healthy forests play in protecting freshwater and forest management that uses watershed-level planning, including placing limits on the amount of forest to be harvested within a watershed in a given time frame, mapping and protecting ephemeral, intermittent streams and vernal pools, delineating no-harvest zones within riparian buffers for all rivers, lakes, and wetlands, and increasing riparian buffers near steep slopes and in floodplains;

4. Engagement on a coordinated climate change and forest management strategy that includes research and action on climate change;

5. Province-wide investments using carbon pricing revenue in the form of tax incentives, grants, and/or loan guarantees to generate emissions reductions from various sectors including forestry, as outlined in the Conservation Council's "Climate Action Plan";

6. Creation of targets and a plan for old growth forest restoration and protection;

7. Raising the area of Crown forest set aside for conservation objectives such as wildlife habitat protection to above the bottom limit of 31 per cent needed for wildlife while working towards a goal of conserving 40 per cent of the land base;

8. Better research and monitoring programs for different categories of wildlife in New Brunswick's forest;

9. Allocation of resources towards research to better understand and protect the species-at-risk on our landscape, including the monitoring of populations and implementation of action plans that ensure the conservation and recovery of at-risk species;

10. Collaboration with scientists, First Nations and environmental organizations on developing a new strategy for increasing the area and function of protected natural areas as part of Crown forest management;

11. Review of the silviculture practices used in Crown forest management with a goal of modernizing the practices, and the phase out of herbicides in Crown forestry due to their impacts on forest wildlife and biodiversity, potential health impacts, and economic impacts;

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14. Maximize forest-based revenue generation and employment that respects ecological limits by exploring a pilot project for community forestry and allowing different tenure systems in a modernized *Crown Lands and Forest Act*;

15. Honouring of the Peace and Friendship treaties and Aboriginal rights in forest management.

Overall, the report card points to a need in the province for modernized forest legislation and regulated practices that are guided by: (1) principles of public trust, public participation and increased transparency; (2) respect for environmental values, including management that respects forested watersheds and better conservation practices for biodiversity in a future of climate change; (3) respect for socio-economic values that encourages a diversity of forest products, services and users, and better supports revenue generation for communities and the province, and (4) honouring the Peace and Friendship treaties and Aboriginal rights.

A forestry professional for 20 years in New Brunswick, Gareth Davies, captured the need and desire for a new *Crown Lands and Forest Act:*

> There was a time when most people could work in the woods and feed a family, but that's not the case anymore. Everybody wants to feel confident that we are managing the forest for the social and economic benefits of local communities. Assuming that maximizing timber supply at the lowest cost for the forest industry will automatically maximize employment in our communities is no longer true. We're stuck using an old model, which no longer works for our communities. We need a new *Crown Lands and Forest Act,* and a strategy that is free of timber supply agreements and allocations.

Survey Responses and Recommendations

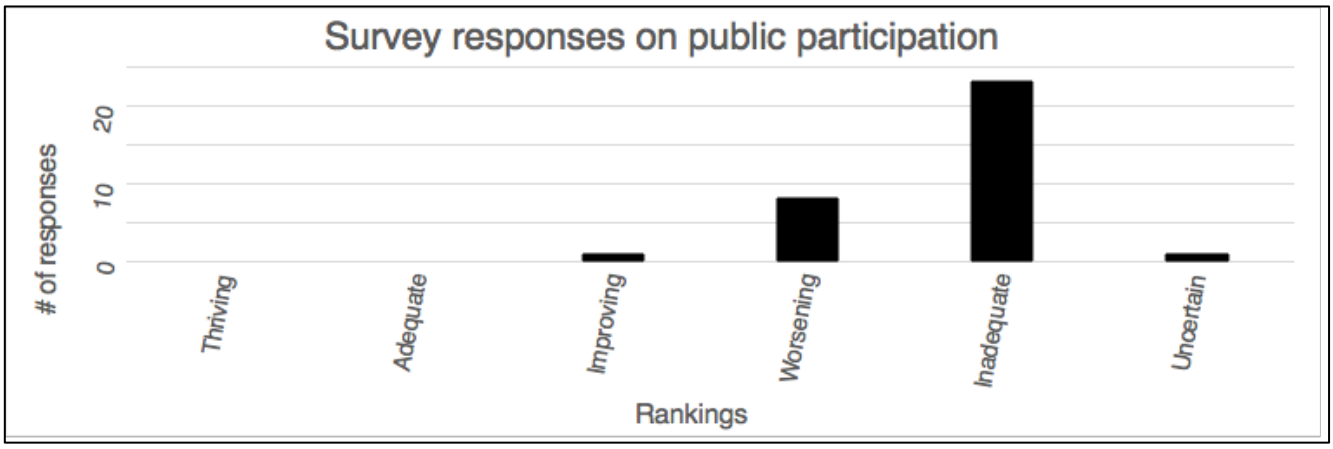
This section describes the results and feedback from a stakeholder survey on New Brunswick Crown forest management conducted by the Conservation Council of New Brunswick in 2016 and 2017. Recommendations by the Conservation Council follow the assessment of each public value: (1) public participation; (2) transparency and monitoring; (3) watershed protection; (4) action on climate change; (5) old growth forest protection; (6) wildlife conservation; (7) action on threatened species; (8) Protected Natural Areas; (9) silviculture practices; (10) management for a diversity of forest products, services and users; (11) revenue generation for communities and the province; and (12) honouring treaties and Aboriginal rights.

1 Public Participation

Crown lands are held in trust by the provincial government and are supposed to be managed on behalf of the public. Therefore, public participation is widely regarded as an essential ingredient in forest management decision-making for Crown lands. Despite this, there continues to be no meaningful role for the public in forest management decisions in New Brunswick. Forest management in New Brunswick from its design to implementation, as well as its effectiveness and outcome, is criticized for hearing the voices of only some key stakeholders and for neglecting public priorities (Nadeau *et al.*, 2007). For forestry management decision-making to have "constructive and effective public participation," it should include "the incorporation of teamwork, collaborative learning and two-way information flow" (Jabbour and Balsille, 2003).

Summary of Results

The majority of survey respondents responded that the public participation process in Crown forest management in New Brunswick is inadequate and/or worsening. Twenty-three survey respondents said it was inadequate while eight said it was worsening. One respondent was uncertain and another indicated it was improving. One respondent remained neutral on the question.



What We Heard

Tom Beckley, a member of University of New Brunswick's Faculty of Forestry and Environmental Management and co-author of the 2007 study, "Public views on forest management in New Brunswick: report from a provincial survey," explained that public participation in forest management decisions has gotten worse, particularly in relation to the 2014 forest strategy: "There was no public participation for two years prior to the announcement of forest strategy in 2014 and there has been no public participation opportunity since."

Lawrence Wuest, a forest ecologist who participated in several public meetings on forest management in the early 2000s, argued that the government has repeatedly ignored public input starting with the 2004 Legislative Committee on Wood Supply, and subsequently other public participation opportunities. "The public has repeatedly said that the integrity of the forest is most important and you have to conform your employment policies or the way you configure your management to honour that first and work from there, but the government does not accept that response," said Wuest.

Woodlot owners in the province often express opposition to Crown forest management decisions that affect them. Megan de Graaf, a woodlot owner and forest ecologist who works with Community Forest International, stated, "Organizations like wood marketing boards and the NB Federation of Woodlot Owners, who generally represent small private woodlot owners, have knowledge on how forests should be managed. When they offer opinions on forest management, they are disregarded."

Scientists and foresters are also not happy with the way they are consulted on forest management decisions. Marc-André Villard, a forest ecologist, was a member of J.D. Irving Ltd.’s forest research advisory committee for 15 years. He spoke out publicly against the government of New Brunswick’s 2014 forest strategy for not consulting scientists. According to Villard, now with the Université du Québec in Rimouski, there is no record of comments on forest management from scientists or the public. "Researchers like myself who have tried to get a hold of the Minister or department staff to communicate research findings related to Crown lands barely get an acknowledgement of receipt. I can’t imagine that the broader public has any better access or influence on Crown land management," said Villard. Jasen Golding, who teaches silviculture methods at the University of New Brunswick, said, "the Association of Registered Professional Foresters of New Brunswick tried to be part of a two-year negotiation for a new forest strategy but were shut out."

Kirk MacDonald, a Progressive Conservative Member of the Legislative Assembly representing the riding of York North for multiple terms, chaired the Select Committee on Wood Supply in 2004. The committee toured the province to gather public input on the way the forest should be managed. The overflowing community meetings spoke to the desire of the public to be consulted in a meaningful way on forest management. He states, "When you look at the recommendations put forward by the Select Committee on Wood Supply, the largest group of recommendations are around opportunities for greater public input into Crown land management. Over a decade after the Select Committee report, I don’t see significantly more opportunities for public input existing than we did when we toured the province."

Chris Spencer, a forest technician from Sussex, New Brunswick, captured the general feeling of many respondents on public participation in forest management decisions: "I am not aware of any formal public participation mechanism. If one exists, it's a well-kept secret. I know there have been number of groups that have toured the province and consulted with the public, but for the most part, public views and feelings of how the Crown lands should be managed seem to have been ignored and they are not reflected in current management strategies."

Recommendations

The Conservation Council recommends the government implement better public participation opportunities and protect those opportunities in an updated *Crown Lands and Forest Act.*

2 Transparency and Monitoring

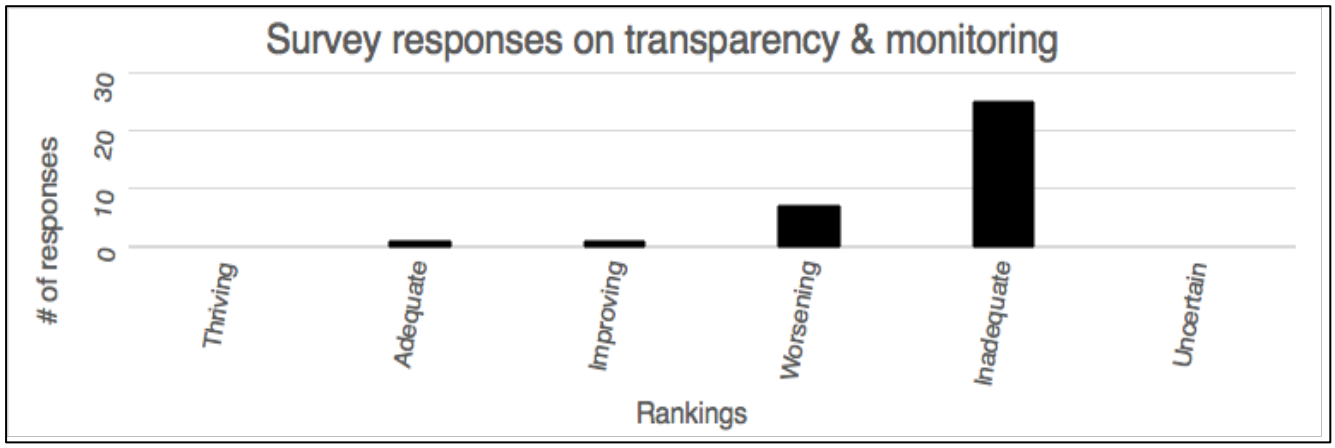
Forest management of public lands should be transparent and monitoring should be independent. However, information that once was available on the website of the Department of Natural Resources (DNR) (now Department of Energy and Resource Development (DERD)) such as the status of each block of land in the province is no longer available. Information needs to be provided in an accessible, timely and transparent way so that the public can make informed assessments of the direction of forest management.

Monitoring of operations on forest lands in New Brunswick now involves an auditing system that requires less independent monitoring than what used to be done by DNR officers in the past. Forestry companies must undergo an audit and if they are found in violation of any regulations, they may face fines and be told to correct their activities.

The government of New Brunswick plans to make LiDAR data, information generated from satellite imagery, increasingly available, which may provide some of the information that the public has been seeking. However, how LiDAR will be used is a concern to conservationists who hope that the information will be used for conservation purposes and not solely for industry seeking to benefit from resource extraction.

Summary of Results

The majority of survey respondents responded that the level of transparency and monitoring in Crown forest management is inadequate and/or worsening. Twenty-five said it was inadequate while seven said it was worsening. One respondent chose to use the term, mediocre, while two others described it as adequate and improving.



What We Heard

Respondents to the survey expressed concern over the lack of information sharing from the government department responsible for forest management, with one respondent calling the department, "a black box." Dale Prest with Community Forests International argued that the current monitoring system is "like the fox controlling the hen house. The farmer cannot check on his hens and must take the fox's word that they are okay." Prest pointed out that information on royalties and stumpage rates is not

shared to the public in an adequate way.

Matthew Smith, a forest ecologist who has studied the Northern flying squirrel and forest habitats, stated:

> To go ahead and cut as much as is being cut in the forest, and not do the monitoring and research required is very troubling. There was some more cooperation in the past, but I think the government and industry have decided that it is best not to discuss it anymore as if there are no concerns. There are more tools and resources now, such as satellite imagery, that are pointing out the impacts of clearcutting on wildlife. When we look at the landscape and the age of the forest now, we have changed the forest. Based on my research, we lack mature forests in southern New Brunswick. We're concerned with the area of mature forest dropping below 40 per cent, but outside of protected areas, it must be 20 per cent or lower. I don't know who's tracking those numbers. That basic information needs to be released by the government and not just in a glossy 'State of the Forest' newsletter that says how great things are going for industry. There needs to be environmental monitoring and research informing people of the true state of the forests.

A number of respondents described their experiences with trying to get information through formal channels, such as through right to information requests, as flawed. Tom Beckley said, "I often hear of researchers trying to get access to information under industry-licensed Crown lands and not being given access. It is worse than inadequate, it is shameful." Matthew Smith described similar problems and stated, "I'd like to see more communication, more information sharing between industry, government and the public and university researchers."

Roger Roy, a professor at the Université de Moncton's School of Forestry in Edmundston, described how the communications between a variety of stakeholders and the government has recently gotten worse: "The Minister's Forest Advisory Committee was created in 2005. The last meeting was held in 2012. The committee meetings provided a forum for the Deputy Minister or other high level staff at the Department to inform members regarding decisions that had already been taken and could not be modified or reversed. At least, we had this, but now, we have nothing. There is no transparency."

Roy and Beckley both pointed to the annual State of the Forest Report (a report that has not been published for several years) that despite its flaws, at least contained some information for the public. Roberta Clowater, Executive Director of the Canadian Parks and Wilderness Society New Brunswick Chapter, similarly argued that, "since the government stopped producing State of the Forest Reports, there are no publicly available statistics about how the forest is being managed or monitored." Chris Spencer wanted more information on the economic performance of current forest management activities: "What value are we achieving for every cubic metre of wood harvested? What are the employment impacts?"

Recommendations

The Conservation Council recommends the government implement more robust transparency and monitoring mechanisms in Crown forest policy, including the return of annual state of the forest reports that contain information about the ecological, economic and social impacts of current forest management activities and an assessment of alternative uses for Crown forest land.

3 Watershed Protection

Many of New Brunswick's watersheds are located within the Crown forest. Major threats to the health of watersheds are related to forest management, specifically from clearcutting and the replacement of complex forest ecosystems with simple plantations lacking coarse woody debris and other structural features that mediate the flow of water. The loss of forest cover due to clearcutting and conversion to plantations has degraded the province's biologically diverse and life-supporting freshwater ecosystems. While buffer zones are required along streams, rivers and wetlands, some logging has been permitted in these areas and more of these areas have recently been opened up to clearcutting as part of the 2014 forestry strategy.

Forest management policies that restore and protect watersheds throughout the province using proper hydrological and ecological objectives are urgently needed. According to the Government of New Brunswick, about 40 per cent of New Brunswickers obtain their water supply from surface waters, and thus rely on healthy watersheds. Despite the fact that New Brunswick's forest plays an integral role in protecting our freshwater, the current forest management regime does not have watershed management objectives, other than maintaining small riparian buffers between clearcuts and watercourses.

Research from Quebec has shown that when more than 50 per cent of a watershed is clearcut, there is a moderate probability that peak flow will be severe enough to affect watercourse morphology and aquatic habitat. Young forests do not effectively regulate water quality and flow. The Conservation Council's analysis of all watersheds in the province in 2009 found that 30 watersheds are insufficiently forested to protect against the effects of peak flow, including damange to the river and stream channel and the habitat it provides. Forty per cent or more of the drainage area of these 30 watersheds are dominated by young forest (de Graaf, 2009). These "at risk" watersheds are located within five of the province's thirteen principal catchment basins: Restigouche River, Chaleur Bay, Nepisguit River, Miramichi River, and Saint John River. The South Branch Nepisguit River, with 62 per cent of the land base covered in Crown forest less than 35 years old, is the most critically affected watershed. The Conservation Council's analysis shows that the Nepisguit River and the headwaters of the Restigouche, Northwest Miramichi, Jemseg, and Canaan Rivers are at-risk because of the large number of watersheds within each catchment basin that are at-risk. With extreme storm events becoming more frequent in New Brunswick, the effects of erosion, runoff and sedimentation on water quality and aquatic habitats are expected to become more severe (de Graaf, 2009).

Research by Linke *et al.* (2017) validated satellite data showing notable forest loss in the headwaters of Miramichi's watershed, with the most severe forest loss occurring in the headwaters of the Southwestern region of Miramichi. The scientists argued that the impact of pervasive clearcutting on water quality and aquatic species of the Miramichi River needs to be addressed in future forest management (Linke *et al.*, 2017).

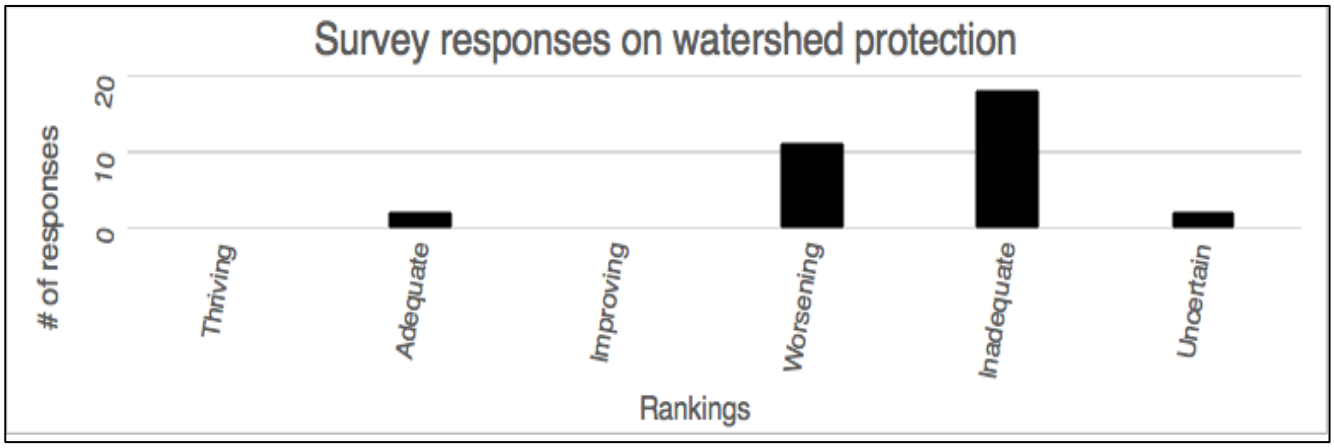
New mapping technology recently acquired by the province of New Brunswick, namely LiDAR that uses satellite imagery to more accurately capture details on the landscape, should be used to identify adequate buffer areas for different types of watercourses, including rivers, wetlands, lakes, and ephemeral and intermittent streams. Buffer zones on rivers and lakes should extend beyond the floodplain, so that the floodplain soils and vegetation remain undisturbed. Buffer zones on rivers and

lakes should include a no-harvest zone. It is also critical, especially on steep slopes, that buffers be measured from the top of the slope rather than from the stream bank. Vernal pools must also be protected. Vernal pools are temporary pools of water, mostly located on forested lands, that are used by certain amphibians and insects for breeding. New Brunswick is lagging behind other jurisdictions, such as the state of Maine, in vernal pool protection. New Brunswick should follow other jurisdictions and develop a program to identify, map, and protect vernal pools.

While the Department of Energy and Resource Development is responsible for forest management on public lands, including watershed management, the responsibility for watershed management on private lands rests with the Department of Environment and Local Government, as does the management of watercourse alterations and pollution. This fragmented approach to watershed management has long been identified as a problem. Some of these issues are being addressed as a result of the work of local watershed groups and programs of the Department of Environment and Local Government. However, watershed protection should be a fundamental part of the main goals and objectives to be met in forest management plans.

Summary of Results

Thirteen of the survey respondents indicated that watershed protection was inadequate in forest management while six respondents indicated it was worsening. Five respondents indicated it was inadequate and worsening. Two respondents indicated it was adequate, another two said they were uncertain and one remained neutral on the question.



Respondents expressed concern that the government is now allowing forestry companies to access and cut more wet forest and steep slopes in order to achieve an additional cut of 660,000 cubic metres of wood from the Crown forest. They expressed concern over how the current forest management regime is increasing risks to water quality and other indicators of watershed health. Roberta Clowater explained: "There isn't a concerted effort to look at the relationship between forest management and watersheds. We need an approach to managing forests with flood risk, soil erosion and sedimentation in mind." Flooding caused by clearcutting was a concern mentioned by several respondents. The costs of washed-out bridges, culverts and roads was also highlighted by some respondents.

Megan de Graaf reflected on her experience studying forests and watersheds while at the Conservation

Council: "The government has guidelines for wildlife and riparian buffers, but they did not have a tool to assess whether harvesting treatments have an effect on water quality and flow until we shared such analysis with them. I am skeptical that the department has continued any work on our recommendations."

When asked about the status of watershed protection in forest management, Roger Babin, a great-grandfather who has worked in the woods near Rogersville all of his life, said, "I can't say it's good because I live in the woods and I go in the woods. I see the devastation. That's not management."

Recommendations

The Conservation Council recommends that the provincial water strategy recognize the role healthy forests play in protecting freshwater and that forest management use watershed-level planning in forest management. Specifically, forest management should place limits on the amount of forest to be harvested within a watershed in a given time frame, ensure that watersheds retain at least 50 per cent forest cover, map and protect ephemeral, intermittent streams and vernal pools, delineate no-harvest zones within riparian buffers for all rivers, lakes, and wetlands, and increase riparian buffers near steep slopes and in floodplains.

4 Action on Climate Change

While the impact of climate change on New Brunswick's forest is not yet fully understood, recent research conducted both here and in similar forests shows that predicted climate change scenarios, which include a warmer and wetter climate, favour hardwood species, including intermediate and shade tolerant hardwoods, such as maples and red oak. Forest management practices in the province have not adapted to prepare for these impacts. Dominant management practices, including large-scale clearcutting, spraying and reforestation favour a small subset of forest species, such as balsam fir, a northern species not expected to do well in a future of climate change. Certain pests that could affect our forest are also expected to migrate north with climate change. Replacing a resilient mixed wood forest with a predominantly softwood forest that the pests prefer is an outdated approach for forest management in New Brunswick. Research by the Fundy Biosphere Reserve on how certain native species will do in a future of climate change is publicly available and should be used by the Government of New Brunswick (Phillips, 2015).

Some attention has been paid to how balsam fir, New Brunswick's provincial tree, could disappear in a future of climate change. Charles Bourque, a University of New Brunswick researcher on forests and climate change, told CBC on September 19, 2016 that, “Tree species that require lower temperatures will tend to be eradicated from the province, while the warmer-loving species, especially from the south, could potentially replace those species that leave the New Brunswick landscape.” Balsam fir is currently a favoured tree of the forestry industry and is found in natural stands and some plantations (as natural regeneration) throughout New Brunswick. Balsam fir is also the favourite food of the spruce budworm, which is another concern in a future of climate change. Other pests such as the Hemlock woolly adelgid are migrating north with the warming temperatures and are threatening forests south of New Brunswick's border.

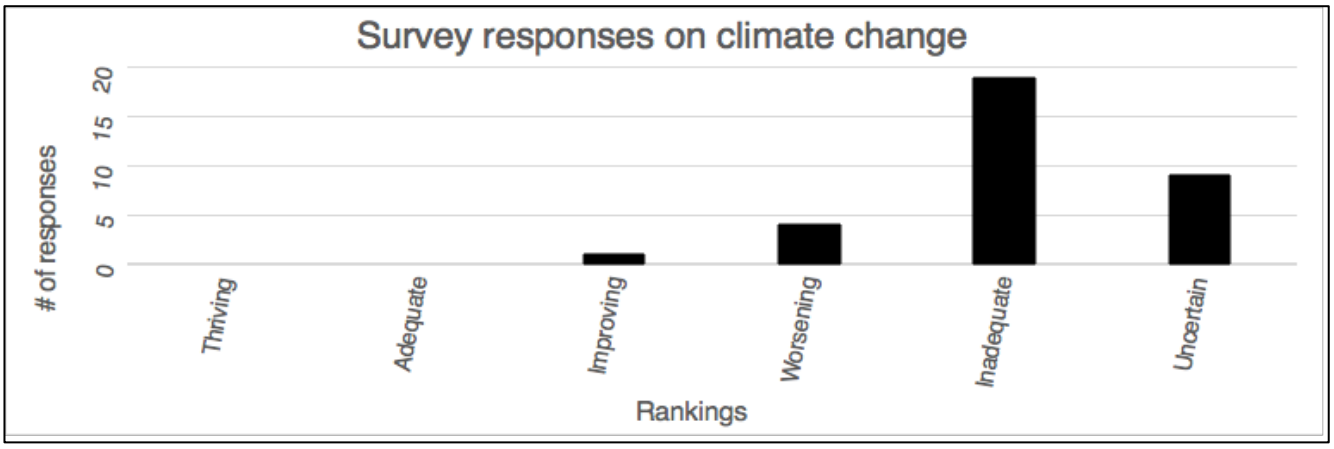
Having mature and old forest stands on our landscape will also mitigate the effects of climate change by moderating air and water temperatures, protecting water courses by decreasing erosion and runoff, lessening flooding, and absorbing carbon and other pollutants.

New Brunswick's 2016 Climate Change Action Plan states that the province will "incorporate climate change knowledge into Crown land operating plans, silviculture planning and all forest management plans;" "Work with natural resources managers to ensure that climate change adaptation plans are completed by 2022 to address major climate threats;" "Support research into the impacts of climate change on agriculture and examine new crop and market opportunities as a result of changing growing conditions;" and "Recognize the importance of ecosystems (e.g., wetlands, forests, soil, dunes, coastal salt marshes) in buffering the impacts of climate change, and integrate ecosystem services (e.g., temperature control, maintaining air quality, erosion control, water quality improvement, flood reduction) into land-use planning" (Province of New Brunswick, 2016).

Summary of Results

Over half of the survey respondents, nineteen of them, indicated that action on climate change

was inadequate in forest management and three indicated it was both inadequate and worsening. Eight respondents were uncertain, and one believed it to be worsening but was uncertain. One thought that climate change considerations in forest management were improving.



What We Heard

A number of survey respondents expressed concern over the borealization of New Brunswick's natural mixed wood forest and some thought that more hardwood species as well as species less susceptible to climate change such as red oak and eastern hemlock should be planted. Borealization of New Brunswick's mixed wood forest has occurred over the past 200 years with the replacement of tree species, such as maples and other hardwoods, with predominately boreal tree species such as spruce.

Bourque argued that New Brunswick is not seriously managing the forest in terms of climate change: "Other provinces recognize the importance of climate change when managing the forest." Ben Phillips, who runs the Acadian Forest Dendrochronology lab at Mount Allison University in Sackville, also wanted to see more research on how the changing climate is going to affect our forest as well as how our changing forest is going to affect the climate: "The forest that's on the landscape today versus the forest that existed pre-land clearance probably absorbs more sunlight and heat and that contributes to climate change. There are many more spruce trees and other conifers on our landscape today, which makes the forest canopy darker than if we had more leafy hardwoods in the landscape and lighter leaf colour."

The importance of a resilient forest in a future of climate change was highlighted by several respondents. Roberta Clowater said: "It appears government is not even taking into consideration the impacts of climate change on the productivity of forests, how it produces wood and other resources, how resilient or not our existing forest management will make the forest with respect to new or existing diseases, pest outbreaks or forest fires. Instead of taking action on climate change, the management decisions appear to be actually making the forests more susceptible to climate change."

Community Forests International (CFI) has been working with private woodlot owners to work on climate solutions in New Brunswick's forestry practices. CFI has monetized the carbon stored on its 705-acre woodlot at just over $300,000 over 100 years. In other words, they estimate they would get paid $3,000 per year for 100 years to keep their average stocking above 20 cords for every acre. CFI

hopes that the provincial government will create a carbon pricing system that works for New Brunswick woodlot owners. CFI would like a carbon cap and trade system as they feel it is a much better fit for woodlot owners. They argued that if each Maritime province instituted a cap and trade system, woodlot owners would be able to manage their lands to store more carbon and receive payment from a regulated carbon market for it. They also want governments to support woodlot owners in gaining access to the other cap and trade markets. CFI estimates that beginning in 2018, exporting carbon offsets to places like California could sustainably bring millions of dollars per year into rural, forest-based communities in New Brunswick, Nova Scotia and Prince Edward Island. CFI feels that woodlot owners will become re-engaged, increasing the size of our working forest, with such a market opportunity (Prest, 2016).

The Conservation Council's 2016 "Climate Action Plan" calls for province-wide investments using carbon pricing revenue that could be in the form of tax incentives, grants, and/or loan guarantees to generate emissions reductions from various sectors including forestry:

> The New Brunswick forest industry already relies extensively on biofuels for processing forest products like paper and lumber, but biofuels can also be used in other forest operations, including heavy equipment and vehicles. Changes to harvesting practices to better protect soil, combined with increased silviculture, including of hardwoods, would diversify our forests making them more resilient to climate change and generating an increase in carbon capture capacity through photosynthesis. A combination of reducing emissions and increasing soil and forest sequestration, as well as actions in the waste and agriculture sectors could generate a further 500,000 tonne contribution to our provincial greenhouse gas target for 2030.

Recommendations

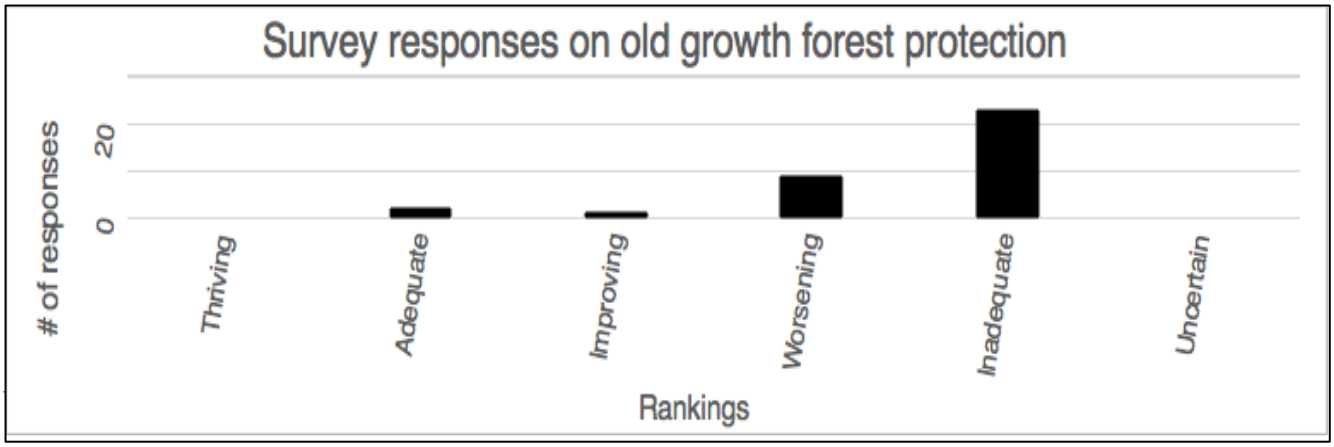
The Conservation Council recommends that the government of New Brunswick fully engage on a coordinated climate change and forest management strategy that includes research and action on climate change. As outlined in the Conservation Council's Climate Action Plan, province-wide investments using carbon pricing revenue could be in the form of tax incentives, grants, and/or loan guarantees to generate emissions reductions from various sectors including forestry.

5 Old Growth Forest Conservation

Old growth forests provide important habitat for wildlife, including a variety of mammals and cavity-nesting birds, as well as mosses and lichens. Older forests also store more carbon than younger forests, making the conservation and restoration of old forests an important part of climate action (Henschel and Gray, 2007; Stephenson *et al*., 2014). However, old growth forest in New Brunswick tends to be concentrated in parks or sites that have been historically inoperable for forestry companies. For Ben Phillips, a dendrochronologist at Mount Allison University's Dendrochronology Lab, an old growth forest is a multi-story, multi-age stand that has a significant proportion of trees that are in the upper range of their life span. The Conservation Council is working with the Mersey Tobeatic Research Institute on an initiative to identify research needs for old growth forest protection.

Summary of Results

Seventeen survey respondents believe that old growth forest protection in forest management is inadequate, with an additional five indicating it was inadequate and worsening. Four respondents indicated that it was worsening, and there was one respondent who said it could be characterized as adequate, inadequate and improving.



Ben Phillips is known for discovering the world's oldest red spruce in 2005. The tree is estimated to be at least 465 years old and were found in the Fundy National Park. Phillips made headlines again when he found what is believed to be the oldest red pines in the Maritimes. The red pines, some of them estimated to be about 300 years old, were found in the Nepisiquit Protected Natural Area in northern New Brunswick in 2015. As someone who has studied old growth forests and spent more than a decade searching for old growth forests in the province, Phillips argued, "I would say that old growth forest protection in this province is completely inadequate. Old growth forest is virtually impossible to find. There's so little of it left on the landscape. Even when you do find forest that is older, it tends to have been cut over at least once or twice in the past."

Old growth forest has been hard to define and some people associate it with virgin, untouched forest. According to Phillips, "Different tree species have a range of life spans but for many of them it would be 200 years old or more. I would expect an old growth stand to have at least 25 per cent shade-tolerant species that are over 200 years old and that is very difficult to find in New Brunswick... One of our

only sources of old trees left in the province are those built into historic structures. That says something really significant about the management of our forest in New Brunswick, when very old trees can only be found preserved in heritage buildings."

Matthew Smith would like to see old growth forest protected for the flying squirrels, owls and fungi that require old growth forest habitat. He said: "Until a short period of time ago, there was a lot of tolerant hardwood old growth in southern New Brunswick. That's been pretty much chipped into toilet paper."

Some respondents worried that the generations that will come after them will not get to experience an old growth forest. Chris Spencer said, "I want my children and grandchildren to be able to see true old growth. True old growth red spruce and white pine can easily be centuries in age and is not 155 years old." Roger Babin similarly argued, "I think within two years, you will not able to show a young person what's old growth because I think it will be all gone."

Roberta Clowater said that the system for protecting old growth forest up until 2012 was inadequate and today it is worse. "The government has reduced the amount of old growth forest protection on Crown forests, making an inadequate system worse. There is not a good system in place to monitor impacts of these reductions on the actual supply of old forest habitat. They are making these decisions that are putting ecosystems at risk, without understanding or tracking the consequences for the forest or for wildlife," said Clowater.

Recommendations

The Conservation Council recommends the government immediately create targets and a plan for old growth forest restoration and protection.

6 Wildlife Conservation

New Brunswick's 2014 forest strategy fails to meet minimal levels of protection needed to sustain wildlife populations, as noted by several respondents of the stakeholder survey. Part of the "conservation forest" that was reduced from 28 per cent to 23 per cent in the 2014 strategy included zones managed especially for wildlife habitat. The province's biologists identified that reduction of the old forest habitats would result in not meeting critical habitat requirements for at least nine key indicator species for wildlife, including the northern flying squirrel, American marten, barred owl and pileated woodpecker.

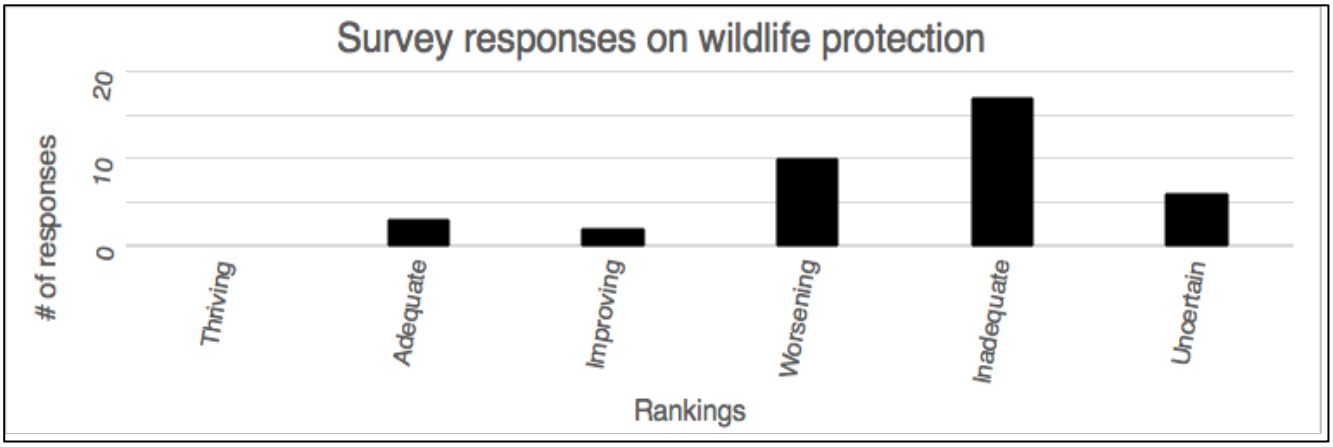
The Greater Fundy Ecosystem Biodiversity Guidelines recommended that since the proportion of old forest (mature and late-successional) in New Brunswick's Crown forest has already been drastically reduced to less than 45 per cent, we need to at least maintain the current proportion on the land base to conserve forest biodiversity and old-forest dependent species, using special management objectives and longer harvest rotations (Betts et al., 2005). These guidelines, published in 2005, have not been followed twelve years later. The current forest strategy has reduced conservation forest to 23 per cent of Crown land, a one-quarter reduction from the previous 31 per cent, a level that was considered to be the bottom limit by most wildlife ecologists and researchers.

New Brunswick’s forestry practices are affecting bird populations, according to Marc-André Villard. Villard told CBC Shift on December 16, 2016 that clearcutting and the conversion of mixed wood stands to plantations are affecting birds' habitats as well as their ability to move across the landscape (McEachern, 2016). Villard's research examines the impacts of forest landscape changes on the ovenbird and different species of woodpeckers. The ovenbird, a songbird that builds its nest on the forest floor, where it also feeds on invertebrates, is less likely to move across plantations than through mixed forest because the plantation floor has less abundant invertebrates. Woodpeckers and other forest birds are affected by forestry practices that are changing landscapes and reducing the number of older and dead trees. Fewer larger and dead trees does not only affect woodpeckers that feed there for insects and spiders but also other birds that use the cavities they create for nesting.

Matthew Betts, a forest scientist who has co-authored reports for the Conservation Council, including “Working with the Woods: Restoring Forests and Community in New Brunswick” and is now an associate professor in Forest Ecosystems and Society at Oregon State University, called the 2014 forest strategy “a radical change and an experiment with the potential to result in local extinction of some birds and wildlife in the province” (CBC, March 18, 2014).

Summary of Results

Eight respondents indicated that wildlife conservation in forest management was inadequate, while an additional six respondents indicated it was inadequate and worsening. Six respondents were uncertain, four believed it to be worsening, and two thought wildlife conservation in forest management was somewhere between inadequate and adequate. There was one respondent for each of these rankings: improving but inadequate, improving, and adequate.



What We Heard

Many survey respondents shared a concern for the inadequate standard of conserving 23 per cent of Crown forest for wildlife and other non-timber objectives and for a lack of a coordinated strategy to achieve wildlife conservation objectives. Lawrence Wuest said, "Historically, it's been the Fish and Wildlife branch that has been the guardian of the fish and wildlife interests in the province. Successive governments have systematically reduced the power of that branch to have any impact on forest policy. They've taken the essential personnel out of that branch and to me it's all in the interest of promoting this plantation mentality and promoting the interest of Irving and the other forestry interests at the expense of good science-based wildlife protection."

Further on the "conservation forest," Roberta Clowater described its initial intent as being a "stop-gap measure to maintain some parts of the Crown forest landscape that are important for different kinds of wildlife." However, as Vince Zelazny, a former scientist with the Department of Natural Resources, noted: "Minimum levels of habitat to protect wildlife went out the door with the 2014 forestry agreement."

Wildlife populations are declining and these declines can be linked to forestry practices, according to Ben Phillips. He said, "Even the species that we do manage for in the forest, their populations are being impacted or are decreasing over time. The large mammals in the forest that everyone thinks about when you say 'wildlife,' those tend to have dwindling populations. I wouldn't blame it all on forestry but I'd certainly blame much of it on forestry."

Many respondents warned that we need to consider all species, not just game species. While studying the impacts of habitat loss on songbirds and woodpeckers, Marc-André Villard noted: "There are a number of mosses and lichens that are probably suffering from the effects of micro-climate changes as you reduce the size of patches of old forest."

Functional connectivity, which is integral to the survival of wildlife, is also a concern of forest scientists. According to Villard: "With the expansion of plantations, I'm concerned there will be a reduction in what we call functional connectivity, which is the relative ease with which organisms move across the landscape. We have evidence that at least some species are extremely reluctant to move across plantations. This could affect dispersal, which is the movement of individuals from natal

sites to subsequent reproductive sites."

Recommendations

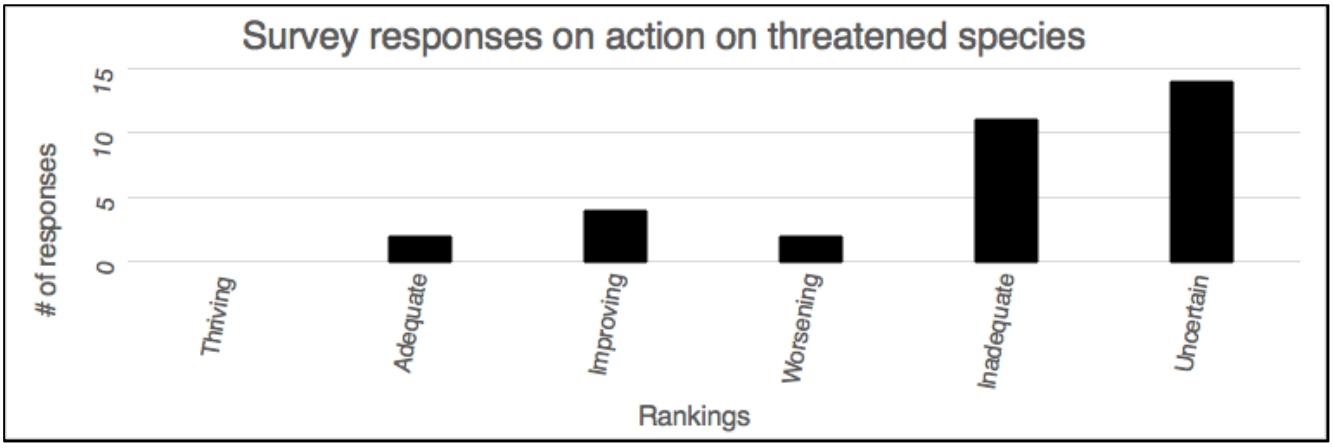
The Conservation Council recommends the government raise the area of Crown forest set aside for conservation objectives such as wildlife habitat protection to above the bottom limit of 31 per cent needed for wildlife while working towards a goal of conserving 40 per cent of the land base. The Conservation Council also recommends better research and monitoring programs for more species of wildlife in New Brunswick's forest.

7 Action on Threatened Species

New Brunswick has already lost some of its forest dwellers: the grey wolf, wolverine, timberwolf and woodland caribou are all extirpated species. A number of migratory songbirds that make their home in our forests in the summer also have threatened or endangered status, including the rusty blackbird, Canada warbler, eastern meadowlark, olive-sided flycatcher and the wood thrush. Some plants are found on the rich soils of seasonally-flooded river banks, often adjacent to forests, or in very specific forest types. For example, pinedrops are only found in old white pine or white pine-hemlock forests of New Brunswick (Hazard *et al.*, 2011). A number of forest lichens found in New Brunswick and Nova Scotia are federally listed as threatened, including the wrinkled shingle lichen. The wrinkled shingle lichen lives on mature red maple and other mature deciduous trees that grow near the edge of forested swamps or floodplains (Government of Canada, 2017).

Summary of Results

Thirteen respondents were uncertain on the question of action on threatened species in forest management. Seven responded that they felt action on threatened species is inadequate with one indicating it was inadequate and worsening. Two respondents said that action on threatened species is improving but inadequate, while two others said it is improving and adequate. One person said it is inadequate but was uncertain, and one said it is worsening.



What We Heard

Insufficient knowledge of the species that exist in our forest is a problem, according to Roger Roy. Roy said: "We have insufficient baseline data to determine all of the species we actually have and which are actually threatened. The annual Bioblitz, organized by staff at the N.B. Museum, is helping but the entire system is insufficient." Roberta Clowater stated that more resources need to be directed towards research to monitor populations.

Vince Zelazny is concerned about how protecting threatened species is practiced on the ground. He argued that it is rife with conflict of interest and "demands a lot of professionalism from the people who are doing that work. There must be a more credible way of protecting threatened species, such as having independent monitors do that work."

Recommendations

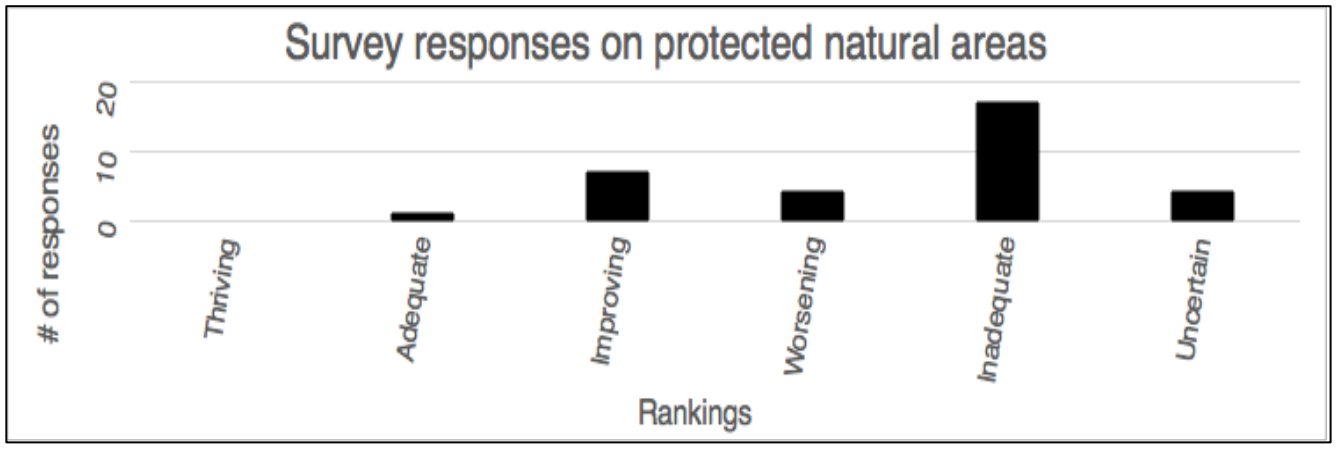
The Conservation Council recommends the government allocate resources towards research to better understand and protect the species-at-risk on our landscape, including the monitoring of populations and implementation of action plans that ensure the conservation and recovery of at-risk species.

8 Protected Natural Areas

Prior to the government of New Brunswick's 2014 Strategy for Crown Lands Forest Management, four per cent of the public forests in the province were protected. In 2014, as part of the forestry strategy, the government of New Brunswick announced an increase in the percentage of protected natural areas on public lands to between 6 per cent and 8 per cent. In 2012, New Brunswick added 142 new protected areas on Crown lands and five on land owned by conservation organizations for the purpose of biodiversity conservation. These additions brought the total area of land and water protected in New Brunswick under the *Protected Natural Areas Act* to approximately 273,000 ha. The increase was welcomed, but it still places New Brunswick behind all other Canadian provinces, except for Prince Edward Island, which in the past converted large areas of its landmass to agriculture. Despite having a large and robust forest industry, British Columbia holds the highest percentage of protected natural areas, in Canada, at 15.3 per cent, according to 2015 figures. Alberta and Ontario have also managed to protect more than 11 per cent of their land bases, while still having an enormous industrial forestry presence (Environment and Climate Change Canada, 2016).

Summary of Results

Thirteen survey respondents indicated that action involving protected natural areas in forest management is inadequate, with one indicating it was inadequate and worsening. Two respondents indicated it was worsening, four respondents indicated it was improving and another four were uncertain. Two respondents said it was improving but inadequate, one indicated it was improving in some ways and worsening in others, and one indicated it was adequate.



What We Heard

On protecting natural areas and the confusion that exists between "protected forests" and "conversation forests," Simon Mitchell, a forester and woodland steward, said, "We are the poorest performing province in the country. At the same time, we continue to talk about the conservation forest, which are the stream buffers and deer wintering areas, as protected forests, and they are anything but. Those are working forests with conservation objectives tied to it, not a protected forest. The misinformation and misrepresentation has been occurring for some time, and not serving any of us well. It isn't helping the forest or the species that rely on it."

Lawrence Wuest expressed concern over how protected natural areas are affected by forestry and other industrial development, such as mining: "I think that protected natural areas are too small a percentage of the total forested area to be effective, and are too fragmented."

Roberta Clowater has long argued for an increase in the amount and size of protected natural areas. Clowater said: "We need to boost protected natural areas especially given the current intensity of management, especially with the current forest strategy pushing limits on plantation establishments to one quarter of Crown lands in coming years. This isn't building resilience for the forests to climate change, and is risky to wildlife and biodiversity. The government needs to build that insurance policy in the face of increased plantations." Similarly, Ben Phillips argued: "Even with the increase in protected natural areas in New Brunswick, we're still not reaching the percentage values that are recommended or mandated from international and national organizations. I guess we're getting to the point now where there is not much left to protect."

Recommendations

The Conservation Council recommends that the government of New Brunswick work with scientists, First Nations, and environmental and conservation organizations on developing a new strategy for increasing the area and the conservation biology functionality of protected natural areas as part of Crown forest management.

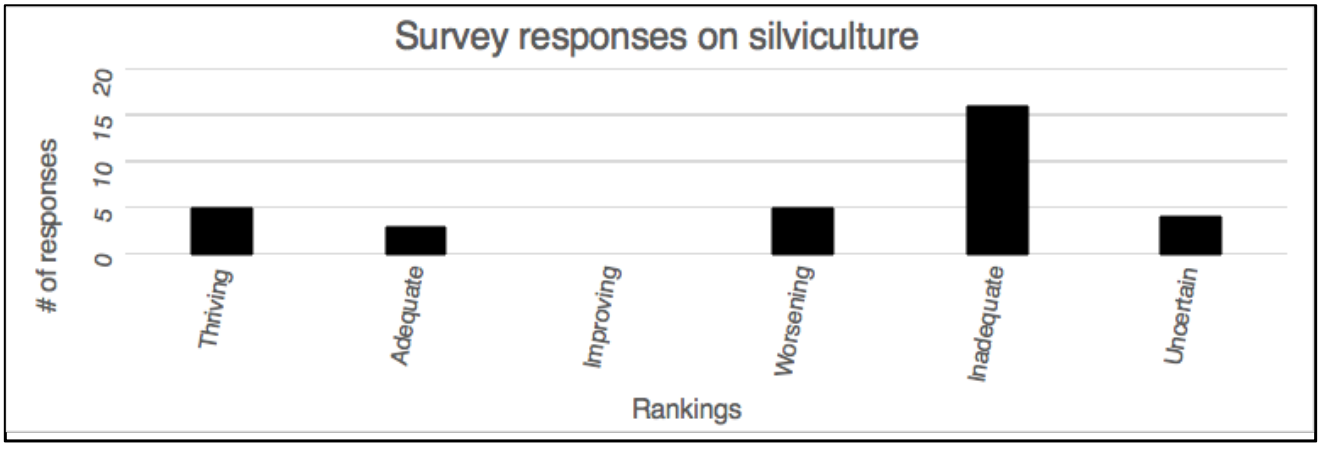
9 Silviculture

Silviculture in New Brunswick has been described as having a narrow focus that involves mostly pre-commercial thinning, commercial thinning, plantation establishment, and application of glyphosate-based herbicides. Some areas are selectively harvested, but they include a much smaller area than that which is intensively managed with these other prescriptions. New Brunswick applies more glyphosates in its forestry operations than any other province in Canada (Acting Chief Medical Officer of Health, 2016). According to the government's 2015-2016 Annual Report on Natural Resources, a record area of 16,131 ha of cut Crown forest land was sprayed with herbicides.

Glyphosates have been labeled by the World Health Organization's International Agency on Research on Cancer as a "probable carcinogen." Glyphosates have also been linked to the decline in New Brunswick's deer population by the province's former deer biologist, Rod Cumberland. A petition against glyphosate spraying for environmental, public health, and economic reasons gathered over 28,000 signatures and was submitted to the New Brunswick Legislative Assembly on Dec. 6, 2016.

Summary of Results

Many respondents noted that silviculture in New Brunswick, since its practice in the province is directed at increasing fibre production, was accomplishing what it set out to do quite well and was therefore thriving, but others expressed concerns with a silviculture regime that prioritizes fibre production. Ten respondents indicated that the silviculture practices utilized in forest management were inadequate. Half of the respondents indicated it was thriving. Four respondents were uncertain, and four indicated it was inadequate and worsening. Two indicated they were adequate, and the following rankings had one respondent each: worsening, thriving but inadequate, and adequate in some respects but inadequate in others.



What We Heard

Many respondents expressed a desire to reform the silviculture program to one that is more ecologically responsible and socially acceptable. Simon Mitchell said:

> We are utilizing very few tools in the overall toolbox to manage the Acadian forest in a sustainable manner. We continue to refer back to the tools that we are most familiar with, that are more economically advantageous for a few, and have the most significant negative impacts on the environmental integrity of our forests. We continue to not learn from our neighbours who implement innovative practices, who have abandoned spraying.

Silviculture in Nova Scotia is done differently than in New Brunswick. According to Tom Beckley: "In Nova Scotia, they have different ranges of planting and post-harvest stand regeneration activities that vary depending on the forest type present before and what they are trying to recreate. In New Brunswick, our clearcut size is relatively large and our rules around adjacent clearcuts are pretty lax. We intensively cut, spray and thin." Vince Zelazny similarly argued: "The Acadian forest standard called for ways of harvesting that aimed to preserve the species mix and biodiversity of exemplary Acadian forest stands. Regrettably, the department decided with the 2014 plan to abandon it. Their approach seems ever more strongly focused on producing softwood lumber and pulp, and less on conserving biodiversity and the forest's natural character and species composition."

Public concern with New Brunswick's current silviculture regime is focused on the use of glyphosates. "I think it’s deeply concerning that they continue to use glyphosate, which we know is a probable carcinogen. I have real concerns with the amount of glyphosate being emitted into the air and water, where it interacts with wildlife and ourselves," said Megan de Graaf.

Silviculture methods may be resulting in increased timber yields for the forestry industry but, survey respondents noted many negative impacts beyond use of glyphosates. "Those plantations are certainly more productive than naturally-regenerated forests but it is not sustainable. From a biodiversity perspective, we found those plantations were very species-poor," said Marc-André Villard. Ben Phillips said: "We’re treating our forest like a boreal forest. We’re cutting forest down and replacing it , through silviculture practices that are completely not appropriate for our forest type."

New Brunswick was also singled out for being overly reliant on an old-fashioned practice of herbicide spraying despite broad-based public opposition. Matthew Smith noted: "Quebec is not spraying its public forest. Nova Scotia does not publicly fund it. What is it about New Brunswick that makes us have to have intensive silviculture management? Whatever support the government is giving to spray our forest should be scaled back. Once natural forest is converted to plantations, it will be very difficult to get back the wildlife and all the diversity we had before. We just have to look at the experience of intensive forest management in the Scandinavian countries."

Chris Spencer has worked in silviculture for the past 30 years throughout the province. Spencer calls some of the silviculture practices in New Brunswick, an "unnecessary expense" for taxpayers:

> I frequently have the opportunity to travel throughout Crown land and view operations. Some of the things that I see that are done in certain stands types; the way they are harvested and the methods used concerns me. Many forest stand types we have in the south are indiscriminately clearcut with little to no regard for perfectly acceptable natural regeneration that is already present. The remaining regeneration often gets crushed and replanted again. It is unnecessary in many cases. Many of the stand types that are on Crown land don't need to be planted using artificial reforestation. If it is not already present, natural regeneration will often flourish in many of these stands types using partial harvesting techniques. To arbitrarily cut five and six cord/acres of intolerant hardwoods, then crush perfectly healthy, advanced white pine and red spruce regeneration, to simply reset it back to zero and plant a new crop is insane.

Recommendations

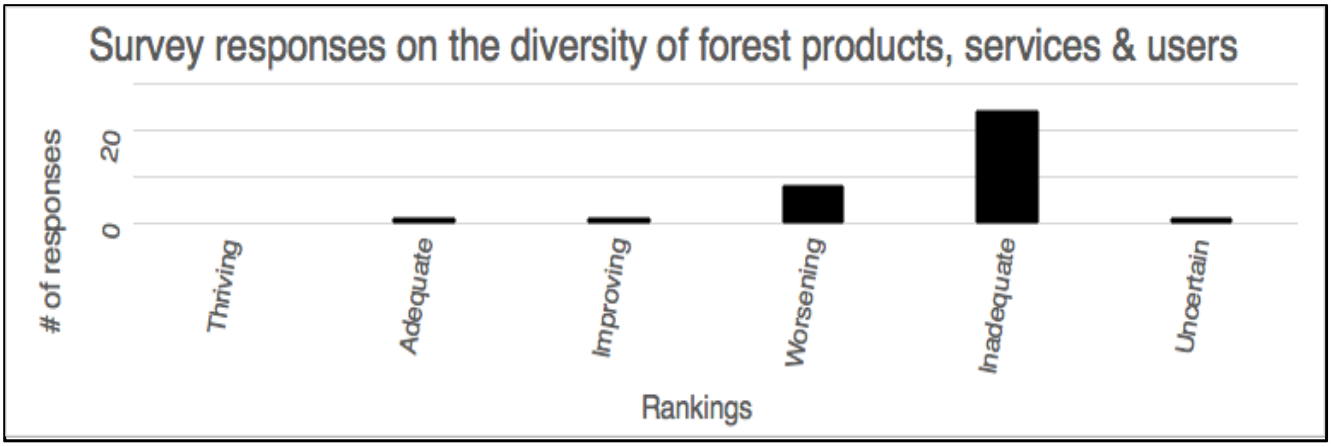
The Conservation Council recommends the government review and modernize silviculture practices and phase out herbicide use in Crown forestry due to its impact on forest wildlife and biodiversity, potential health impacts, and economic impacts.

10 Management for a Diversity of Forest Products, Services and Users

Forest management in New Brunswick focuses on fibre production to the detriment of other forest products, services, and users (Smith, 2014). Non-timber forest products that are harvested in New Brunswick's forest include maple syrup, berries, mushrooms, fir tips and cones. New Brunswick is also home to natural beauty that generates revenue and employment for the tourism and recreation sectors. Managing a forest for various products and services is conducive to keeping a forest functioning as a healthy ecosystem.

Summary of Results

Eighteen survey respondents indicated that managing for diversity of forest products, services and users was inadequate in New Brunswick. Five respondents felt it was inadequate and worsening, and three felt it was worsening. The following rankings had one respondent each: uncertain, improving but inadequate, and adequate.



The 2014 forestry strategy was regarded by many survey respondents as further harming the potential for various forest products and services. Roberta Clowater noted: "The forestry strategy drives us towards a more pulp-oriented forest products economy, favouring that as though it will always be the winner in the economic future. We are making decisions now which will limit the options of users in the future to make a business based on forest products. Ecotourism is being curtailed extremely at a time when it should be encouraged."

"Given the diversity of the forest we have and are able to produce, we should have many more hardwood mills and a better cross-section of types of wood products," said Tom Beckley. "We do not do value-added very well. We also still have a great natural environment to be enjoyed." Simon Mitchell similarly argued, "We continue to ignore the opportunities with non-timber products and ecological goods and services. We are still fixated on an industrial forest model with large-scale mill operations, yet there is a growing increase in demand for wild harvesting of products, ecological goods and services, and recreational uses of the forest. That really isn't on the radar in New Brunswick. The lack of diversification is impacting rural communities who have lost forest jobs in recent years."

The government of New Brunswick's focus on pulp and timber is stopping the potential for non-timber forest products and services to flourish, according to Ron Smith. He said: "Any opportunity or any other potential product or activity coming from Crown Lands is viewed first and foremost as what impact may it have on timber supply. That's a gross mistake. It is also a tremendous disservice to the citizens of New Brunswick in terms of the potential values that they can achieve from public lands."

The pressure on the Crown forest to produce wood products at the expense of other forest values could be reduced by shifting some of the emphasis for wood product production to private woodlots, argued Roger Roy. He pointed to the government of New Brunswick-commissioned 2012 Private Land Task Force report, "New Approaches for Private Woodlots: Reframing the Forest Policy Debate," that made such recommendations. "Unfortunately, the recommendations in this report were ignored by government," stated Roy.

Furthermore, Ron Smith, a member of the University of New Brunswick's Faculty of Forestry and Environmental Management, described how Crown forest management is harming the province's private woodlot owners:

> Crown Lands, which were intended to be the residual supplier of timber to the mill, is the primary supplier. The public lands are competing unfairly against the private woodlot owners and the small private land owners for providing fibre to the mills. With that, the prices are so low, to the point where it's not economically viable for woodlot owners to try to practice sustainable forest management, e.g.: selective harvesting of some sort, and still be able to sell their wood for at least their cost of production. Right now they have to almost sell it below the cost so that's leading to far more liquidation harvesting all over the province on small private lands. For many people, woodlots are their retirement plan and the only way that they can draw on that fund is by dealing with companies that want to clearcut their lands. That's the only way they can get a reasonable return because they can't afford to do selective harvesting as the prices for wood are artificially low. Our public lands are the biggest impediment to developing a viable woodlot sector in the province.

Chris Spencer explained how private woodlot owners are struggling with the current Crown forest regime:

> Our woodlot marketing boards date back to the mid 1960s. One of the primary reasons that the woodlot marketing boards were formed was to help woodlot owners address competition that was in the marketplace from the Crown. Fifty years later, one of our primary problems continues to be competition from Crown land. Now, there will be many people within the department and industry who will say that that is not true, that Crown doesn’t compete. For the past 50 years, when markets turn sour or turn down, rarely do harvest levels decline from the Crown land. They have a certain amount of wood based on their Annual Allowable Cuts (AACs) that gets harvested, regardless of market conditions. The numbers show that when there’s a downturn in the market, we, the woodlot owners, are the ones who pay the price. We are price takers. We are forced to take what industry offers. People operating on the Crown are in the same situation. If they’re a truck driver or porter operator, they basically have to take it or leave it. That’s not fair. The Crown forest is a resource that should benefit the taxpayer. Not enough benefits are coming back to the taxpayer, to the people who work on the Crown or to

those trying to compete in the same marketplace.

Recommendations

The Conservation Council recommends the government offer support for more diversity in forest products and services and ensure that such diversity is protected in a modernized *Crown Lands and Forest Act.* The Conservation Council also supports the NB Federation of Woodlot Owners in their call for a return of primary source of timber supply to woodlot owners.

11 Revenue Generation for Communities and the Province

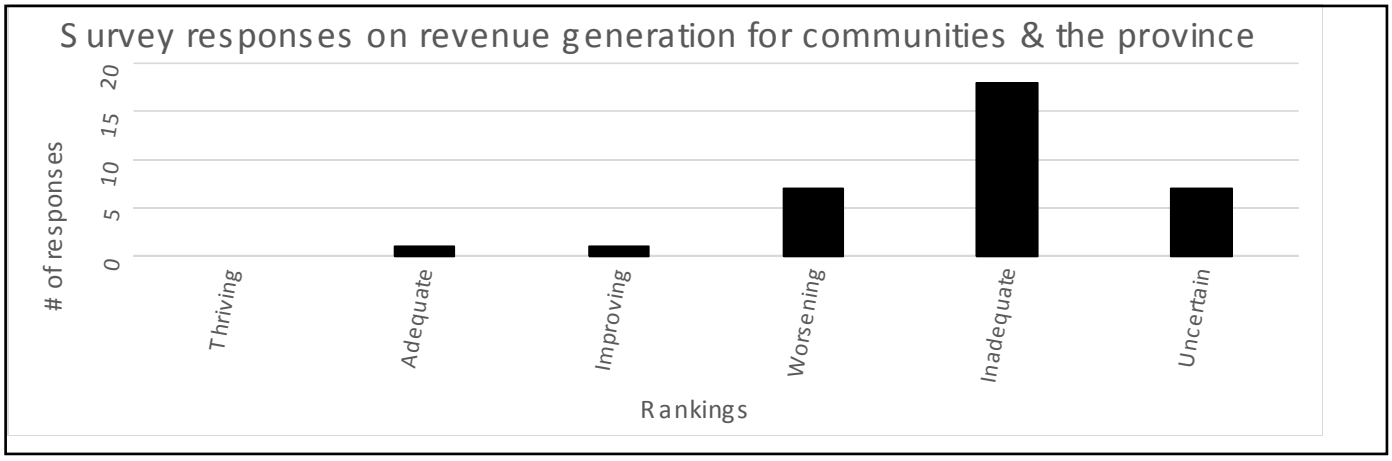
Forests have generated revenue and employment for communities and the province for generations. However, the pulp and paper industry and the wood products industry have monopolized government policy and discussion regarding our forest economy when there are many other forms of forest-based economic activity in this province, including maple syrup production, tourism, hunting, and fishing. When making decisions about the Crown forest and forest economy, it is imperative that a more complete suite of possibilities, including value-added and non-timber industries, be examined and supported to maximize the economic benefits of the Crown forest to the people of this province. It is critical that the *Crown Lands and Forest Act* (1982) be amended to allow for different types of tenure that allow for greater revenue generation and meaningful employment opportunities for communities and the province. The Conservation Council has also long called for pilot projects to experiment with community forestry and different models of tenure, including partnerships with marketing boards, First Nations, and municipalities, where appropriate.

Ron Smith, an expert on non-timber forest products, has noted the economic benefits that New Brunswick is missing out on by focusing on timber production. Smith wrote in 2014: "The maple sugar industry in New Brunswick has been lobbying, with little success, to increase the amount of Crown land made available for sugar bush leases from 0.5 to 1 per cent. If you look at the jobs created and the amount of revenue given to the province from annual leases, the best end-use for tolerant maple stands is clearly as sugar bush, not biomass or timber."

Economist Rob Moir and energy consultant Garth Hood have documented New Brunswick's failure to generate the levels of jobs from forestry seen in neighbouring jurisdictions. They note that New Brunswick generates fewer jobs in relation to the wood it harvests than Maine, Nova Scotia, New Hampshire, Vermont, Quebec, Ontario, and New York. New Brunswick generates 1.38 direct jobs for every 1000 cubic metres of wood harvested compared to 3.91 jobs in Ontario, 1.64 jobs in Nova Scotia and 1.58 jobs in Maine. Thus, for the over 5 million cubic metres of softwood and hardwood cut annually in New Brunswick, the province generates 1,000 fewer direct jobs than Maine and 1,300 fewer jobs than Nova Scotia for equivalent amounts of wood cut (Moir and Hood, 2014).

Summary of Results

Thirteen respondents indicated that the revenue generation for local communities and the province stemming from forest management was inadequate. Seven respondents were uncertain, four indicated it was inadequate and worsening, and three felt it was worsening. The rankings of improving but inadequate, and adequate were each used by one respondent.



What We Heard

A number of the respondents declared that the fact that the Department of Natural Resources does not cover its costs through stumpage fees and revenues brought in by users is evidence of a broken system. Simon Mitchell observed: "We are bringing in less revenue but we're harvesting more and more wood. Someone is making money somewhere, it's just not the local communities or the province." David Palmer, a long-time advocate for woodlot owners, stated: "My view is that public lands have essentially been privatized and we have been saddled with enormous costs of managing this semi-private forest."

The wave of mill closures and loss of forest-based employment and local revenue was lamented by several respondents. Margo Sheppard, an environmental planner and the former Executive Director of the Nature Trust of NB, said: "With the closures of mills over the last decade, the number of jobs is decreasing while production is becoming much more centralized in the name of efficiency or profits. There has been a hollowing out of the rural areas and it is getting worse. There is no market for the woodlot owners, and rural communities across New Brunswick are facing closures of courthouses and schools, Service New Brunswick outlets and ranger offices."

Lack of support from the government of New Brunswick for community forestry was also noted by respondents. Tom Beckley recalled: "Upper Miramichi folks hoped that in becoming a rural community, it would mean they could generate forest-based employment and revenue but the Crown land license is an obstacle here." J.D. Irving is the largest Crown land license holder in Upper Miramichi. "There should be the possibility for that local community benefit and revenue generation without much overlap with industry," said Beckley.

Kirk MacDonald noted that the Select Committee on Wood Supply recommended tying wood fibre to communities. He described the situation where wood was cut from the Crown land even though J.D. Irving had closed its mill in Deersdale: "We need to look at the *Crown Lands and Forest Act* and the agreements with companies to make sure that the fibre stays in the community. If a company makes the economic decision that they have to shut down their mill then the wood fibre tied to that mill should be maintained for the greater good of the people in that area. That has not happened."

Recommendations

The Conservation Council recommends the government maximize forest-based revenue generation and employment that respects ecological limits by exploring a pilot project for community forestry and allowing different tenure in a modernized *Crown Lands and Forest Act.*

12 Honouring Treaties and Aboriginal Rights

Forestry governance and practice in New Brunswick has been challenged by several court rulings that affirm treaty rights. A provincial court ruled in 1997 that Reginald Paul, a Wolastoq (Maliseet) man, and the Wolastoq and Mi'kmaq peoples of the province of New Brunswick have a treaty right to harvest timber from Crown land. The case was later overturned in an appeal court, but the court case did push the provincial government to provide limited harvesting rights to 15 First Nations in New Brunswick through First Nation Harvesting Agreements (Wyatt *et al.*, 2015). The agreements stipulate that 5.3 per cent of the Annual Allowable Cut (ACC) from the Crown land had to go to the First Nations. However, decisions over the volume and location of timber to be harvested as well as the price of timber and revenue to be generated from a timber harvest in such arrangements are made not by First Nations but by government and industry (Assembly of First Nations Chiefs in New Brunswick, 2010; Wyatt *et al.*, 2015). In 1998, the Supreme Court of Canada reaffirmed Aboriginal rights to obtain a moderate livelihood from the forest in the Marshall case. More recently, the Supreme Court of Canada decision in the Sappier-Gray-Polchies case in 2007 reaffirmed Aboriginal rights to use forest resources for domestic purposes (Assembly of First Nations Chiefs in NB, 2010).

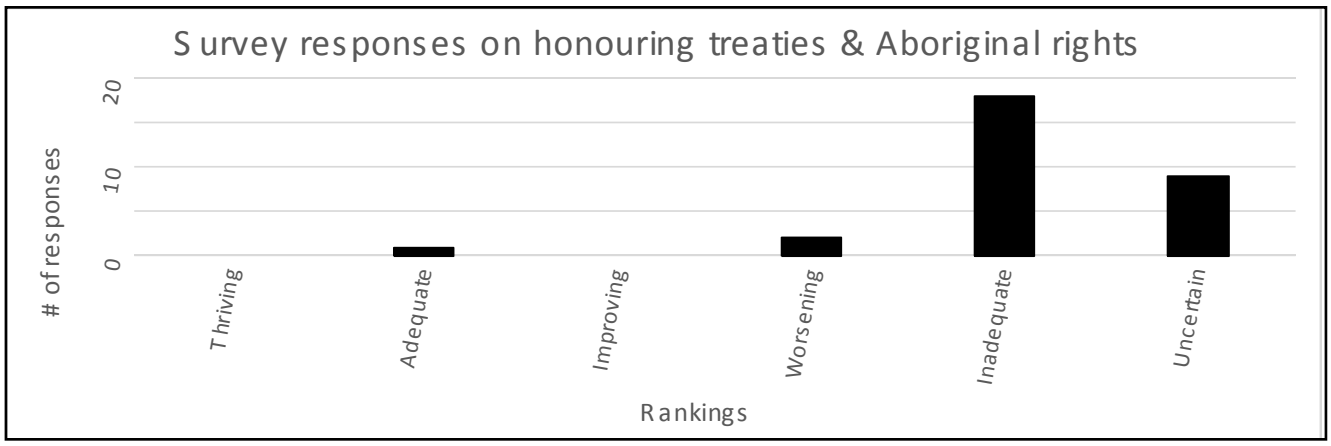
The 2014 Supreme Court of Canada decision in *Tsilhqot'in Nation v British Columbia* established Aboriginal land title for the Tsilhqot'in First Nation, setting the stage for other First Nations to use the case to argue that provinces cannot engage in clearcutting on lands protected by Aboriginal title without first gaining the approval from the title holder. Elsipogtog First Nation filed an Aboriginal Title Claim in the Saint John Court of Queen’s Bench on November 9, 2016 on behalf of the Mi’kmaq people for title to the Mi’kma’ki district of Sikniktuk. Sikniktuk is traditional Mi’kmaq territory, and covers about 30 per cent of New Brunswick (McQuarrie, 2016).

Seven Mi'kmaq First Nation Chiefs announced on May 12, 2016 that they were suing the New Brunswick government over the 2014 forestry strategy, claiming that the strategy and agreements signed between government and the forestry companies infringe on Aboriginal and treaty rights of the Mi'kmaq. The statement of claim argues that the forestry strategy will have a permanent and negative impact on wildlife and the overall health of the forests of New Brunswick, and will adversely affect Mi'kmaq rights to hunt deer and moose, fish salmon and trout, and gather in the forest. The chiefs argue that the government did not meaningfully consult with them before signing the agreements. A temporary court injunction was unsuccessfully sought by some First Nations in 2014 to stop the implementation of the strategy set for February 2015 (White, 2016).

Stephen Wyatt, a professor at the Université de Moncton's School of Forestry in Edmundston, and colleagues surveyed 13 of the 15 First Nations communities in New Brunswick in 2015 and found that the First Nations felt that governance arrangements related to forestry do not deliver the priorities of environmental protection that are important to First Nations and that the power in these arrangements remains with government and industry. The way that the government has handled Indigenous rights has resulted in First Nations not being able to fully access the benefits related to forestry. The governance arrangements also do not guarantee sustainable forest management (Wyatt *et al.*, 2015).

Summary of Results

Seventeen respondents indicated that treaties and Aboriginal rights were inadequately honoured through forest management. Nine respondents were uncertain while one said it was worsening and inadequate, one said it was worsening and one said it was adequate.



What We Heard

According to the Mi'kmaq Sagamag Mawiomi, an organization of the Mi'kmaq Chiefs in New Brunswick, the province is doing a completely inadequate job of recognizing and implementing Treaty and Aboriginal rights. This is especially the case in terms of the new forest strategy and current “forest management” practices. Currently, the situation is getting worse.

Forestry operations certified by the Forest Steward Council (FSC) should force companies to consult with First Nations, according to Margo Sheppard. She argued: "The kind of forestry practices that we have today has very few, if any, safeguards in terms of First Nations’ concerns and certainly cuts out environmental and public concerns altogether."

"The province has taken an adversarial legal approach to treaty settlements," according to Ron Smith. "Friendship agreements have been upheld in the highest court in the land. Friendship agreements did not cede the land to the province but every step of the way, the province fights the First Nations instead of working with them and respecting the Friendship Agreements and the spirit of them."

Recommendations

The Conservation Council recommends the government honour the Peace and Friendship treaties and Aboriginal rights in forest management.

Conclusion

Forest management and governance in New Brunswick has long been characterized as a public-private arrangement between government and industry with an ambiguous policy-making process (Ashton and Anderson, 2005). New Brunswick's Department of Natural Resources, recently reconfigured and renamed the Department of Energy and Resource Development, is criticized for delegating various management responsibilities to the private forestry sector while ignoring conservation groups, First Nations, scientists and woodlot owners (Ashton and Anderson, 2005; Nadeau *et al*., 2007).

The provincial move towards industrial license consolidation (from 84 before 1982 to five by 2014), coupled with a controversial additional annual allowable cut rate of 660,000 cubic meters in 2014 is giving more control of Crown lands to the existing large firms holding licenses to cut on Crown land, namely J.D. Irving Ltd. However, there is evidence of a strong public desire to conserve New Brunswick's remaining native mixed-wood Acadian forest (Nadeau *et al.,* 2007). There are also communities, such as Upper Miramichi, that want more control over local forests and First Nations and traditional councils that are saying that the government has failed to consult them when it comes to how the forests are managed on Crown land, land that was never ceded by the indigenous people in New Brunswick. This forest report card, informed by recent studies and analysis and a stakeholder survey conducted by the Conservation Council in 2016 and 2017, attempts to amplify the voices of those concerned with guarding the public interest in Crown forest management.

Specifically, the report card points to the need for action by the government of New Brunswick in the following areas:

1. Implementation of better public participation opportunities and protect those opportunities in an updated *Crown Lands and Forest Act;*

2. Implementation of more robust transparency and monitoring mechanisms in Crown forest policy, including the return of an annual state of the forest report that contains information that the public has repeatedly asked for, including ecological, economic and social impacts of current forest management activities and an assessment of alternative uses for Crown forest land;

3. A provincial water strategy that recognizes the role healthy forests play in protecting freshwater by using watersheds as the forest management unit on Crown Lands, placing limits on the amount of forest to be harvested within a watershed in a given time frame, mapping and protecting ephemeral, intermittent streams and vernal pools, delineating no-harvest zones within riparian buffers for all rivers, lakes, and wetlands, and increasing riparian buffers near steep slopes and in floodplains;

4. Engagement on a coordinated climate change and forest management strategy that includes research and action on climate change;

5. Province-wide investments using carbon pricing revenue in the form of tax incentives, grants, and/or loan guarantees to generate emissions reductions from various sectors including forestry, as outlined in the Conservation Council's Climate Action Plan;

6. Creation of targets and a plan for old growth forest restoration and protection;

7. Raising the area of Crown forest set aside for conservation objectives such as wildlife habitat protection to above the bottom limit of 31 per cent needed for wildlife while working towards a goal of conserving 40 per cent of the land base;

8. Better research and monitoring programs for different categories of wildlife in New Brunswick's forest;

9. Allocation of resources towards research to better understand and protect the species-at-risk on our landscape, including the monitoring of populations and implementation of action plans that ensure the conservation and recovery of at-risk species;

10. Collaboration with scientists, First Nations and environmental organizations on developing a new strategy for increasing the area and function of protected natural areas as part of Crown forest management;

11. A review of the silviculture practices used in Crown forest management with a goal of modernizing the practices, and the phase out of herbicides in Crown forestry due to its impact on forest wildlife and biodiversity, potential health impacts, and economic impacts;

12. Support for more diversity in forest products and services and ensure that such diversity is protected in a modernized *Crown Lands and Forest Act;*

13. Return to private woodlot owners, the right of primary source of supply for timber processed at the province's mills;

14. Maximize forest-based revenue generation and employment that respects ecological limits by exploring a pilot project for community forestry and allowing different tenure systems in a modernized Crown Lands and Forest Act;

15. The honouring of the Peace and Friendship treaties and Aboriginal rights in forest management.

Overall, the results of the stakeholder survey point to the need for modernized forestry legislation in the province that is guided by public priorities, namely that it respects: (1) public trust, public participation and increased transparency and monitoring; (2) environmental values, including management that protects forested watersheds and ensures better conservation practices for biodiversity in a future of climate change; (3) socio-economic values that encourages a diversity of forest products, services and users and better supports revenue generation for communities and the province, and (4) the Peace and Friendship treaties and Aboriginal rights.

Appendix A

List of participants

1. Roger Babin, woods worker, Kent County
2. Tom Beckley, Professor, Faculty of Forestry and Environmental Management, University of New Brunswick
3. Charles Bourque, Professor, Faculty of Forestry and Environmental Management, University of New Brunswick
4. Roberta Clowater, Executive Director, Canadian Parks & Wilderness Society, New Brunswick Chapter
5. Gareth Davies, forestry professional
6. Megan de Graaf, forest ecologist, woodlot owner
7. Tony Diamond, Retired Faculty of Forestry and Environmental Management, University of New Brunswick
8. Sabine Dietz, Nature NB
9. Thom Erdle, Faculty of Forestry and Environmental Management, University of New Brunswick
10. Jasen Golding, Faculty of Forestry and Environmental Management, University of New Brunswick
11. Jim Goltz, Honorary president of Nature NB
12. Kirk MacDonald, Member of the Legislative Assembly for York North
13. Mi'kmaq Sagamag Mawiomi
14. Fan-Rui Meng, Faculty of Forestry and Environmental Management, University of New Brunswick
15. Simon Mitchell, Forester, woodland steward
16. David Palmer, retired forester
17. Ben Phillips, Professor, Dendochronology Lab, Mount Allison University
18. Dan Phillips, Forestry Technician, Department of Energy and Resource Development
19. Dale Prest, Ecosystem Services Specialist, Community Forests International
20. Roger Roy – Professor, Université de Moncton, School of Forestry, Edmunston
21. Margo Sheppard, Environmental Planner and retired Executive Director of Nature Trust of NB
22. Matthew Smith, forest scientist
23. Ron Smith, Faculty of Forestry and Environmental Management, University of New Brunswick
24. Chris Spencer, Forestry technician, Sussex, NB
25. Vanessa Roy-MacDougall, Executive Director of Nature NB
26. Marc-André Villard, Professor, Université de Québec in Rimouski
27. Lawrence Wuest, forest ecologist, Stanley, NB
28. Vince Zelazny, Registered Professional Forester

Two participants chose to be anonymous.

Appendix B

Questionnaire for Acadian Forest Report Card
August 2016

Name:
Title:
Affiliation (University, NGO, etc):
Date of survey:

The Conservation Council of New Brunswick is researching the state of the Acadian forest in New Brunswick. One of the ways that the Conservation Council will complete this research is to survey people like you who are knowledgeable about public values associated with the Acadian forest in New Brunswick. We plan to evaluate New Brunswick's Crown lands and forest management for 12 priorities or concerns. Forest researchers and analysts at the province's universities and colleges, representatives of conservation groups, First Nations' forestry coordinators, representatives of First Nations organizations, representatives of forest user groups and representatives of private woodlot owners and marketing boards will be asked to complete the survey.

To complete the survey, you are being asked to provide your assessment of a priority or a concern that New Brunswickers have in relation to Crown lands and forest management by giving a ranking. These priorities were highlighted in a 2007 study on public attitudes by Solange Nadeau and Tom Beckley called, "Public Views on Forest Management in New Brunswick." They were also concerns shared during the public hearings of the Select Committee on Wood Supply in 2004. The rankings are: Thriving, Adequate, Improving, Worsening, Inadequate and Uncertain. You are also asked to explain your ranking. The final two questions ask you to share other insights or recommendations that you may have for Crown lands and forest management in New Brunswick and to provide any suggestions of people we should interview for this project.

Informed consent

The information you provide will be published in an Acadian Forest Report Card fall 2016. We would like to share your qualitative explanations of your rankings (with attribution) in a document accompanying the report card. We will share your responses with you before publication in case you would like to make any corrections, insertions or deletions to your comments. You are free to withdraw your comments at any time. Completing the survey constitutes your consent for us to use, with attribution, the information you provide.

1. How would you rate New Brunswick Crown lands and forest management in terms of public participation?

   □ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

2. How would you rate New Brunswick Crown lands and forest management in terms of transparency (including information and monitoring)?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

3. How would you rate New Brunswick Crown lands and forest management in terms of watershed protection?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

4. How would you rate New Brunswick Crown lands and forest management in terms of action on climate change?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

5. How would you rate New Brunswick Crown lands and forest management in terms of old growth forest protection?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

6. How would you rate New Brunswick Crown lands and forest management in terms of wildlife conservation?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

7. How would you rate New Brunswick Crown lands and forest management in terms of action on threatened species?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

8. How would you rate New Brunswick Crown lands and forest management in terms of protected natural areas?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

9. How would you rate New Brunswick Crown lands and forest management in terms of silviculture practices?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

10. How would you rate New Brunswick Crown lands and forest management in terms of management for a diversity of forest products, services and users?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

11. How would you rate New Brunswick Crown lands and forest management in terms of revenue generation for local communities and the province?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

12. How would you rate New Brunswick Crown lands and forest management in terms of honouring and respecting Aboriginal treaties and rights?

□ Thriving □ Adequate □ Improving □ Worsening □ Inadequate □ Uncertain

Please explain the reason for your ranking.

13. Is there anything else you would like to say about Crown lands and forest management in New Brunswick?

14. Do you have suggestions of knowledgeable people who we should survey?

Thank you for participating in our questionnaire.

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