



**THE HARRIS
CENTRE**
Memorial University

EXPERIMENTS IN RURAL DEVELOPMENT AND ECOSYSTEM-BASED MANAGEMENT
The Possibilities of Community Forestry in Newfoundland

Erin Kelly, PhD, Environmental Policy Institute
Grenfell Campus, Memorial University
August 2012



This research project was funded under the Harris Centre's Applied Research Fund. The intellectual property vests with the author(s). For more information about the Applied Research Fund or to obtain hard copies of this report, please contact the Harris Centre.

Experiments in Rural Development and Ecosystem-based Management: the Possibilities of Community Forestry in Newfoundland

August 31, 2012

Submitted by Erin Kelly, PhD

Grenfell Campus, Memorial University

Environmental Policy Institute



Environmental Policy Institute
Grenfell Campus - Memorial University of Newfoundland
1 University Drive
Corner Brook, NL A2H 6P9

E-Mail: erinckloverkelly@gmail.com
www.swgc.mun.ca/epi

Policy recommendations

In light of a changing forestry sector and a struggling rural economy, this paper reviews the possible benefits of formalizing a community forest tenure in the Great Northern Peninsula of Newfoundland. Benefits were identified through interviews and document analysis, and include:

- expanding the decision-making power of local residents and communities over nearby landscapes;
- integrating regional economic development with natural resource management; and
- reconciling competing land use objectives and forest uses.

Community forestry is framed as an adaptive, experimental approach in order to address recent forest policy changes in the province, from timber-oriented management to ecosystem-based management. Though significant obstacles remain, the community forest tenure could provide a model for communities across the province, integrating local community voices with economically, socially, and environmentally sustainable forestry.

Contents

Policy recommendations.....	2
1 Introduction: the possibilities of community forestry in Newfoundland.....	4
2 The roots of community forestry.....	6
2.1 Pulp and paper tenures.....	7
2.2 The commons.....	9
2.3 Prioritizing industry development.....	10
2.4 A new mandate: the rise of ecosystem-based management.....	11
3 The possibilities of community forestry.....	15
3.1 Setting the stage: the GNP.....	15
3.2 Potential benefits of formalizing community forestry in the GNP.....	17
3.2.1 Expanding local power.....	18
3.2.2 Integrating regional economic development and forest management.....	21
3.2.3 Reconciling multiple land use objectives.....	23
3.3 Constraints to a formal community forest tenure.....	25
4 Conclusion.....	26
Bibliography.....	28

1 Introduction: the possibilities of community forestry in Newfoundland

*Isolation and hardship bred an overpowering sense of place. Newfoundlanders belong to a series of widening circles: to their family; to their parish; to their faith; to their hamlet; bay; stretch of coastline; and above all to their Island.*¹

Community forestry is a global experiment in forest governance, which includes devolved control over natural resources, accrual of benefits to local communities, and management based on ecological sustainability (Charnley and Poe, 2007). But the forms of community forestry are locally distinct, and depend on the circumstances of a place. Newfoundland² is a place with a long history of common pool management of resources, but without formalized community tenure rights. This paper identifies the possible benefits of formalizing community forest tenure in the Great Northern Peninsula (GNP), a region struggling to capture economic and social benefits from its natural resources following the collapse of the cod fishery in the early 1990s and years of instability and contraction in the forest sector. Though the form of a community forest experiment in Newfoundland must necessarily be the choice of its citizens, this report outlines some of the possible benefits of such an experiment, and obstacles to its realization. Possible benefits include: integrating existing forest users – especially subsistence and recreational users – with forest planning processes; combining regional and local economic development with natural resource management; and reconciling conflicting land use objectives by creating a platform for open discussion of management priorities. These benefits may be realized through a timely experiment in forest tenure and management within the context of a provincial government mandate for ecosystem-based management in forests.

This paper is intended to support the efforts of community leaders and economic development agencies in the GNP who have already submitted a request to the Minister of Natural Resources, requesting to create a model community forest. This forest would serve as a much-needed example of economic and social adaptiveness and innovation in the province's forests during a time of great uncertainty. The proposed GNP Community Forest would extend from River of Ponds in the south to St. Barbe in the north; the region, referred to here as the St. Barbe

¹ Quoted in Nazir and Moores (2001), original: Gwyn, R. (1972). *Smallwood: The Unlikely Revolutionary*. Toronto: McClelland and Stewart.

² The province is called Newfoundland and Labrador; because this paper focuses on a region of the island of Newfoundland, we refer to Newfoundland, not Newfoundland and Labrador.

Development Association (SBDA) Region, includes 21 communities along Hwy 430, of which five are incorporated municipalities (Figure 1).

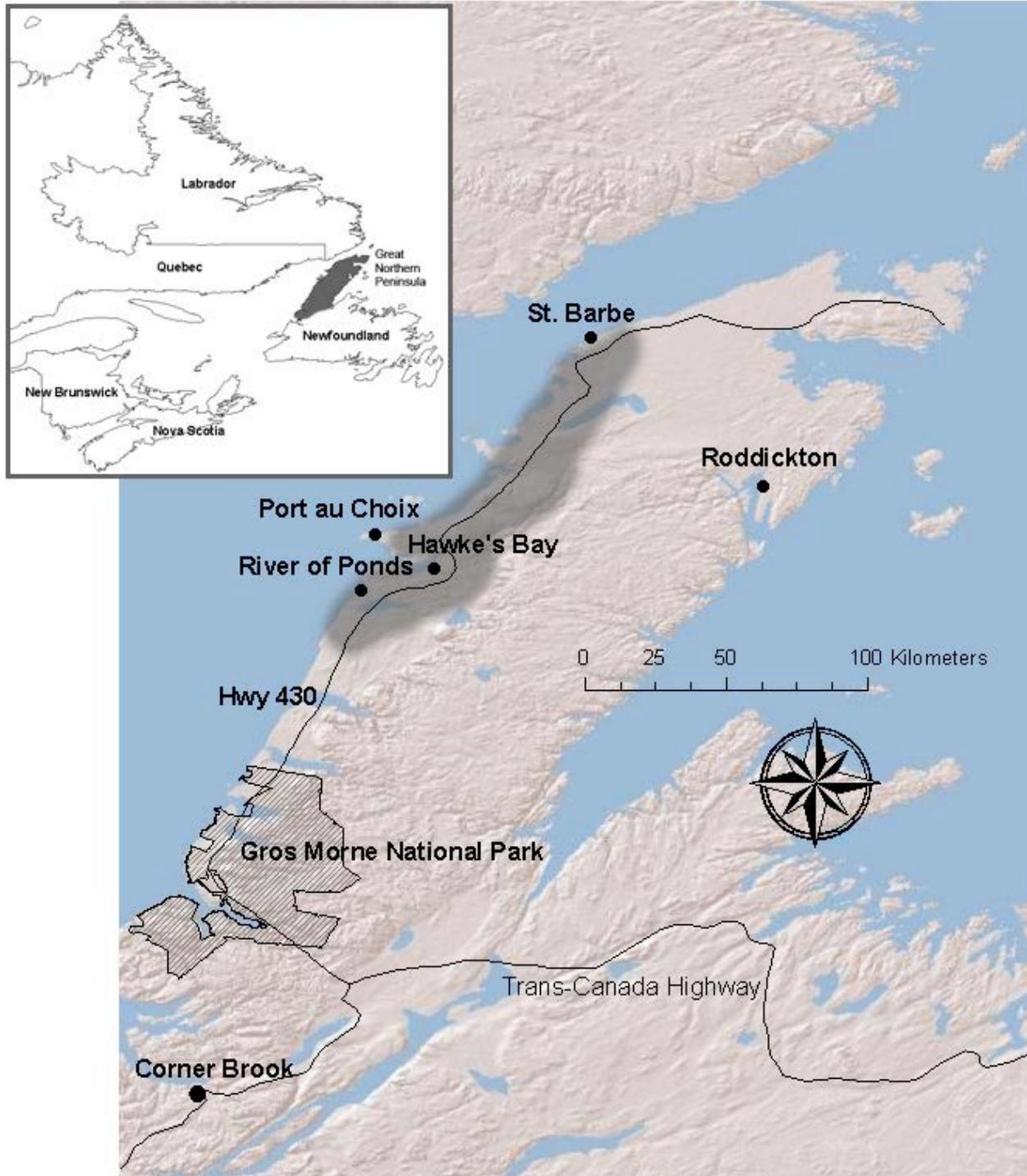


Figure 1. The Great Northern Peninsula. The approximate boundaries of the proposed community forest are indicated by the gray shading.

Through interviews and document analysis, this paper addresses questions surrounding the challenges of forestry in rural Newfoundland, including: How are forests currently used by Newfoundlanders, and how do policies meet the needs of forest users? How can forestry serve to complement or bolster rural economic needs? Why haven't community forest tenures – which have been successfully implemented in other jurisdictions – yet emerged in Newfoundland, and what obstacles remain?

In 2011, I conducted semi-structured interviews with residents of the GNP (n=28), from forest managers and industry employees (4), logging contractors (7), economic development officers (3), community leaders (7), outfitters (4), and other community members (3). Interview topics centred on questions about: 1) the changing role of forestry in the region – its history and possible futures; 2) forest planning and management; and 3) economic constraints and opportunities in forestry and in other sectors. Supplemental information about forest policy came from a series of interviews with forest policy experts, academics, and forest managers across the province (n=45) from 2010-2012, as well as meetings, conferences, and focus groups. These additional interviews and meetings centred on forest policy in the province and the role of communities and the public in forest management. I also attended meetings regarding the possible creation of a community forest in the GNP.

2 The roots of community forestry

The island's history of customary access and rights form the “roots” of community forestry. In rural towns across the province, fisheries, mines, and logging camps opened and closed over time, and workers maintained diversified livelihoods by combining seasonal income with subsistence activities such as domestic fuelwood and sawlog harvesting, moose hunting, snaring, fishing, berry and mushroom picking, and gardening (Omohundro, 1995). This history has extended to today, with persistent economic and social links between subsistence activities and household and community well-being (den Otter and Beckley, 2002). Subsistence activities declined through the 20th century as the formal economy grew, but rebounded in the late 20th century, in part due to a revitalization of traditional Newfoundland culture (Omohundro, 1995) and “as a recreation, a regional mark of distinction, a bank of useful skills, an expression of self-

esteem, a way to stretch limited cash, and an insurance against sudden drops in a household's income" (Omohundro, 1994, p. xviii).

Thus a cultural sense of entitlement to the forest, including the right to harvest trees and to build cabins, shaped aspects of forest access and governance across the island. Land ownership outside of municipalities is predominantly in the hands of the province. But tenure and land rights have been more varied, and in a simplified model can be conceived as evolving along two paths: a common property rights tenure along the coastal three-mile commons or "fishermen's reserve," which was largely utilized for domestic use and to support the fishery; and a government-supported industrial pulp and paper tenure targeting inland forest resource development (Munro, 1978). Pulp and paper tenures eventually covered two-thirds of the island and the needs of the pulp and paper industry dominated forest planning and management, which was overseen by the Department of Natural Resources, Forestry Branch (DNR-Forestry). But these tenures have been shrinking in the early years of the 21st century alongside industry struggles, and the remaining lands, labeled "unalienated Crown" lands have been growing in area and importance. Unalienated Crown lands were long left to domestic sawmill licenses and largely unregulated domestic harvesting, and it is these lands which offer promise for community forest tenures.

2.1 Pulp and paper tenures

The pulp and paper industry emerged in the early 20th century in Newfoundland. Pulp and paper leases, valid for 99 years, were first created in 1890, when 6- to 150-square mile leases were extended to pulp and paper manufacturers for \$20 per square mile plus \$20/square mile at years 25, 50, and 75, with no royalty charges on the trees³. Pulp and paper manufacturers were therefore favoured over sawmill operators, who had to pay rent, land bonuses, and royalty. Subsequent legislation maintained this favourable payment scheme for pulp and paper (Munro, 1978). Over time infrastructure requirements for leases were relaxed, fees were reduced, and lease periods were extended (Munro, 1978). Support for the pulp and paper industry was in keeping with Newfoundland policies that emphasized export-based industrial development, often financed through foreign loans and under foreign management (Cadigan, 2009; Letto, 1998; Summers, 1994).

³ Newfoundland, 1890. An Act to amend the Crown Lands Act, 1884, and the Acts in Amendment thereof. 53 Victoria, Cap. 1. (see Munro, 1978)

Almost all of the industrial tenures were eventually consolidated and controlled by two pulp and paper companies, the Anglo-Newfoundland Development Company in Grand Falls, established in 1909, and Newfoundland Power and Paper Company in Corner Brook (later Corner Brook Pulp and Paper, CBPP), established 1925 (Munro, 1978). In 1962, the Grand Falls mill, then Price Pulp and Paper, had 7,577 square miles total under its domain; the Corner Brook mill, then Bowater, had 14,618 square miles (Munro, 1978). The majority of these lands were technically property of the Crown, but the pulp and paper companies created management, harvest, and road plans, and granted cabin permits, effectively “regulating internal use patterns” of the landscape in the words of Schlager and Ostrom (1992), and determining the end uses and beneficiaries of forest utilization. While CBPP was bound by provincially-established forest practice guidelines and reporting regulations, long-term leases in Newfoundland were essentially equivalent to private landholdings because of their duration and relative autonomy regarding forest practices (APEC, 2008).

As of 2011, the Grand Falls mill and one additional mill in Stephenville had closed, leaving just CBPP remaining, though operating only two of its four paper machines. The island of Newfoundland had a total of 11.1 million ha, half forested and half non-forested. Of the forested lands, 63% were considered productive forest⁴ and the remainder were non-productive forest. Combining CBPP and unalienated Crown lands, about 25% of productive land was available for harvest *without* constraints – which is 15% of the total forested land, and 7.8% of the total island. Another 31.4% of productive forest land was available for harvest *with* some constraints – about 20% of the total forested land, and 10% of the island. In total, 2 million ha out of 11.1 million ha (17.8%) on the island were considered available for commercial harvest.

CBPP in 2011 had 1.5 million ha of leased lands, with lease rights extending to 2037 (Figure 2). CBPP had relinquished their rights to 447,427 ha of leased lands in 2010 for \$12 million (Auditor General, 2011).

⁴ Productive forests are defined by potential volume per hectare: 35 m³/ha at rotation age.

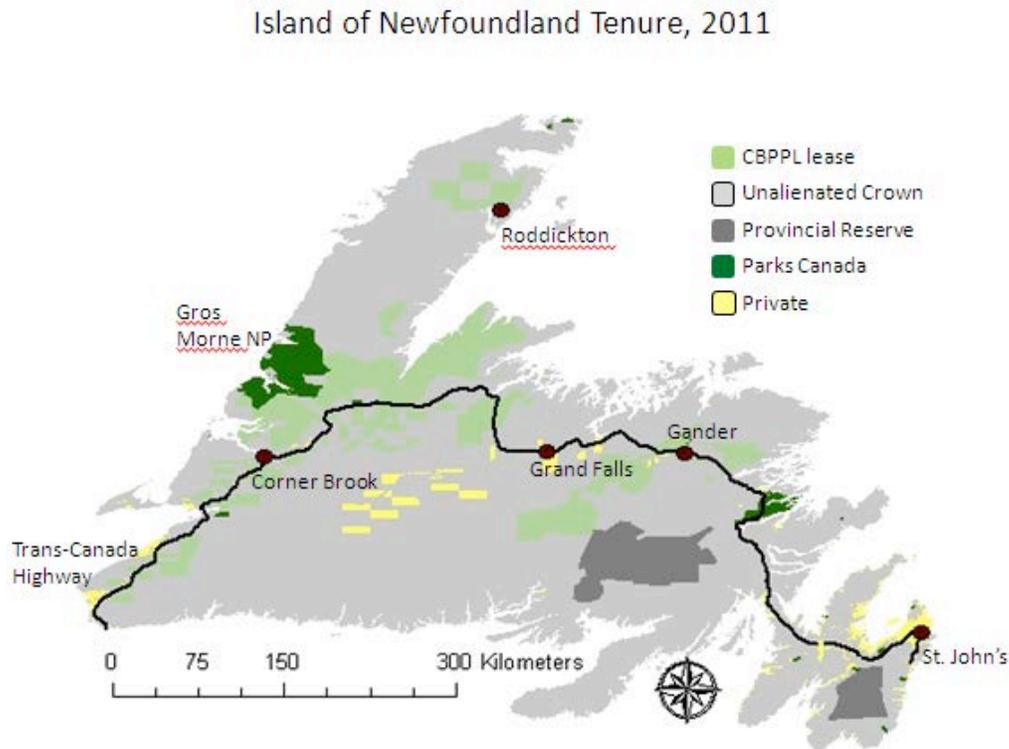


Figure 2. Map of the Island of Newfoundland with its tenure system. Data from DNR-Forestry.⁵

2.2 The commons

Even after the dissolution of the official three-mile commons in the mid-20th century, the coastal forests surrounding rural outpost communities largely remained unalienated Crown lands, where domestic sawmilling and fuelwood gathering activities were concentrated.

Common property rights had developed because of the importance of the fisheries, while the pulp and paper industry dominated the insular forests. The first conflicts over forest access occurred between the industry and Newfoundland residents who used the timber for domestic use as industrial operations began to encroach upon coastal resources in the early 20th century (Cadigan 2006). Pulp projects around the communities of White Bay South and up the northern peninsula in Roddickton intruded upon the 3-mile limit, blurring distinctions between the

⁵ DNR-Forestry GIS data from the Corner Brook office, provided to the author on disk. Data updated as of 2012.

commons and the industrializing interior forests, and “weaken[ing] the integrity of the three-mile limit” (Ommer, 2007, p. 101).

But a strong sense of rights to all forest lands, especially unalienated Crown lands, was evident through interviews and in everyday conversations. Newfoundlanders from all walks of life – government agencies, environmental groups, and industry – spoke of the right to access, hunt on, and obtain wood from the forest.

2.3 Prioritizing industry development

The relationship between industrial owners in the pulp and paper industry and the government of Newfoundland was historically collaborative, in a joint bid to develop the forest resources of the Province, diversify employment, and bring jobs to remote regions of the province. This led to prioritization of industry needs within forest planning.

The dominance of the industrial pulp and paper tenure was an important reason that community forest rights remained undeveloped in Newfoundland, despite local reliance on forest subsistence activities. Community control would have undermined the forest development plans of government, which focused on providing large tracts of land for commodity production. While the three-mile commons was handed over to fishermen and sawmillers, the three-mile commons was encroached upon by the pulp and paper industry (Cadigan, 2006) and logs were sold from the three-mile commons to the industry by independent contractors (Interview, logging contractor). Formal community control over any forest land would have undermined the primacy of the pulp and paper industry. A second reason that community forestry rights were not formalized involved the pattern of provincial economic development, which long relied on large industrial projects, often foreign-owned and foreign-controlled, which the government supported through subsidies and technical assistance (Cadigan 2009). The pulp and paper industry met these criteria. However, as the pulp and paper industry diminished in the province from 2005 onward, abandoning some regions altogether – including the GNP – a tenure and management vacuum arose.

2.4 A new mandate: the rise of ecosystem-based management

Forest policies in Newfoundland, as administered by the Department of Natural Resources Forestry [DNR-Forestry], began changing in the 1990s from a narrow focus on wood fibre growth and extraction to policies embodying a more diverse suite of goals described as “ecosystem-based management” (Nazir and Moores, 2001).

Ecosystem-based management (EBM)⁶ can be defined as “management driven by explicit goals, executed by policies, protocols, and practices, and made adaptable by monitoring and research based on our best understanding of the ecological interactions and processes necessary to sustain ecosystem structure and function” (Christensen et al., 1996, page 669). It includes a number of components: intergenerational sustainability; measurable outcome-based goals; science-based decision-making that recognizes complexity and incorporates multiple spatial and temporal scales, ecosystem function and dynamics, and uncertainty and surprise; integration of human activities; and adaptability (Christensen et al., 1996). The Society of American Foresters provides a forest-specific definition of EBM: “the strategy by which, in aggregate, the full array of forest values and functions is maintained at the landscape level” (Society of American Foresters, 1993). Paralleling these changes to forest management, policies toward forest communities have been re-examined and reframed. Historical notions of community stability based on predictable harvest and mill output have been replaced with visions of community *resilience* and health, wherein communities have some decision-making autonomy and more diversified employment bases (Donoghue and Sturtevant, 2007; Kelly and Bliss, 2009).

The Forestry Act in 1990 began the evolution of forest policies in Newfoundland from a specific focus on fibre management to EBM (Nazir and Moores, 2001). The 2003 Provincial Sustainable Forest Management Strategy provided clarity regarding this shift, which it labeled a “new vision” for forestry in the province, that of: “finding a balance between the ecological, economic and social values that the public defines” (DNR-Forestry 2003, p. 1). This balance was to be achieved through sustainable forest management, which acknowledges ecosystem complexity

⁶ In using this term, I recognize it is controversial, and often described as “vague” or simply value-driven rather than scientific. It is nevertheless the closest descriptor for the forest policy objectives within the province, as outlined in the 2003 Sustainable Forest Management Strategy.

and uncertainty, and the importance of adaptive management.⁷ Adaptive management involves management experiments carried out across the landscape, with predictions and monitoring to test hypotheses; forestry becomes “a continuous and ongoing learning process rather than an end in itself” (DNR-Forestry 2003, p. 1).

EBM objectives stem from an Environmental Preview Report (EPR) prepared for the EA process in 1995 which greatly influenced the policy direction of forest management in the province. The EPR highlighted two policy objectives: 1) ecosystem-based management, including adaptive management; and 2) inclusive public participation. The objectives are explicitly linked because, as explained by DNR-Forestry (1995): “adaptive forest ecosystem management requires the involvement of all stakeholders with an interest in the local forest land” (p. 7). These goals have subsequently been used repeatedly in forest policy language in the province. Forest planning processes are temporally and spatially nested, with 20-year forest strategies providing the broadest level of vision and guidance, 5-year operating plans providing more specific forest management directives, and annual operating plans providing spatially and temporally explicit harvesting and silvicultural plans. The bulk of planning occurs with 5-year plans, which designate harvests and mitigation measures, and also require Environmental Assessment (EA) registration and approval.

Five-year operating plans are created through various inputs, including policies of other departments (Wildlife, Tourism, etc.), technical knowledge gleaned from wood supply analyses and the calculation of the Annual Allowable Cut, public input, and market signals. They are shaped by the requirements of 20-year forest strategies such as the 2003 Provincial Sustainable Forest Management Strategy (2003 SFMS). The 2003 SFMS explicitly called for “ecologically-based forest management” as a guiding objective for management. The strategy emphasised that EBM “requires an understanding of all forest values when making sound management decisions” (DNR-Forestry, 2003, p. 47), meaning that plans were required to incorporate multiple values. Some of these values were relatively easily defined and measured, and some inevitably required decisions based on incomplete evidence.

⁷ Both unalienated Crown lands and CBPP leased lands are managed under similar policies, and they will be discussed together unless indicated otherwise. The primary distinction is that planning documents for Crown lands are created by DNR-Forestry, while planning documents for CBPP lands are created by CBPP.

Despite the shift toward EBM, forest planning and management in Newfoundland continued to emphasize more easily defined and measured values to the detriment of other, usually non-timber values. This reflected a long-standing commitment to a narrow definition of forestry expertise steeped in wood availability analyses, and prioritization of commercial uses over other forest values. For example, despite mandates within the 2003 Sustainable Forest Management Plan, DNR-Forestry did not create EBM guidelines (Auditor General, 2011), indicating that government perpetuated vague, difficult-to-measure parameters for non-timber values.

A Sierra Club document (Plotkin, 2004) provided insights into conservationists' concerns about forest management in the province by asking: is ecosystem-based management being implemented? The authors' findings were largely negative; their primary criticism was that the only carefully quantified measurement included in management is the Annual Allowable Cut [AAC].⁸

To understand the persistent commitment to commercial wood use, I begin with an explanation of the quantification of the AAC, which formed the basis of forest planning, as described by a DNR-Forestry interviewee: “in the mid-90s, we started making harvest plans; it gave the AAC some concreteness. It gave people some idea of what forestry was doing.” The very concreteness of the AAC tended to give it priority in terms of forest planning, leading to decisions based on the *certainty* of the planning exercise.

The AAC, or allowable rate of cut on productive Class I forest lands, was determined through the use of two models: an aspatial model called Woodstock, and a spatial model called Stanley. These models were used to optimize forest planning, which means maximizing harvests, given a number of non-timber requirements. The process of determining AAC began with the aspatial “optimum,” which was then restricted through multiple rounds, each decreasing the flexibility of the model to optimize harvest. With every limitation on the model, the AAC dropped because the model had less flexibility for allocating harvest. In other words, with each requirement, the model produced a lower AAC. This occurred in layers. First, the modeling exercise was limited because of requirements for even-flow harvesting, meaning that the AAC had to be equal in every 5-year period of the 160-year planning horizon. Second, the model was limited spatially,

⁸ With the exception of District 19a in Labrador

through the spatial analysis software and through “blocking” by district managers, who blocked harvests within their districts. Third, the model was limited through the deduction of “other values” from the AAC, which included operational constraints, such as steep slopes or isolation of stands; disturbance constraints, such as insect infestations, diseases, or fire events; and environmental or non-timber value requirements, the most contentious deductions for forest managers. A number of managers within DNR-Forestry were resistant to these deductions, as the agency lost control over large parts of the land base: “we’re losing our land – the land base is eroding because of preserves and habitat areas” (Interview, DNR-Forestry).

The uncertainty of non-timber values and environmental requirements caused consternation for many DNR-Forestry managers. While the AAC was based on precisely quantified variables in the wood supply analysis, including 1) existing forest resources, based on inventories and previous management; and 2) yield curves based on species, site class, and growth conditions, non-timber values were not easily quantified and involved a great deal of uncertainty. One interviewee from the Department of Environment and Conservation (DEC) wildlife department said: “That’s the problem, we can’t put it on a map and then say here it is and this is it forever and ever, it’s like okay it’s got to be adaptive, it’s got to move and that causes problems for industry, they don’t want it to move, they want to be able to plan around it” (Interview, DEC).

AAC determination created a chasm between DNR-Forestry and industry on the one hand, and ENGOs and other government departments on the other, in terms of whether the models adequately captured non-timber values: “every time we say you can’t harvest there, their AAC goes down... whether it’s parks, wildlife, tourism, whether it’s outfitters, it takes away from what they have because they allocated everything” (Interview, DEC). This forest planning strategy optimized harvests then deducted other values, rather than planning for a range of values – including domestic harvests and non-timber values – from the beginning. This was especially problematic for values without a clear threshold for management, such as tourism: “there is no criteria-based process to balance competing uses... it’s a forest cutting plan that decides how much, where, and when forests will be harvested” (Interview, Dept. of Tourism, Culture and Recreation).

Even with mill closures, as demand for wood fibre declined, DNR-Forestry District Managers – who implemented the policies created by DNR-Forestry executive – did not receive direction about alternative ways to carry out forest management and planning. Several managers spoke of a “transition” in terms of management, but a transition without clear direction:

Mill closures have been kind of going on for 6 or 8 years, but it’s almost as if we’re still in transition here and we haven’t made any huge decisions about scaling back... there’s a certain expectation that we free up some of this resource for other things and what I’m asking for [from DNR-Forestry executive] is direction. (Interview, DNR-Forestry)

The long-standing links between forest management, societal benefits through industry activity (employment, wood products), and forest health from a sustained-yield perspective had started to dissolve. New linkages were slow in forming, and there arose a gap between EBM in policy and the necessary mechanisms for implementing policy.

3 The possibilities of community forestry

Community forestry offers one way to experiment with creating new linkages – both between forest management and economic development, and between forestry and ecosystem-based management. By creating a discrete parcel of land for such experimentation, the province can minimize risk while implementing adaptive management. This mimics the intentions of Adaptive Management Areas, created in the Pacific Northwest under the Northwest Forest Plan, though with an explicitly social and economic set of mandates. The GNP offers an ideal place to test the formal community forest experiment: it has little to lose after the pulp and paper industry abandoned the region; it has clear economic and social problems (and opportunities) that could be partially addressed through forestry; and it has a host of local leaders and economic developers who are willing to shoulder some of the responsibilities of a community forest.

3.1 Setting the stage: the GNP

The GNP is a sparsely-populated peninsula extending 300 km from its southern end at Gros Morne National Park to its northern tip; it is approximately 80 km wide from east to west coasts. The Long Range Mountains form the spine of the peninsula, separating the west coast, which contains most communities and the only major road (Hwy 430), from the isolated east coast.

Forests of the GNP are boreal and dominated by balsam fir trees. The GNP has a short growing season and productive forest stands are naturally highly fragmented and interspersed with scrub, bogs, and rocky highlands (DNR-Forestry, 2008).

Historically, both the Corner Brook and Grand Falls mills had substantial land claims on the interior forests of the GNP; in addition, a revolving cast of sawmills and other commercial wood utilizers appeared and disappeared over the years. After the Grand Falls mill closed in 2009, and CBPPL relinquished its lands on the GNP in 2010, the GNP had only unalienated Crown land remaining. As of 2012, two sawmills remained near the St. Barbe Development Association (SBDA) region of the proposed community forest: Holson Forest Products in Roddickton and Coates Lumber in Main Brook. There was no market for the small-diameter logs that dominate many stands in the GNP; CBPP was no longer interested in logs from the region and a proposed pellet mill at Holson Forest Products had stalled in its development.

Forestry revenues in the GNP shrunk from \$19 million in 2008 to \$9 million in 2010, while the labour force declined from 140 forest workers in 2003 to 75 in 2010 (RED Ochre Board, 2011). In 2011, commercial logging was carried out by 17 independent contractors remaining in the region; all seven of the contractors interviewed for this project expressed pessimism and resignation about the decline of commercial forestry. They had significant debt and were wary of investing more into an industry in a downward spiral:

Kruger [CBPPL] asked we to get another [harvester] and then they left. We had to do something to pay the banks so we started cutting for different people. Then the price went down and costs went up (Interview, logging contractor).

This contractor spoke of moving to Alberta for work, following the trend of many residents of the GNP who moved to or commuted to jobs elsewhere. While two small commercial sawmills remained in the GNP, the pulp and paper-dominated tenure and management system long supported by DNR-Forestry had disappeared.

Newfoundland was long one of the most rural and economically depressed provinces of Canada, and though some parts of Newfoundland benefited from offshore oil revenues, demographic

trends for the SBDA Region as measured by Statistics Canada reveal population decline and low income and education levels (Table 1).

Table 1. Demographic information for the communities of the SBDA Region and Canada as a whole. Data source: Statistics Canada.

	SBDA Region	Canada
Population, 2006	5502	31,612,897
Population, 2001	6183	30,007,094
Population change from 2001 to 2006	- 11%	+ 5.4%
2005 Median household income (after taxes)	\$36,968	\$55,111
% Ages 25-64 with no high school diploma, 2006	45.2%	15.4%
% Ages 25-64 with a university degree, 2006	7.6%	22.9%

However, some researchers have found that census data do not capture the extent or the character of well-being in rural Newfoundland because of the importance of the informal subsistence economy (den Otter and Beckley, 2002). As an example, some Newfoundlanders built their own homes, and many in the GNP relied on domestic fuelwood for their heat.

3.2 Potential benefits of formalizing community forestry in the GNP

There are numerous possible benefits from formalizing a community forest tenure given the social and economic circumstances of the GNP. These benefits include: 1) expanding the decision-making power of local residents and communities over nearby landscapes; 2) integrating regional economic development with natural resource management; and 3) reconciling competing land use objectives and forest uses. All of these benefits are nested within the province's mandate to implement ecosystem-based management, which includes the participation of the public and adaptive management. Community forestry may be considered a vital part of adaptive management, allowing for social and economic experiments that test new tenure arrangements and means of public participation.

3.2.1 *Expanding local power*

As forests in the GNP transitioned away from pulp and paper dominance, the question of *who* controlled forest management became central. Since the beginning of the 20th century, pulp and paper industry needs determined forest policies and management priorities throughout the province. On pulp and paper tenured lands, which were leased for 99 years, industry enjoyed relative autonomy and decision-making authority. Further, the provincial government supported the industry through guaranteed loans and grants, generous tax incentives, road building and silvicultural assistance, and control over hydropower resources (Ommer, 2007). The province continued to support the pulp and paper industry with subsidies and other assistance despite the closure of two of the Island's three mills since 2005, and capacity reduction and tenure relinquishments at the one remaining mill, CBPPL (Auditor General, 2011; Wernerheim and Long, 2011).

Until the pulp and paper industry decline, chronic wood deficits on the island because of pulp and paper fibre needs allowed for little flexibility in forest planning. In order to secure industry investment, long-term tenure agreements were only granted to pulp and paper companies, while all other forest users, including local sawmills and value-added wood producers, relied on unalienated Crown lands permits or exchange agreements with the pulp and paper industry to procure wood.

Domestic users were largely historically confined to unalienated Crown lands because of their proximity to towns, though there was some exclusion from industry leased lands, which could be gated and even had guards until the 1970s (Interview, logging contractor). With establishment of an extensive road network, and broader access to technology such as vehicles, ATVs and snowmobiles, Newfoundlanders gained physical access to almost all forest lands, whether unalienated Crown or pulp and paper-controlled, and this access extended to the right to harvest wood and build cabins. Public access to all forest lands had expanded over time.

Domestic harvesting is regulated – fuelwood and sawlog harvests require a \$21 permit, and total harvest volume cannot exceed 22 m³. Wood removal is generally limited to non-commercial species (hardwoods, larch) in cutover stands, or on designated domestic harvest units. However, most interviewees indicated that illegal harvesting is common. Cabin building is also regulated

through the Crown Lands division, which sells lots. However, if a cabin is built on any forest access road without permission, the cabin owner pays \$500 as “illegal occupation fee” and all cabin owners, legal or illegal, pay \$100 annual land rent.

At times, tension arose between domestic harvesters and DNR-Forestry, which criticized domestic fuelwood and sawlog harvests for decades as wasteful or inefficient and at odds with commercial forestry. One community forest model was attempted in the GNP from 1984-1986, which addressed the problem of perceived “uncontrolled indiscriminate domestic cutting” (Roy, 1989, page 345) and also because of the importance of domestic forest harvests. The model was initially recommended by the 1981 Royal Commission on Forestry, which promoted “delineate[d] areas of non-alienated Crown Lands as community forests for provision of domestic wood supplies... to assess the potential for greater community participation in managing local forest resources” (in Roy, 1989, page 346). The pilot community forest was created on 500 ha near the community of Parsons Pond, just north of Gros Morne National Park. Residents were consulted, but they were not granted control over management or decision-making on the forest. Rather, the “community forest” consisted of paying domestic harvesters to cut according to specifications of DNR-Forestry, in an attempt to restore high-graded forests. The experiment ended when funding, which was from a joint federal/provincial program, dried up.

Domestic forest uses and subsistence uses have remained prominent in rural regions such as the GNP. In 2010 the two forest management districts of the GNP domestic harvests constituted more than one-third of the total harvest (Table 2)⁹. Among communities in the GNP, as many as 80% of households use firewood as their primary heat source (Omohundro, 1994; unpublished DNR-Forestry data, 2011). In all, there were more than 2800 domestic harvesting permit holders in the GNP in 2011, plus an unknown number of domestic harvesters operating without permits.¹⁰ In addition, on the GNP alone, almost 9000 moose licenses and 146 caribou licenses were issued to residents of the province, and licenses were also allocated to non-residents,

⁹ Actual proportion of domestic harvest as of 2010 was much higher, as commercial harvest levels declined with the departure of CBPPL. Additionally, unplanned and non-permitted domestic cutting is common.

¹⁰ From a conversation with DNR-Forestry

generating substantial tourism income and helping support a growing outfitter industry (DEC, 2011).

Table 2. Harvest information for Forest Management Districts 17 from 2008-2012, which includes the SBDA region. Data from Anderson (2011).

	District 17 ¹¹	District 18
Total land	587,076 ha	533,321 ha
Productive forest	203,792 ha	158,400 ha
Total harvest scheduled (2008-2012)/AAC	291,197 m ³ 58,239 m ³	704,170 m ³ 140,834 m ³
Total domestic harvest scheduled (2008-2012)/AAC	111,413 m ³ 22,282 m ³	231,014 m ³ 46,203 m ³
Domestic as proportion of total harvest	38%	33%

The proposed GNP Community Forest, which is entirely within District 17, includes approximately 100,000 ha of land, with an AAC of 40,000 m³, half of which is domestic, half commercial. The community forest would contain much of the planned domestic harvest of District 17.

Formalizing these subsistence uses within the framework of a community forest could expand local decision-making control and integrate the many subsistence and recreational forest users into forest planning processes. This would give residents a voice and a stake in how their landscapes are managed; in the words of an economic development officer in the GNP: “it’s a connection to place, to their homes, to their coastlines that makes people want to make this community forest idea work” (Interview, economic development officer). Access to the forest, long predicated on the right to enter the forest and engage in domestic harvests and other subsistence activities, would expand to include forest planning and management, creating more

¹¹ The proposed community forest is almost entirely within District 17, which covers the western part of the GNP; District 18 includes both remaining sawmills and the pellet mill, and lies north and east of District 17. The districts share a forest manager and planning processes are combined for the two districts.

place-based accountability and decision-making power. The ways this could be done is explored in the following sections.

3.2.2 Integrating regional economic development and forest management

Development projects throughout the 20th century in Newfoundland were centred on industrial and natural resource megaprojects, with substantial funding and control from foreign investors (Cadigan, 2009). This model was frequently misaligned with the needs of small, isolated communities. But other visions of rural development percolated within community development circles since at least the 1960s, with the creation of provincial government-funded regional development associations (Blake, 2003). The associations attempted to create small-scale industries and resource-based jobs:

A healthy economic strategy for the Province will depend to a great extent on the stimulation and encouragement of a vast array of small-scale resource based activities, emphasizing the strength of the existing rural economic base (ARDA, 1971, pages 21-22).

One regional association, the St. Barbe Development Association (SBDA), created in 1974, remained in the GNP. Across the province, most regional associations shut down or were replaced in 1995 when the province created twenty regional economic development boards; most of the SBDA Region falls under the RED Ochre Regional Board. The SBDA and RED Ochre worked in tandem, with the SBDA implementing infrastructure and employment projects and the RED Ochre Board determining the priorities and direction of regional development. Both boards had broad representation; community representatives sat on the SBDA, while RED Ochre membership was based on stakeholder representation, including members of the business, labour, community development, and government sectors. These boards demonstrated an approach for communities to “tak[e] more control themselves over their economic destinies” (Blake, 2003, page 207), and they leveraged funds and collaborated with federal and provincial funding agencies.

Both RED Ochre and SBDA identified forest projects as economically promising: the RED Ochre Strategic Economic Plan emphasized a need to transform forestry, including development of non-timber forest products, value-added wood processing, and tourism industries (RED Ochre

Board, 2011). The SBDA organized a silviculture training program and multiple forest restoration projects. However, while the two boards had clear economic and community development mandates, they lacked land use management authority and forestry expertise.

Meanwhile, DNR-Forestry, which had forest management authority and expertise, did *not* have an explicit rural development or community well-being mandate. It was therefore unable to prioritize different forest uses from the perspective of maximizing employment or returning benefits to local communities.

In response to forest industry decline, the SBDA and RED Ochre Board, in conjunction with the Model Forest of Newfoundland and Labrador – a federally-funded group with a representative in the GNP – proposed the community forest pilot project. Though in its initial stages, several discussions and meetings included representatives from other provincial agencies, including DNR-Forestry.

Formalizing the community forest tenure could facilitate the integration of the mandates of economic development boards, which centred on job creation and community capacity, and the mandates of DNR-Forestry, which focused on land management and forest sustainability. This integrated mandate could re-align forest-based economic opportunities with regional economic development plans. Further, the economic development boards and the District DNR-Forestry office were regionally-based, decentralized provincial government agencies that could facilitate the transfer of power and decision-making authority to a community forest authority (CFA). The CFA would be responsible for allocating timber for commercial uses, in line with the traditional mandates of DNR-Forestry, but could also oversee an economically holistic approach to forest resources. Different objectives and economic visions for the forest could be prioritized on a landscape level and among different communities.

Alternative small-scale entrepreneurial projects and forest uses could then be coordinated through the CFA. For example, the commercialization of fuelwood is a promising development, and Hawke's Bay, which is on a major transportation route and only 264 km from a major market in Corner Brook, may be a viable base (Anderson, 2011). Non-timber forest products, including foods such as wild berries and mushrooms, wreaths and ornamentals, and medicinal products also offer commercial opportunities (Carson, 2009). Tourism is growing in the region,

particularly because of Gros Morne National Park in the south and the L'Anse aux Meadows National Historic Site in the north, which radiate a growing but disorganized network of hiking and snowmobiling trails. The proposed community forest would include a large protected area with tourism potential, known as the St. John's Highlands, which could be integrated into the trail system.

None of these economic opportunities are dependent on community forestry *per se*. But a CFA could combine the objectives and expertise of development agencies and the DNR-Forestry in order to better determine wood allocation to encourage and grow local businesses. The creation of a CFA could create a place for open discussion of the distribution of economic benefits from the forest. Through the CFA, residents of the GNP could become active participants in shaping the trajectory of forest planning, as well as the distribution of forest benefits.

3.2.3 *Reconciling multiple land use objectives*

In the 1990s DNR-Forestry shifted its policy objectives from timber-based sustained yield management to more diverse objectives such as ecosystem-based management, inclusive public participation, and biodiversity protection (Nazir and Moores, 2001). But mechanisms for implementing these new objectives remained unclear and a gap between policy objectives and forest planning became evident (Auditor General, 2011). Forest planning remained narrowly-focused on timber provision; according to many forest managers in the province, this was in part due to the difficulty of reconciling competing land use claims.

As described above, provincial forest management planning revolved around determination of the Annual Allowable Cut, which maximized commercial harvest, as calculated by forest planners located in Corner Brook, distant from the GNP. The tendency was for forest planners to optimize commercial harvest, which was then “eroded” by competing uses, including domestic harvest, municipal watersheds, protected areas, wildlife habitat, riparian buffers, cabin building, and so on. In the words of the 2008 five-year management plan for Districts 17 and 18, “the land base available for forest activity is constantly being eroded by other [non-commercial] users” (DNR-Forestry, 2008, page 48). In other words, rather than integrating competing uses, the policy framework rendered forest uses mutually exclusive, with every non-commercial forest claim viewed as a drain on the economic viability of the forest industry.

As part of its five-year planning process, DNR-Forestry held public meetings in various communities in order to gain public input. According to most interviewees, including employees of DNR-Forestry, residents had little substantive input into forestry plans. At meetings, residents were presented with maps of harvest areas that had already been determined and justified through the internal DNR-Forestry planning exercise. Participants were allowed to comment on proposed harvest areas only, while management priorities in general could not be addressed. Though the five-year forest planning process remained the provincial government's preferred venue for public input, most meetings were poorly attended and most interviewees – both in the GNP and in other regions of Newfoundland – felt that forest plans were completed prior to their input. One outfitter said: “You could travel [to meetings] and voice your opinion on the plan, but it didn't matter” (Interview, GNP outfitter).

Regional DNR-Forestry staff were similarly frustrated; one manager indicated that “local values” were complicating forest planning and management, and that people came to the meetings with “an agenda” that he could not resolve (Interview, DNR-Forestry). Agencies dealing with other natural resource and land use issues, such as Wildlife, Parks and Natural Areas, Agriculture, and Mining, had little input into five year plans, and collaboration was limited; therefore separate “silos” were established, with each government agency attending to its own mandate.

This led to a number of conflicts among forest users and managers as people came to forest planning meetings with various demands not within the power of DNR-Forestry to accommodate. Public forest decision-making remained at the tokenistic “consultation” level of public participation, in which citizens “participate in participation” and governmental decision-makers gain “the evidence that they have gone through the required motions of involving ‘those people’” (Arnstein, 1969, page 219).

These province-wide problems indicate the need for restructuring public participation and interagency collaboration. In keeping with the spirit of ecosystem-based management, community forestry is an experiment in forest governance and collaboration that is more nimble than traditional timber optimization. It could better incorporate the diverse needs and objectives of subsistence and recreational users, community watersheds, protected areas, and tourism development. Formalized community forest tenure could give residents a chance to prioritize

land uses with the engagement of various government agencies not limited to DNR-Forestry, and it could give the provincial government and DNR-Forestry a clearly delineated region for experimenting with a new form of land use decision-making.

3.3 Constraints to a formal community forest tenure

There are many reasons why Newfoundland does not yet have a community forest, and substantial barriers to realizing a community forest in the province remain, and this section highlights several.

First, policy makers within the provincial government need to reassess a tenure system that favours pulp and paper operators over other businesses and forest users. This is especially true given the precipitous and likely continuing decline of the industry (Milley, 2008). Current tenure arrangements and forest planning mechanisms hinder formal community forest tenures, as the only long-term tenure rights on Crown lands are granted to pulp and paper companies and link forest tenure to wood processing capacity.

This constraint is formidable as the provincial government has demonstrated a hesitancy to cede control over its lands, especially if potential industrial development opportunities could be threatened. This has been evident with the proposed creation of the provincial Natural Areas Systems Plan, first introduced in 1996 and, according to interviews with members of the committee which created the Plan, since relegated to a bureaucratic purgatory because of conflicts with mining and other development possibilities.

Second, the pulp and paper industry left the GNP because the region was no longer economically viable for its operations. Community forest supporters will need to think beyond traditional economic models to nurture entrepreneurial businesses that have a high risk of failure. The region has experienced high levels of out-migration – especially of young, motivated people (McGinn, 2010). The remaining residents of the GNP tend to be older, and possibly past the age of investing time and money in an economically and politically risky forestry business. As an economic development officer stated, “an aging population is an issue for the region; they aren’t dead and they still want to work, but there is still a lack of willingness to take entrepreneurial risks” (Interview, economic development officer).

Third, the communities of rural Newfoundland evolved from isolated fishing villages; a lingering effect of this is a tendency for residents to identify with their towns, rather than their regions (House, 2003). A regional forester stated, “regional cooperation is a huge issue, currently there is lots of little communities working against each other and fighting for the same projects,” (Interview, DNR-Forestry). This has resulted in distrust among residents of different communities; interviews about the proposed GNP Community Forest indicated that several community leaders distrusted each other and rumours of dissenting communities impacted early community forest meetings.

4 Conclusion

The links between forests and nearby communities have evolved over time in parallel with changing government policies, tenure regimes, and market forces. Through much of the 20th century, forest communities of North America were dependent on distant decision-makers within government or the forest industry. This arrangement has shifted somewhat, in part with the establishment of new forest tenures such as community forests. With community forests, governments devolve decision-making authority to a group of citizens who help shape management and determine distribution of benefits (Brendler and Carey, 1998). A traditional view of the commons asserts that overexploitation of shared natural resources is inevitable and that privatization or state management are the only viable solutions (Hardin, 1968). But a large body of evidence suggests that resource users have a wide array of common-pool governance structures, often resulting in sustainable, efficient, equitable resource use (Ostrom, 1999).

As outlined in this chapter, formalizing community forest rights in Newfoundland could 1) bring a large number of existing forest users to the planning table; 2) integrate natural resource management with regional economic development; and 3) help resolve land use conflicts. Though presented separately, in fact these three benefits are inextricably linked. Through the involvement of existing forest users, land use conflicts can be openly discussed and economic priorities set at a regional level. Forest access for community members would thus expand from subsistence and recreational activities centred on domestic wood harvests, hunting, and cabin building, to participating in decision-making regarding the uses of the forest and distribution of benefits from forest products. Subsistence users, prominent in the GNP, utilize natural resources

to meet material and cultural needs outside the formal market and may regard themselves as legitimate stewards of resources regardless of formal management authority (Emery and Pierce, 2005). Many rural residents already have substantial access to forests, and knowledge about its resources; this *de facto* commons arrangement may be strengthened and formalized through community forestry.

Formal community forest tenure would replace a forest decision-making process that linked the economic destiny of the GNP to the plans of the pulp and paper industry, a decision-making process that was unable to accommodate alternative forest uses and dissenting voices. A community forest authority in the GNP could identify and help negotiate conflicts at a local level by engaging with citizens, in coordination with representatives of multiple government agencies. Community forestry could also bring together residents of the sparsely-populated region around a common cause. Formalizing commons arrangements through clearly delineated management and tenure rights may empower local communities and give local residents a sense of ownership over the fate of nearby landscapes (Kellert et al., 2000).

The community forest experiment could provide benefits to remnant forest industry as well. By transferring decision-making to a community group, residents gain intimate knowledge of industry needs, alleviating distrust. Harvesting could be controlled by residents who have a keen interest in supporting an array of commercial operations, including commercial operations.

A community forest could provide benefits for more than just forestry in the region. Researchers have demonstrated the capacity of community groups to build upon successes in natural resource management in order to address other challenges (Baker and Kusel, 2003). The community forest model could serve to create a more vibrant, economically resilient region in other sectors, and provide precedence within the province for community control over development. Though community forest tenures would serve different purposes in other regions of the province, the roots of community forestry exist across the province, and the GNP Community Forest would provide an example for other communities to follow.

Bibliography

- Anderson, A. (2011). *Domestic fuel wood feasibility study*. Corner Brook, NL: Anderson & Yates Forest Consultants.
- ARDA (Agricultural Rehabilitation and Development Association). (1971). *A cost-sharing program of rural development under the Federal-Provincial 1971-1975 ARDA Agreement*. St. John's, NL: Agriculture and Rural Development Dept.
- Arnstein, S.R. (1969). A ladder of citizen participation. *Journal of American Institute of Planners* 35 (4): 216-224.
- Atlantic Provinces Economic Council (APEC). (2008). *Building competitiveness in Atlantic Canada's forest industries: A strategy for future prosperity*. Halifax, NS: APEC.
- Auditor General. (2011). *Annual Report, part 2.14 Forest Management*. St. John's, NL: Auditor General of NL.
- Baker, M., and J. Kusel. (2003). *Community forestry in the United States: learning from the past, crafting the future*. Washington, DC: Island Press.
- Blake, R.B. (2003). *Regional and rural development strategies in Canada: the search for solutions*. Royal Commission on Renewing and Strengthening our Place in Canada.
- Brendler, T., and H. Carey. (1998). Community forestry defined. *Journal of Forestry* 96(3): 21-23.
- Cadigan, S. (2009). *Newfoundland and Labrador: A History*. Toronto: University of Toronto Press.
- Cadigan, S. (2006). Recognizing the commons in coastal forests: the three-mile limit in Newfoundland, 1875-1939. *Newfoundland and Labrador Studies* 21(2): 209-233.
- Carson, S. (2009). *Biophysical inventory of the Northern Peninsula and White Bay South Region*. Corner Brook, NL: Model Forest of Newfoundland and Labrador.
- Charnley, S., and M.R. Poe. (2007). Community forestry in theory and practice: where are we now? *Annual Review of Anthropology* 36: 301-336.
- Christensen, N.L., A.M. Bartuska, J.H. Brown, S. Carpenter, C. D'Antonio, R. Francis, J.F. Franklin, J.A. MacMahon, R.F. Noss, D.J. Parsons, C.H. Peterson, M.G. Turner, R.G. Woodmansee. (1996). The report of the Ecological Society of America Committee on the scientific basis for ecosystem management. *Ecological Applications* 6(3): 665-691.
- DEC (Department of Environment and Conservation). (2011). *Hunting and trapping guide 2011-2012*. St. John's, NL: Department of Environment and Conservation.
- Den Otter, M., and T. Beckley. (2002). *This is paradise: community sustainability indicators for the Western Newfoundland Model Forest*. Fredericton, NB: Natural Resources Canada, Atlantic Forestry Centre, Information Report M-X-216E.

- Department of Natural Resources (DNR-Forestry). (2008). *Districts 17 and 18 Five Year Management Plan, 2008-2012*. Corner Brook, NL: Dept. of Natural Resources.
- Department of Natural Resources Forestry (DNR-Forestry). (2003). *Provincial Sustainable Forest Management Strategy*. Corner Brook, NL: Department of Natural Resources.
- Department of Natural Resources Forestry (DNR-Forestry). (1995). *Environmental Preview Report: Proposed Adaptive Management Process*. St. John's, NL: Newfoundland Forest Service.
- Donoghue, E. M., and V. E. Sturtevant. (2007). Social science constructs in ecosystem assessments: revisiting community capacity and community resiliency. *Society and Natural Resources* 20: 899-912.
- Emery, M., and A.R. Pierce. (2005). Interrupting the telos: locating the subsistence in US forests. *Environment and Planning A* 37(6): 981-993.
- Hardin, G. (1968). The tragedy of the commons. *Science* 162: 1243-1248.
- House, J. (2003). Does community really matter in Newfoundland and Labrador? In Byron, R., *Retrenchment and Regeneration in Rural Newfoundland* (pp. 226-267). Toronto: University of Toronto Press.
- Kellert, S.R., J.N. Mehta, S.A. Ebbin, and L.L. Lichtenfeld. (2000). Community natural resource management: promise, rhetoric, and reality. *Society and Natural Resources* 13: 705-715.
- Kelly, E.C., and J.C. Bliss. (2009). Healthy forests, healthy communities: an emerging paradigm for natural resource dependent communities? *Society and Natural Resources* 22(6): 519-537.
- Letto, D. (1998). *Chocolate Bars and Rubber Boots: The Smallwood Industrialization Plan*. Paradise, NL: Blue Hill Publishing.
- McGinn, J. (2010). *Rural depopulation in Newfoundland and Labrador: Attitudes of young people and the impact of new industry development*. Master's thesis. Coleraine, UK: University of Ulster.
- Milley, P. (2008). *Newfoundland forest sector strategy, final report*. Corner Brook, NL: Submitted by Halifax Global to Forestry Services Branch, DNR, Government of Newfoundland.
- Munro, J. (1978). *Public timber allocation policy in Newfoundland*. PhD thesis. Vancouver, BC: University of British Columbia.
- Nazir, M., and L. Moores. (2001). Forest policy in Newfoundland and Labrador. *The Forestry Chronicle* 77(1): 61-63.
- Ommer, R. (2007). *Coasts Under Stress: Restructuring and Social-ecological Health*. Montreal: McGill-Queen's University Press.
- Omohundro, J. (1995). Living off the land. In Felt, L. and P. Sinclair (eds.) *Living on the Edge* (pp. 103-127). St. John's, NL: Memorial University.

- Omohundro, J. (1994). *Rough Food: The Seasons of Subsistence in Northern Newfoundland*. St. John's, NL: Memorial University.
- Ostrom, E. (1999). Coping with tragedies of the commons. *Annual Review of Political Science* 2: 493-535.
- Plotkin, Rachel. (2004). *Ecosystem-based management: Rhetoric or reality?* Ottawa, Ontario: Sierra Club.
- RED Ochre Board. (2011). *Strategic Economic Plan (2011-2014)*. Parsons Pond, NL: RED Ochre Regional Board Inc., Board of Directors.
- Roy, M. (1989). Guided change through community forestry: A case study in forest management unit 17 – Newfoundland. *The Forestry Chronicle* 65: 344-347.
- Schlager, E., and E. Ostrom. (1992). Property-rights regimes and natural resources: a conceptual analysis. *Land Economics* 68(3): 249-262.
- Society of American Foresters (SAF). (1993). *Task Force Report on Sustaining Long-term Forest Health and Productivity*. Bethesda, MD: Society of American Foresters.
- Summers, V.A. (1994). *Regime Change in a Resource Economy: The Politics of Underdevelopment in Newfoundland since 1825*. St. John's, NL: Breakwater.
- Wernerheim, M., and B. Long. (2011). *Commercial forestry at a cross-roads: emerging trends in the forest sector of Newfoundland and Labrador*. St. John's, NL: Harris Centre of Memorial University.



THE LESLIE HARRIS CENTRE OF REGIONAL POLICY AND DEVELOPMENT

1st Floor Spencer Hall, St. John's, NL Canada A1C 5S7

Tel: 709 864 6170 Fax: 709 864 3734 www.mun.ca/harriscentre

THE HARRIS CENTRE Memorial University

