

A Report on
Working Forest Conservation Easements

Prepared for:
The Nova Forest Alliance

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The first step of this project entailed researching the efforts and experiences of other land trusts in incorporating forestry into conservation easements. This involved a telephone survey of ten land trusts with a wide range in approaches to conservation easements; synthesizing information, such as template easements and exemplary management plans; and reviewing conservation easement legislation for different provinces and American states where working forest easements are a reality.

Part I of this report summarizes the different approaches, experiences, and information published by the land trusts interviewed. Parts II and III compare these different approaches, and provide recommendations for the most appropriate strategy for Nova Scotia. This includes suggestions as to the expertise required on staff, the monitoring demands of working forest easements and how to address them, and the additional costs involved.

Part IV of this report reviews various guides and manuals for forest management practices, and recommends a set of non-intensive, uneven-aged forest management practices acceptable under a working forest conservation easement.

PART I Summary of Survey Results

Sue Michalsky, Forester, Nature Conservancy of Canada, Alberta office

The Alberta office of the Nature Conservancy of Canada (NCC) was opened in 1990. There are six people on staff, including 2 field positions. NCC currently holds two working forest conservation easements in Alberta. Their easements specify that a management plan has to be followed, and that logging operations have to conform with a 'management map'.

Management plan A 'mutually agreeable' forestry consultant, recommended by NCC, prepares a 20-year management plan that is renewed every 10 years. A staff person participates in setting the terms of reference for the plan, choosing a suitable consultant, and reviewing the final plan. This may take 2 or 3 days of staff time. The management plan may cost the landowner in the order of \$3000. A qualified NCC staff person has prepared one of the management plans.

One of the two NCC working forest easements was reviewed for the purpose of this report. This easement did not specify which topics must be addressed in the management plan. It did, however, list various logging restrictions and property management principles that must be abided by, such as no cutting within 30 meters of a permanent stream, and no cutting on slopes greater than 45 degrees. The easement also specifies that harvesting operations have to meet or exceed the Montana Forestry Best Management Practices for Water Quality as well as the province of Alberta's Guidelines for Conservation and Logging on Private Lands.

Baseline The NCC carries out regular baseline studies which map and describe all developments, habitat types and unique natural features as well as provide a list of plant and wildlife species on a property. Forestland easements may also include a timber inventory.

Monitoring Annual monitoring of working forest easements is carried out by NCC staff, or by a trusted, qualified consultant. Landowners are invited to attend monitoring visits.

Simpler easements may be monitored by qualified volunteers, volunteer organizations, or by summer students. To date, monitoring of easements on managed forestlands has not been more intensive than for other easements, partly because there are so few, and also because the original landowners still own the properties. Michalsky suggests that monitoring may become more intensive in the future as land changes hands. In her opinion, a biologist or other trained staff person could monitor a working forest easement, but may need additional assistance from time to time.

Violations NCC has not yet had any serious violations. However, in the event that a violation is suspected, their first step is to seek additional expertise to verify the violation, and, if possible, work out a mutual arrangement with the landowner in order to remedy the problem. If this latter step doesn't work, NCC places a stop order on the violating activity and attempts to have the problem mediated or arbitrated. As a very last resort, they go to court.

Violations are prevented through regular contact with landowners by stewardship staff. Monitoring is used as an opportunity both to build relationships with landowners, as well as to provide management advice and extension services. The Conservancy also tries to keep landowners informed of their work in Alberta via a special mailing list for conservation easement holders, who are often invited to attend events in their area.

Financial incentives Few financial incentives are in place in Alberta to encourage landowners to place conservation easements on their property. The most significant incentive is the federal tax deduction on the donation of an easement that is applicable to all provinces with easement legislation. NCC also has a paid easement program in Alberta where they purchase conservation easements from landowners in key conservation areas. However, it is very limited in geographic scope.

Costs The Alberta NCC has found that working forest easements are slightly more costly than others. Baseline surveys are more costly due to the timber inventory. In addition, NCC will sometimes write the management plan for a property. Monitoring is expected to become more costly as landowners of working forest easements change.

Funding Most easements in Alberta are funded by the NCC through their donors. While they ask landowners to contribute to a stewardship endowment for their property, landowners are rarely able and/or willing to do so.

Donald Dupres, Field Director, Pacific Forest Trust, Seattle, Washington

Formed in 1993, the Pacific Forest Trust (PFT) is a relatively young land trust that specializes in protecting private, productive forestlands in the northwest United States. To date, PFT has negotiated ten easements for 15,000 acres of forestland in California, Washington and Oregon. PFT has 12 staff members, including foresters, biologists, and lawyers.

Long-term goals PFT has developed a manual, entitled "Working in the Woods", that outlines how to incorporate careful, long-term logging practices into a conservation easement. In this manual, they recommend the establishment of long-term performance goals, whereby the landowner and the land trust agree upon a set of goals for the property that will guide

forest management into the future. For the Pacific northwest, their goals may be to attain a mixed conifer forest with late seral characteristics, including a mix of late successional tree species in a range of age classes, with volumes of standing and downed woody debris similar to that found in old growth forests.

The concept behind setting goals in the easement is to establish what the landowner envisages for the property in 100 years or more. This provides a basis for all future forest management plans, as well as provides guidance to the land trust as to what are considered acceptable practices.

Restrictions In addition to setting goals, the PFT recommends establishing a set of restrictions in the easement, for example, forbidding the harvest of certain underrepresented or threatened tree species; setting a minimum riparian buffer width; and allowing no more than a said volume of wood removed per decade.

Management plan PFT requires a management plan prepared by a professional forester or other natural resource consultant, and reserves the right to review and approve the plan before the commencement of any forest management and harvesting activities.

Monitoring and Violations Monitoring is carried out on an annual basis by PFT staff. In the event of a violation, the Trust may contract a consulting forester for a second opinion. However, their preferred strategy is to avoid a violation before it happens. To this end, the Trust requires that it be notified if the land is sold.

To date, PFT has not had a serious violation of an easement. This may be because they are a young organization, and because most landowners who become involved with the PFT have managed their land well for generations.

Financial incentives Substantial income and state tax benefits encourage landowners to put easements on their wooded properties in the three northwestern states. In order to qualify for tax breaks, the easement must protect significant habitat. PFT will only consider properties greater than 160 acres in size.

Keith Ross, New England Forestry Foundation, New Hampshire

Formed in 1944, the New England Forestry Foundation (NEFF) owns 110 properties and has a total of 40 working forest easements, the largest of which covers 755,000 acres.

Management plan NEFF requires that management plans are prepared by professional foresters, and for easements under 5000 acres, approved by NEFF prior to any management activities. Their easements specify what NEFF wants to see in the plan, including a description of the owner's management objectives, an inventory of forest resources and values, and forest type maps. Management plans must be reviewed and updated every ten years.

Baselines Baseline studies are carried out by NEFF and generally paid for by the landowners. Baselines include inventories of standing timber and other features of a property. The amount

of detail in a baseline study is a function of the potential for violations of the easement. For example, a property with many abutters will require more photo documentation than a property with no houses nearby. Easements are monitored by staff and volunteers, and for the large acreages, the Forest Society of Maine is retained to carry out monitoring using satellite imagery and GIS. NEFF does not have professional foresters on staff, but hires consulting foresters when needed.

Monitoring and Violations To date, NEFF has not had any major violations of an easement. In Mr. Ross' opinion, working forest easements are easier to monitor than other types of easements as there are fewer potential violations. When a violation is suspected, their first step is to notify the landowner and meet at the property to inspect the situation.

To avoid violations, NEFF keeps in touch with landowners on an annual basis. Landowners are also invited to accompany staff on monitoring visits. New landowners are visited shortly after taking possession of a property to introduce the easement, discuss its conditions, walk the land, and build a relationship with the land trust. While first-time easement holders may be motivated by financial incentives, including lower capital gains, income and property taxes, their land also tends to be in good management. Second round easement holders tend to be of greater concern to NEFF, and in general, all land trusts.

Funding A monitoring and enforcement fund is set up for every property accepted by NEFF. Generally, NEFF raises the money for each property endowment. Mr. Ross noted that neighbors are a great source of funding.

Todd Dunham, Director of Land Protection, and Kathy Regan, Conservation specialist; Adirondack Nature Conservancy, New York

The Adirondack Nature Conservancy (ANC) has been involved with conservation easements on managed forestlands in New York State for 27 years. ANC holds a number of small, private easements, in addition to several easements on large parcels of industry-owned forestlands. Landowners are motivated by concerns for the land as well as by the various tax incentives.

After experiencing problems with the language in their older easements, a 'new' generation of working forest easements was developed. The older working forest easements required only that harvesting operations meet the Society of American Forester's Best Management Practices for the state of New York. This led to at least one situation in which a property was cut heavily, yet the cutting was deemed acceptable under the state Best Management Practices. To amend this situation, easement language was modified to require that management plans include specific long-term management objectives and management goals for each stand. In addition, the Conservancy required the development of a professionally prepared management plan that addressed certain basic topics. The Conservancy allows clearcuts up to 25 acres in size, with minimum buffers of 300 feet between clearcuts, provided stumps and material less than four inches in diameter are left on the site.

Management plan The Conservancy has a list of preferred foresters to recommend to landowners needing management plans. Preparation of the plan involves consultation with

both the landowner and a representative from the Conservancy, and the final plan must be reviewed and approved by the Conservancy. The management plan remains effective for 10-15 years. Approvals for additional activities, such as road-building in sensitive areas, are required on a case-by-case basis. The Conservancy is shying away from being prescriptive in their easements in order to avoid micromanagement of properties.

Baseline The Adirondack Nature Conservancy's baseline studies for working forest easements do not differ significantly from other types of easements. The more detailed inventories for working forest easements are usually carried out by the forester preparing the management plan. Landowners are charged a flat fee of US\$500 for a baseline study, regardless of the type of easement. If the landowner is unable to afford this fee, the Conservancy absorbs the cost.

Monitoring Properties are monitored on an annual basis by ANC staff. Properties with new landowners, active harvesting operations or suspected problems may be monitored more often. Industrial-type easements, covering thousands of acres, require intensive monitoring. Landowners are visited once a year, while new landowners may be visited more often than that.

Generally there is at least one person on staff with some background in forestry, whether it be a degree or practical background. Several others amongst the 14 staff have backgrounds in ecology and botany.

The 'new' generation of easements are not easier to monitor, however violations of these easements are easier to identify and define. This is partly because easements now require management plans to have clear long-term goals, and also because easements include a statement of purpose, that explains why the easement exists and the conservation objectives for the property. This statement of intent becomes important when there is confusion interpreting the easement.

Violations Violations of an easement are dealt with by correcting the problem, if possible, or by amending the easement. Landowners can be fined, or, if the issue goes to court, and the Conservancy wins the case, the landowner must pay all the court costs.

Costs and funding The endowment for working forest easements is greater than for other easements. Kathy Regan, ANC's Conservation specialist, factors in a day and a half of a consulting forester's time to review the management plan and assess the harvesting operations. This adds an additional US\$540 onto the cost of the easement. Landowners are asked to make a donation towards the endowment fund. Otherwise, the Conservancy does the fundraising for endowments.

Paul Doscher, Senior Director for Land Conservation & Beth McGuinn, Stewardship Coordinator, Society for the Protection of New Hampshire Forests, NH

The Society for the Protection of New Hampshire Forests (also known as the 'Forest Society') has been active for at least 20 years. During that time, the Forest Society has acquired 422

easements, most of which allow forest harvesting. The Forest Society also owns a fair amount of land in fee simple.

Long-term goals Like the Adirondack Nature Conservancy, the Forest Society has modified their easements over the past 5 years. They have moved away from being prescriptive, and they have added a requirement that each property under forest management have a management plan, and that each plan must address 7 goals, including:

- maintenance or improvement of overall quality of forest products;
- maintenance of soil productivity;
- protection of water quality, wetlands and riparian zones;
- conservation of scenic quality;
- +protection of unique or fragile natural areas;
- protection of unique historic and cultural features; and
- conservation of native plant and animal species.

Management plan Management plans must be prepared by a professional forester licensed in the state of New Hampshire. This forester is also expected to supervise harvesting operations. The Forest Society does not review and approve management plans for every property. Instead, the forester preparing the management plan has to sign a certificate that the management plan is in compliance with the easement. The Forest Society allows easement holders their choice of licensed New Hampshire foresters. The easement recommends that management activities meet the standards described in "Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire".

Baseline Baseline studies are carried out by flying each property, and taking aerial photos of the whole property. The property boundaries are then drawn on the air photos. Photos are also taken on the ground, showing typical forest types, roads, and boundaries. Property features are documented on 2 sets of forms. The more detailed form, the easement property summary sheet, details the general forest type, forest history, soil types, wildlife habitat and signs, nearby protected lands, and other details like donor objectives. The more general form, the baseline documentation form, details the proportion of the property in field, forest, wetland, etc.; the natural features of the property (forest types, rare species, vernal pools); and the manmade features of the property (buildings, roads, utilities, dams, etc.). The baseline also includes a topographical map showing the property boundaries, a property survey, and soils maps for the parcel.

Monitoring Monitoring is carried out annually by flying each property. This work has been contracted out for the past 10 years. On the ground monitoring is carried out every 5 years by staff. Visits are also made to properties that have recently changed hands. Ground monitoring visits take roughly 1.25 - 1.5 days, including preparation, travel, field time and follow-up. The Forest Society has 7 foresters on staff.

Violations To avoid violations, the Forest Society has removed prescriptive language from their easements. To date, they have had only one serious violation of an easement, and this was the only situation in which technically prescriptive language was used in the easement. This particular easement was difficult for a non-forester to comprehend, yet it did not require

a forester to prepare a management plan, nor to supervise the harvesting. The Forest Society also noted several other problems with prescriptive language: first, it doesn't allow for the professional judgement of foresters; second, it doesn't adapt to changes in forest condition; and third, it doesn't allow for changes in technology and knowledge over time.

The Forest Society is also moving away from listing restrictions in their working forest easements. If a restriction is suspected of being violated, the burden of proof is on the land trust to prove there has been a violation. For example, if a landowner is suspected of violating the targets for basal area and canopy cover, the trust has to prove a violation was committed. This may involve hiring a consulting forester to carry out a detailed timber cruise.

The Forest Society's current approach is to specify that a licensed professional forester prepares the management plan, certifies it is in compliance with the easement, and supervises harvesting operations. In the event of a violation, the first step is to require a copy of the management plan. The management plan is then reviewed by staff to ascertain whether or not the management plan meets the goals in the easement. The next step is to ascertain whether or not on-the-ground practices meet the management plan. County or state extension foresters may be asked to provide a second opinion. The next steps depend on whether the logger and/or forester are violating the management plan, or whether the management plan lives up to the easement. In other words, the management plan becomes an enforcement tool. If there is a violation and the forester is at fault, the Forest Society can take it up with the New Hampshire licensing board.

The Forest Society tries to avoid violations by continuing to work with landowners after easements are negotiated, and by sending easement holders regular newsletters.

Incentives and funds People have varied incentives for placing easements on their property: not wanting to see their land developed, large tax deductible donations, reductions in capital gains taxes. Landowners are asked to contribute a minimum of US\$1,000 towards an endowment fund.

Eileen Palmer & Bill Turner, Director, BC Land Conservancy

The BC Land Conservancy has only recently delved into working forest 'restrictive covenants'. To date, they have one signed, and a number of others being developed. They also hold a number of covenants on agricultural and range lands. The BC Land Conservancy often partners with local community conservancies and organizations to co-sign covenants and to help with monitoring and landowner contact.

There are no foresters on staff, and this is why the Land Conservancy relies on the forestry expertise of Silva Forest Foundation (a Forest Stewardship Council accredited certifier). Silva may be involved in writing management plans for landowners, or in reviewing them for the Land Conservancy. If the land is 'certified' by Silva, then it must meet Silva's internationally endorsed standards as a well-managed forest operation, and is audited by Silva on an annual basis.

Monitoring of BC Land Conservancy easements is carried out by summer students and local groups. In this way, funding for the Land Conservancy comes from provincial youth employment programs and fundraising events.

BC legislation allows land trusts in the province to be rewarded a pre-determined fine by landowners who violate their easement. This fine, called a "rent charge", can be substantial.

Carl Powden, Northeast Kingdom Director, and Preston Bristow, Stewardship Coordinator, Vermont Land Trust

The Vermont Land Trust (VLT) has been in existence for 20 years, and over that time, has acquired 700 easements across the state. There are currently 35 people on staff at the Vermont Land Trust spread over several different offices. Whereas the Vermont Nature Conservancy focuses on ecological hot spots in the state, VLT focusses primarily on the working landscape, with most of their easements allowing some degree of forest extraction. VLT is involved with purchasing lands and easements. Lands are bought, encumbered by an easement, and later resold. Roughly 50-60% of their easements are purchased.

Long-term goals To rectify problems encountered with older easements, VLT now specifies three clear forest management objectives in their easements: create a sustained yield of timber products; prevent soil erosion and protect water quality; and manage stands for long rotations that maximize the opportunity for harvesting high quality saw logs, sustained over time, while maintaining a healthy and biologically diverse forest. Target sizes for large diameter high quality saw timber are specified in the easement. The easement also requires that road-building, stream crossings, harvesting and skidding conform to the "Acceptable Management Practices recommended on Logging Jobs in Vermont".

Management plan Vermont Land Trust requires the preparation of a Management Plan that must be approved by the Trust prior to any forest management activities. The Plan must be prepared and management activities conducted under the supervision of a professional forester (with a minimum of a Bachelors degree in forestry from an institution approved by the Society of American Foresters). Every management plan is reviewed by the forester on staff. Additional notification is required prior to commencement of timber harvesting activity.

Baseline Vermont Land Trust does not usually get involved with formal inventories for baseline studies. For purchased easements, the Trust carries out an inventory prior to the purchase. Properties are monitored annually by staff.

Violations When a violation is suspected, monitors report their concerns to the forester on staff, who then confirms whether or not there is a problem. The staff forester may then call upon the county forester for a second opinion. If the loggers were the problem, VLT may insist they come back and correct the damage. If that is not possible, VLT may have the owner sign a restoration plan, which is amended to the management plan, to get the forest back on track. Overall, 2% of their easements are cause for concern.

Costs VLT has adjusted endowment costs upwards assuming that working forest easements are more expensive. Mr. Powden, however, is not convinced this is the case. Currently, a

200-acre property requires an endowment of \$US 3,600. Monies for endowments may come from foundation grants, fund-raisers, and payments over time.

Bernie Hall, The Nature Conservancy, Montana

The Montana Nature Conservancy office has been operating for 16 years. In that time, they have acquired 80 conservation easements and 17 staff, including 5 biologists.

Long-term goals In one of their most recent conservation easements, the Nature Conservancy has assumed the responsibility to manage a 4000 acre property subject to a working forest easement. This easement requires that the forests be managed in an uneven-aged management system that meets five goals:

- to perpetuate old-growth trees in the existing uneven-aged stands;
- to continue the long term process of converting even-aged stands to uneven-aged structures;
- to maintain stands in a healthy, ecologically functioning condition;
- to continue to provide open space and significant natural habitat for wildlife and native plants; and
- to provide for the long-term sustainable flow of forest products on an annual or periodic basis.

This easement requires that forest treatments be designed to favor the healthiest, best formed trees, that active and inactive raptor nests not be disturbed during the nesting season, and that nesting trees not be removed. The easement also differentiates between ‘selective’ and ‘selection’ harvesting, clarifying that the former will likely result in high-grading, whereas the latter improves the quality of the residual stand over time. Appendix D to the easement states that selection harvesting should be the primary method of reaching and sustaining the long-term goals of the easement. It also describes the various stand types on the property, and acceptable prescriptions for each.

Management plan The Montana Nature Conservancy requires that a management plan be prepared by a professional forester and approved by the Conservancy prior to any management activities. If the landowner is receptive, Conservancy staff may recommend several preferred foresters. Easements stipulate the topics that have to be addressed in the management plan. Management plans are updated every 5 years, or whenever needed as indicated by monitoring. Management plans are generally reviewed in-house, or by a forester retained by the Conservancy. Further notification may be required prior to any road building activities. The Montana Best Management Practices are established as a minimum standard in their easements.

Baseline The Montana Nature Conservancy prepares an Easement Documentation Report, similar to a baseline, that provides an accurate representation of the biological and physical condition of the property at the time of the granting of the easement. The detail and scale of this report, or baseline, varies with the size of the operation and the restrictions in the easement. More detailed easements may require in-depth inventories and the establishment of permanent sampling plots. Baselines for working forest easements often take more time to

prepare and the easements longer to negotiate. Easements are monitored at least once a year, and sometimes more often.

Violations To date, the Montana Nature Conservancy has not gone to court over an easement violations. To prevent violations, they maintain ongoing involvement with landowners.

Funding and costs Through a federal Forest Legacy Program, money is made available to the state of Montana and to the Montana TNC to purchase easements that allow timber to be extracted from private woodlots. The landowners in turn receive income and estate tax breaks. Landowners are not expected to provide an endowment for monitoring and potential legal costs. The Montana Nature Conservancy puts 50% more into the endowment funds for working forest endowments.

Thom Larson, Forester, Brandywine Conservancy, Pennsylvania

Founded in the 1960s, the Brandywine Conservancy (BC) did not become involved in working forest easements until the mid-80s. Today, the Conservancy holds 400 easements, 20% of which allow some limited amount of harvesting subject to an approved management plan. Nine staff are involved with land stewardship activities.

Management plan The Brandywine Conservancy requires a professionally prepared management plan (by a forester meeting the criteria of the Society of American Foresters). Thom Larson, the forester on staff, reviews and approves each management plan. Plans are renewed every 10 years. Management plans must satisfy the following conditions:

- tree harvesting and removal must not adversely affect surface or ground water quality or the future regeneration capacity or species composition of the woodland;
- cutting should not result in the under- or over-representation of any single tree species, or in ‘high grading’, unless this cutting is to upgrade the quality of the woodland, or to remove nonnative, invasive, or diseased species which endanger the health of other woodland species;
- no cutting should occur within environmentally sensitive areas, including wildlife habitat areas, rare, uncommon or endangered plant communities, wetlands, alluvial floodplains, or slopes greater than 25% in grade;
- Standing dead trees, branches, slash and other harvesting residuals should be retained in the woodland for use as wildlife shelters, dens, and refuges, and to replenish soil nutrients and organic matter; and
- Road and skid trail building, log landings and erosion control devices must meet the standards of the Pennsylvania Bureau of Forestry and the Pennsylvania Department of Environmental Resources.

Baseline Baselines for working forest easements do not include complete forest inventories - this is generally done by the forester preparing the management plan. Staff naturalists document the flora and fauna on a property as part of the generic baseline study for all conservation easements. Thom Larson may spend an additional 9-18 hours on a baseline study for a 100-acre working forest easement.

Monitoring Monitoring of working forest easements is carried out by two staff members and generally takes more time than for other easements. Staff members have a wide array of backgrounds, including landscape architecture, planning, botany, hydrology and wildlife biology. Mr. Larson is called on to confirm violations of working forest easements.

Violations The Brandywine Conservancy has had 10-12 major violations over the past 4-5 years. Most of these violations have been a result of over-harvesting of individual, high-valued trees, as well as salvage harvesting operations after big storms. Second generation owners are one of their biggest problems as they often do not understand the intent of the easement or how it will limit their activities and decisions. In the event of a violation, the Conservancy can require the preparation of a restoration plan, or may fine the violator.

Violations are prevented by maintaining communication with landowners (with monitoring visits and newsletters); warning landowners against certain logging crews; and by keeping a close eye on tree-marking and logging crews.

According to Mr. Larson, it is not difficult to recognize when a violation has occurred - the large, unmarked stumps of valuable species are not difficult to locate. Before a harvest, tree-markers select which trees are to be removed by marking the tree in several places. Mr. Larson checks the marking before harvesting takes place to make sure it fits within the goals of the easement; he also keeps an eye on the ongoing harvesting operations to make sure unmarked trees are not being cut.

Costs Mr. Larson has found that working forest easements are less time consuming and costly than easements with reserved building rights. Endowments funds come from landowners, private foundations, as well as State funds. The endowment towards a 100-acre easement is roughly \$3,500.

Kent Gilges, The Nature Conservancy, Forest Bank

The Forest Bank project is a novel approach to ensuring good forestry practices on privately owned forestlands. The Nature Conservancy pays landowners the fair market value for the standing timber on their property in exchange for an easement that allows the Nature Conservancy to be the manager of the land in perpetuity. Over the next several years, TNC plans to have these lands green certified as well-managed forests by the Forest Stewardship Council.

Andy Zepp, Land Trust Alliance, Washington, DC

The Land Trust Alliance has convened a working group on managed forest easements in order to establish consensus on some basic parameters for all trusts holding or planning to hold working forest easements. As part of this exercise, there will be a retreat, draft documents circulated, a publication, and sessions held at the next LTA conference.

PART II Comparison of approaches to working forest easements

There is a wide variation in approaches to conservation easements on managed forestlands. Pacific Forest Trust is perceived as having one of the most regulatory, or prescriptive approaches, with very specific goals, a list of requirements for the Management Plan, and a list of specific restrictions (such as maximum size of forest openings, maximum harvest volumes, and a minimum leave stand).

At the other end of the spectrum, a number of land trusts in the northeastern United States have traditionally taken a more open space easement approach, with the goal of removing undesired development rights but not affecting other management activities. Their older easements might have referred simply to the state Best Management Practices or ‘sustained yield forestry’. Under this scenario, high-grading (taking the best, leaving the rest) and careless road building were not uncommon, and there were no requirements for economic and ecological values to be maintained over time.

Until recently, the Adirondack Nature Conservancy, New England Forestry Foundation and the Society for the Protection of New Hampshire Forests (the Forest Society) were representative of this approach. However, each land trust has adopted a number of changes over the past 5-10 years to improve the quality of forest management and to improve easement language. All land trusts surveyed now require that a Management Plan be prepared by a professional forester, and with the exception of the Forest Society, the management plan must be reviewed and approved by the Land Trust prior to any forest harvesting activities.

While the Forest Society now requires a management plan that is prepared by a licensed professional forester, they have shied away from being prescriptive, cautioning that it does not allow for unforeseen and unpredictable changes over time, nor does it allow for the professional judgement of foresters. Instead, they have established seven long-term goals, and referenced two documents as acceptable best management practices. The Adirondack Nature Conservancy and NEFF allow the landowner to set their own objectives and long-term management goals, which have to meet the intended purpose of the easement. No goals are specified in their ‘model’ easements, their list of restrictions are fairly broad and nonspecific, and management practices are expected to meet a set of regional Best Management Practices. The Alberta Nature Conservancy of Canada has similar, non-specific easements with generic restrictions which reference the Montana Best Management Practices. The BC Land Conservancy’s approach was somewhat unclear, and it appears that they rely heavily upon a local eco-forestry foundation to establish, guide and monitor forest management practices.

The ‘middle’ of the spectrum is somewhere between the less prescriptive approach of ANC, NEFF and the SPNHF, and the cautious, regulated approach of the Pacific Forest Trust. This middle ground is occupied by the Vermont Land Trust, the Brandywine Conservancy, and the Montana Nature Conservancy. The primary objective of the Vermont Land Trust model easement is to manage for high quality timber products while maintaining a healthy and diverse forest. It differs from the model easement of the Forest Society in that VLT approves all management plans, and they carry out annual monitoring of properties. It differs from the Pacific Forest Trust in that the VLT easement does not directly address the protection of the significant biological attributes of the forest.

In one of their most recent easements, the Montana Nature Conservancy describes the acceptable silviculture methods for the different stand types on the property, and specifies that only selection harvesting - *not selective harvesting* - is acceptable. They go one step further by specifying a set of ecological goals that must be met by an uneven-aged management system, such as perpetuating old-growth trees in the existing uneven-aged stands, and providing significant natural habitat for wildlife and native plants.

The Brandywine Conservancy easement does not allow highgrading, cutting in environmentally sensitive areas, nor unrestrained promotion of economically important species. It is also one of the few trusts whose easement directly addresses the maintenance of woody debris and tree diversity.

The differences in approaches to conservation easements may be a result of differences in regulatory context in which each land trust works, as well as the culture of timber harvest and use of professional foresters (Wayburn, 1999). Western states have a highly regulated forest industry, which may be a consequence in part of the high value of individual trees. New Hampshire, on the other hand, has a long history of distaste for government controls and regulations, which is reflected in their less prescriptive approach to working forest easements. In Vermont, the work of the Vermont Land Trust is made easier by state regulations which require that landowners follow state-approved forest management plans in order to qualify for land use tax breaks.

The drawbacks of working forest easements are that they often require more work than other kinds of easements. They may be more management intensive, and involve more initial and ongoing interaction with both landowners and their managers. They may also be more costly to design and monitor, and may require additional expertise to evaluate forest practices.

PART III Conclusions and Recommendations to the Nova Scotia Nature Trust

Justifying working forest easements Easement legislation requires that a land trust justify the ‘conservation’ value of a conservation easement. Similarly, a land trust’s by-laws require that an easement has conservation merit. Given these expectations, how does one justify a conservation easement that allows timber harvesting?

In the United States, it is very important that a land trust prove their easements serve a ‘public good’. To this end, the government has recognized that green space is a ‘public good’, whether it be a field, wetland, forest, or working forest. Forestlands that are managed for timber are seen to preserve forestlands (as opposed to some other activity that might cause permanent or semi-permanent conversion of forestlands into other uses). Provided the forest practices meet sound long-term ecological and silvicultural goals, these forestlands contribute a myriad of public benefits, including watershed protection, wildlife habitat, carbon storage, protection of endangered and threatened species, habitat for native species, recreational opportunities, and scenic and aesthetic values (Wayburn 1999). Overall, working forest easements could be described as being for the “protection of a relatively natural habitat of fish, wildlife, or plants, or similar ecosystem”. From an economic perspective, working forest easements could be considered more beneficial than ‘forever wild’ easements as they allow for a long-term supply of forest products, therefore contributing to the economic vitality in forest-dependent regions.

Recommendation: The broad public and ecological benefits of working forest easements should be explicitly stated.

Goals & objectives

Most of the land trusts surveyed either include a set of goals in their model working forest easement, or they require that the management plan outline the landowner’s goals and objectives for the property. Several land trusts pointed out the importance of having a clear *statement of purpose* in the easement, which could provide guidance in interpreting the easement.

Establishing long-term ecological and economic goals in an easement helps to specify the desired end results, while giving the landowner or forest manager the responsibility to choose the tools and technology to reach the agreed upon goals (Boelhower 1995). These goals can be very specific, such as maintaining a minimum number of snags per acre, or general, like the protection of water quality.

Recommendation: Working forest easements should have a clear statement of purpose, as well as a set of long-term ecological and economic goals. At a minimum, the long-term goals of an easement should address both long-term economic issues, such as the maintenance of good quality growing stock, as well as ecological issues, such as protection of unique and fragile natural areas; conservation of native plant and animal species; protection of water quality and wetlands; and maintenance of soil productivity, site fertility and wildlife habitat (especially for species sensitive to fragmentation, edge creation, and loss of large woody debris).

An easement may become even more specific, and characterize the forest ecosystem that management activities must strive towards, such as a mix of dominant tree species (including x,y,z), a range of age classes, volumes of standing dead trees and large downed woody debris similar to those in late seral forests, a multi-story canopy with no less than 'x' % closure, and an average of 'x' dominant trees 'x' inches in diameter per acre.

Working forest easements should also present no-cut options for future landowners who do not wish to extract timber from their property.

Management plan

All land trusts surveyed require that a management plan consistent with the terms and goals of the easement be prepared by a professional forester, and with the exception of the Forest Society, reviewed and approved by the land trust prior to the commencement of forest management activities.

Recommendation: A management plan, consistent with the terms and goals of the easement, should be prepared by a 'mutually agreeable' forester or other acceptable individual. The NS Nature Trust should retain the right to review and approve the plan prior to the commencement of forest management activities. The easement should specify the minimum parameters to be addressed in the plan, such as an inventory of the physical and natural features of the land; a description of stand management history; silvicultural and harvest methods; an access plan; erosion control measures; strategies for sensitive habitats; and overall ecosystem management considerations.

Baseline study

All land trusts surveyed carry out baselines for their easements. While some do extra work for their working forest easements, others follow the same methodology used for their more typical easements. In the latter case, the land trusts may rely on the forester's management plan for detailed forest inventory information, or on the information collected during annual monitoring visits. Several organizations suggested that baselines for working forest easements are not as time consuming as baselines for easements with reserved building rights.

According to Connie Best, Managing Director of the Pacific Forest Trust, the ability to enforce an easement through time is seriously undermined without good baseline documentation in place when the easement is first established. For example, without a detailed baseline study, the management objectives for a property may not include the necessary protection of particular features on the property, such as highly erosive soils, raptor nests, or habitat for vulnerable, threatened and endangered species.

According to Wayburn (1994), baselines should include descriptions of forest condition, site history and ecology, timber and biological inventories, characterizations of habitat, as well as mapping of waterways, roads and general vegetation types.

Recommendation: At a minimum, the Nature Trust should carry out the normal baseline study of a property with a conservation easement. Depending on the time and resources available, the Nature Trust may want to rely on the management plan for more detailed forest inventory

information, or they may want to hire a forester to carry out a timber cruise as part of the initial baseline study (and have a staff person accompany the forester to learn how to do cruises for future easements).

Restrictions

In addition to a set of fairly generic restrictions pertinent to most conservation easements (such as restrictions on new roads, watercourse manipulation, excavation of fill materials), a land trust may want to follow the example of the PFT, and adopt a specific set of restrictions pertinent to a commercial timber harvest. For example, the land trust may want to establish a maximum harvest volume per decade well below any growth rate to promote the buildup of older age classes. They may also want to establish a maximum opening size or a minimum riparian no-cut buffer zone.

Recommendation: The Nature Trust should review the restrictions in various model easements, such as those of the Pacific Forest Trust, and develop a set appropriate to the Nova Scotia context.

Monitoring

Monitoring for most of the land trusts that were surveyed is carried out by staff, with occasional help from volunteers, and consulting and extension foresters. Staff monitors may be foresters, biologists or other trained individuals. The majority of monitoring work appears to be carried out by non-foresters with some forestry training. In the event of a suspected violation, the monitors may call upon the staff forester, if one exists, a county/extension forester, or a consulting forester to confirm the violation.

Most land trusts indicated that monitoring needs for working forest easements are more intensive and expensive than for other easements.

Recommendation: Nature Trust staff and trained volunteers should be able to carry out much of the monitoring for working forest easements. If a violation is suspected, the Nature Trust may want to seek volunteer or paid advice from provincial or consulting foresters, or other experienced individuals with a strong practical background in forestry or forest biology. Small land trusts like the Nature Trust may want to establish a panel of experts to help review management activities and interpret forestry terms in the easement. Available forestry expertise should be close at hand.

Violations

The incidence of significant easement violations was generally very low. This is partly because 80% of easement lands are still owned by the individuals who first negotiated the easement. Second generation easement holders are widely recognized as higher risk landowners. In the event of a significant violation, land trusts have chosen a variety of approaches: the landowner is fined, a restoration plan is required, the forester loses their license, loggers are asked to return and 'correct' any damage, or an easement is rewritten.

All land trusts indicated that avoiding violations was of high priority. Techniques included ongoing communications with successive landowners, in particular visits with new

landowners; landowner newsletters; management plan approval, as well as approvals of amendments if there are significant changes in circumstances; financial retribution; and clarity in easement drafting and in the establishment of long-term goals.

Recommendation: The Nature Trust should take as many preventative measures as possible to avoid violations of easements. According to other land trusts, the most important preventative measures are immediate contact with new landowners, including a visit to the woodlot and review of the management plan and easement with the new landowners, as well as ongoing contact through newsletters, monitoring visits, events, etc. In dealing with violations, taking the landowner to court should be considered the last resort after all other options are exhausted. Some of these other ‘options’ are mentioned above.

Costs

Two of the nine organizations contacted have adopted higher endowments for working forest easements (the Montana Nature Conservancy requires 50% more). A staff person from one of these organizations didn't feel the higher endowment for the working forest easement was justified. Others mentioned that working forest easements are less time-consuming and costly than easements with reserved building rights.

Recommendation: The Nature Trust may want to adopt a higher endowment for working forest easements. This rate should be comparable to the rates established by other land trusts.

Funding

Various sources of funding for working forest easements have been identified: foundation grants, neighbors, a proportion of timber revenues, the landowners, government coffers, fundraising events, and sponsors. One trust suggested linking up with provincial government agencies for in-kind help with monitoring, baselines and outside expertise.

Recommendation: All the above-mentioned funding sources should be considered.

Financial incentives for landowners

Financial incentives for saving land are much greater in United States. Property and capital gains taxes are reduced, and tax-deductible receipts issued for the ‘donation’ of the easement. Some land trusts may even pay for the value of the easement (including the Montana Nature Conservancy, Vermont Land Trust, Forest Bank project, and the Brandywine Conservancy).

Recommendation: Continue to lobby the government to improve the financial incentives for protecting private land.

PART IV An overview of Best Management Practices

While a statement of purpose, long-term goals, and a set of restrictions are key ingredients in a working forest easement, a land trust may also want to select a set of forestry guidelines that have to be met by the forester preparing the management plan, as well as by the tree-markers, loggers, and contractors constructing roads, landings and bridges.

There are no Best Management Practices (BMPs) in Nova Scotia that would meet the criteria of the province's Conservation Easement Act, nor the conservation mandate of the Nova Scotia Nature Trust. Therefore we had to go further afield to find a set of acceptable BMPs for working forest easements. A variety of existing guidelines were reviewed and are described below. Full references are cited in the reference list.

Singleton et al. *Conservation guidelines for ecologically-sensitive forested sites on private woodlots within the Fundy Model Forest*

These guidelines were written to help private landowners in the Fundy Model Forest conserve unique, rare and under-represented forest community types on their land. Prior to European settlement, long-lived, late-successional tree species were much more widespread in New Brunswick. Centuries of land clearing and wood cutting have greatly reduced their abundance and the average age of forest stands.

Singleton's guidelines focus on the silvics of the dominant tree species in each community type, and provide various options for promoting and maintaining these species on the landscape. Many of these community types are also found in Nova Scotia, such as hemlock slope forests, pine-oak forests, rich northern hardwood forest, and coastal ravine red spruce forests. The "General Management Recommendations" could be modified slightly for use over a broader land base to restore forest communities that have been reduced or lost. The recommendations in "Buffer Management" follow the same general principles as those outlined in the Ontario silviculture manuals for the Great Lakes St. Lawrence region. These guidelines also outline harvest frequencies, harvesting practices, and age of tree harvest for maintaining and promoting particular tree species and their associated flora and fauna.

While these guidelines are an excellent starting point, they do not cover the range of management considerations, such as riparian issues, road-building, erosion control, soils, unique and significant habitats, felling practices, and aesthetic concerns. In addition, many landowners have inherited poorly managed woodlots from their predecessors. Under such circumstances, the landowner may want to consider restoration forestry, in which they actively restore the forest to its original structure, age distribution and species composition by promoting and in-planting long-lived Acadian tree species, and selecting against over-represented, short-lived tree species, such as white birch, red maple, and white spruce.

New Hampshire Forest Sustainability Standards Work Team. *Good Forestry in the Granite State - Recommended Voluntary Forest Management Practices for New Hampshire.*

This set of guidelines was produced by a team of volunteers representing forestry, wildlife, water quality, and recreational interests. For the most part, these guidelines are very good, covering a range of topics, including:

- maintenance of soil productivity and minimization of erosion and soil damage;
- careful practices near wetlands and watercourses;
- maintenance of water quality;
- specific habitat issues (such as cavity trees, mast trees, and beaver openings);
- unique features (such as rare plants, vernal pools, seeps, raptor nesting trees, eagle and osprey nests, heron colonies, and old growth forests);
- timber quality and supply (with sections on regeneration, forest structure, managing for high-quality trees, controlling logging damage, and dealing with insect damage and disease); and
- aesthetic considerations (such as timing of management activities, location of truck roads, skid trails and landings, and disposal of slash).

Section 4, “Unique and Fragile Areas”, is excellent, as is Section 5.4, “Controlling Logging Damage”. Overall, the manual is very user-friendly, very readable, and has lots of useful visuals. It also presents a range of options to the landowner. For the Nature Trust, there is one major problem with this manual, and that is the acceptance of even-aged management techniques. Even with forest management, conservation has to be the primary intent of a working forest conservation easement. Timber production must be secondary to this primary goal. Consequently, harvesting methods and techniques that compromise the ecological values of a woodlot are not acceptable. Numerous scientific papers have demonstrated the often severe impacts of clearcutting on water quality, soil productivity and fertility, and wildlife (especially those species sensitive to edge creation, forest fragmentation, and the removal of the structural attributes of older forests). Degrading forest ecosystems is contrary to the objectives and by-laws of the NS Nature Trust.

An additional problem with these guidelines is the recommendations in Section 3.2 that promote edge habitat for game species such as white-tailed deer, snowshoe hares, and ruffed grouse. While hunting is an accepted practice for many properties with conservation easements, creating permanent openings in areas of continuous forest cover is destructive to many forest interior species, including various songbirds (migrant warblers, thrushes, vireos and flycatchers), goshawks, and various mammals (such as marten and fisher). Due to the extent to which the current landscape has been fragmented by road and power corridors, forest clearcutting, and urban development, many forest interior species are declining in numbers. Consequently, there is no ecological justification for further fragmenting our forested landscapes; indeed efforts should be made to minimize any further forest fragmentation and to restore forest cover.

Cullen. *BMP's for Erosion Control on Timber Harvesting Operations in NH.*

This set of BMPs produced by the New Hampshire Department of Resources and Economic Development is a very good complement to *Good Forestry in the Granite State*. It has excellent visuals, is very readable, and covers a range of subjects, including truck haul roads, skid trails and log landings, with details on how to construct water bars, reverse grades, culverts, corduroys, bridges, fords and other devices to prevent erosion. It also goes into some detail on wetlands, and how to identify them by the assemblages of plants, shrubs and tree species.

Ontario Ministry of Natural Resources. *A silvicultural guide for the tolerant hardwood forest in Ontario.*

Ontario Ministry of Natural Resources. *A silvicultural guide for the Great Lakes-St. Lawrence Conifer forest in Ontario.*

These technical guides are based on information and research carried out over many years in southern Ontario and elsewhere. They are scientifically thorough documents that outline the silvics and harvesting techniques for the economically valuable trees of southern Ontario. While they are tailored to Ontario, much of the information is also applicable to the forests of Nova Scotia.

Various biological issues are touched upon in two sections: “Habitat Management Considerations” and “Integrating Timber and Wildlife Habitat Management”. This is a vast improvement over many other silviculture guides. For the purposes of a conservation easement, high priority would be placed on the wildlife habitat considerations. This is particularly relevant to the discussion of white pine regeneration. The conifer guide recommends that the uniform shelterwood method be used to harvest and regenerate white pine. This entails harvesting white pine in stages, with the final stage involving complete overstory removal. Elsewhere, the guide recommends leaving 16 veteran trees per hectare to maintain wildlife habitat. While leaving a few veteran trees is better than complete overstory removal, it does not differ significantly from a clearcut. There are still problems with an inadequate abundance of cavity trees, snags, and large woody debris, a lack of vertical and horizontal structural diversity, and a concomitant decline in species richness.

Anderson and Rice. *A Tree-Marking Guide For The Tolerant Hardwoods Working Group in Ontario.*

This publication is meant to be a complement to the OMNR silviculture guides described above. It focuses on the use of tree-marking procedures for various partial cutting systems, combining the silvical and ecological characteristics of trees to help the tree-marker identify which trees are to be cut and which are to be left.

Schneider. *MacPhail Woods Ecological Forestry Project.*

Gary Schneider has created an amazing website that describes the MacPhail Woods Ecological Forestry Project. This website reviews the ecological effects of clearcutting and forest fragmentation, and delves into restoration forestry, providing information on which species to cut and which to favour or plant, and how to go about restoring woodlots to the original age class distribution and species composition of the early Acadian forests.

Jewett. *Forestry Best Management Practices for the Maintenance of Water Quality*

This literature review makes use of many different Best Management Practice publications collected from across North America. Suggestions from each are included under different subject headings. It is a good reference, but is not user-friendly like the New Hampshire BMPs.

Recommendations towards Best Management Practices to the Nova Scotia Nature Trust

The guidelines that best capture the spirit and intentions of the Nova Scotia Nature Trust are Singleton's *Conservation Guidelines for ecologically-sensitive forested sites on private woodlots within the Fundy Model Forest*. While these guidelines are tailored to New Brunswick, the basic management recommendations and the management approach can be applied to Nova Scotia. However, there are a number of management issues that are not covered in these guidelines, such as water quality, soil productivity, unique features, timber quality, and aesthetic considerations. Omitting the even-aged management options, these issues are addressed satisfactorily in *Good Forestry in the Granite State* and in Cullen's *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire*. Gary Schneider provides a good introduction to restoration forestry for those landowners interested in restoring degraded woodlots.

The Ontario silviculture guides are invaluable tools that are highly applicable to Nova Scotia. Little scientific research has been carried out in the Maritimes on the silvics of Acadian tree species and how to regenerate them using uneven-aged management techniques. The Ontario guides are the next best thing, and cover many of the same tree species common to Nova Scotia. From a conservation perspective, there is one significant concern with these guides, and that is the recommendation to carry out complete overstory removal during a shelterwood cut. Leaving at least 40% of the overstory in a shelterwood cut should be a minimum target, but 50% or more would be preferable.

Conclusions

Based on the results of the first phase of this project, we now have a much better understanding of working forest easements, the variety of approaches towards them, and what would be the best options for Nova Scotia. This research has revealed a promising new opportunity and a strong base of experience to draw from. We would also like to make four recommendations based on our findings:

First, we recommend the Nova Forest Alliance proceed with funding the next steps of the project outlined in our initial proposal. The next stage of this project entails taking the information gathered from other jurisdictions and testing its applicability and feasibility within the Nova Scotia context. This includes the development of a draft conservation easement, along with potential (and realistic) goals, restrictions, and prescriptions, solutions to dealing with violations, and clarification of how such an easement would fit within the existing legislative framework, particularly the Conservation Easement Act. The last phase would involve working through a management plan that is acceptable to the landowner and the Nature Trust and that lives up to the conditions of the easement, and testing the applicability of concepts developed elsewhere, including Best Management Practices.

The end result of this additional work would be clear guidelines on using working forest easements in Nova Scotia. This would include an easement template, sample management plan, and easement management/enforcement recommendations specific to the Nova Scotia context. It would also include specific recommendations for any changes required to legislation or Best Management Practices, and specific organizational needs to use this tool in Nova Scotia. This second phase would include consulting with legal and forestry professionals.

There are several major obstacles that will slow the progress towards working forest easements in Nova Scotia. We recommend the Nova Forest Alliance consider means of addressing these obstacles through research, support for training, etc. One of the greatest obstacles is the scarcity in forestry professionals familiar with careful logging, felling, skidding and road-building techniques, and with silviculture techniques other than even-aged forest management. This includes road contractors, loggers, foresters, *and* landowners. Finding trustworthy logging crews and foresters experienced in uneven-aged management can be a problem anywhere, but in Nova Scotia, this problem will be particularly significant.

In addition, millions of dollars of government research money has gone into promoting and encouraging even-aged forest management techniques. There has been very little research, however, into the maintenance, promotion and regeneration of the long-lived and valuable Acadian tree species. We can ‘borrow’ from the scientifically-based techniques developed in Ontario, but we should also invest in more locally-based research that is publicly available, as well as develop model woodlots that demonstrate uneven-aged management techniques.

Lastly, this project highlights the need to develop conservation guidelines for forest practices here in Nova Scotia. Singleton et al. developed guidelines for the Fundy Model Forest in New Brunswick. A set of similar guidelines, tailored to Nova Scotia, and more broadly applicable, are much in need, and would be greatly welcomed by woodlot owners and others. Such a

project is a major undertaking, however the benefits would clearly justify the costs.

References

Anderson, H.W. and Rice, J.A. 1993. A Tree-Marking Guide For The Tolerant Hardwoods Working Group in Ontario. Ontario Ministry of Natural Resources, Science and Technology Series. Volume 8.

Boelhower, Mary Ellen. 1995. Forests Forever: A Comprehensive Evaluation of Conservation Easements on Working Forests in Maine, New Hampshire, and Vermont. New Hampshire Conservation Institute

Boelhower, Mary Ellen. 1995. Forests Forever. Exchange. Land Trust Alliance. Spring, 1995.

Cullen, JB. 1996. BMP's for Erosion Control on Timber Harvesting Operations in NH. State of NH, Department of Resources and Economic Development, Division of Forests and Lands

Jewett, John. 1996. Forestry Best Management Practices for the Maintenance of Water Quality (A literature Review). Prepared for the Fundy Model Forest Water resources Subgroup.

New Hampshire Forest Sustainability Standards Work Team. 1997. *Good Forestry in the Granite State - Recommended Voluntary Forest Management Practices for New Hampshire*. NH Division of Forests and Lands and the Society for the Protection of New Hampshire Forests.

Ontario Ministry of Natural Resources. 1998. A silvicultural guide for the tolerant hardwood forest in Ontario. Ont. Min. Nat. Resour. Queen's Printer for Ontario. Toronto. 500p.

Ontario Ministry of Natural Resources. 1998. A silvicultural guide for the Great Lakes-St. Lawrence conifer forest in Ontario. Ont. Min. Nat. Resour. Queen's Printer for Ontario. Toronto. 424p.

Schneider, Gary. *MacPhail Woods Ecological Forestry Project*. www3.pei.sympatico.ca/garyschneider

Singleton, J.; Loo, J; Foley, J. 1999. *Conservation Guidelines for ecologically-sensitive forested sites on private woodlots within the Fundy Model Forest*. Canadian Forest Service - Atlantic Forestry Centre.

Slee, Kendall. 1998. Evolving Easements on Working Forestlands. Exchange. Land Trust Alliance. Spring, 1998.

Wayburn, Laurie. 1999. Developing Consensus on Conservation Easements on Managed Forestlands. Exchange. Land Trust Alliance. Fall, 1999

Wayburn, Laurie. 1994. Saving the Forests for the Trees, and Other Values. The Back Forty.