



Agriculture and
Forestry

State of the Forest Report 2010

State of the Forest Report

2010

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Table of Contents

List of Figures	
List of Tables	
A Message from the Minister	7
Executive Summary	8
Résumé	9
Preface	10
History 2000-2010	11
Introduction	14
Land Use	15
Forest Land Ownership	17
Parks, Protected Natural Areas, and Wildlife Management Areas	18
Coverture	18
Forest Age	21
Forest Volume	22
Harvest Statistics 2001-2010	24
Sustainable Harvest and Forest Dynamics	25
Nursery Production	28
Private Land Forest Management	30
Public Forest Management	31
Forest Fire Protection	33
Future Programming	34
Diversifying Forest-based Wealth Creation	34
Setting Goals and Targets for Public Land	35
Increasing Forested Protected Areas	35
Increasing Community Involvement in Public Land Forest Management	35
Planning at the Landscape Level	35
Balancing Private Land Incentives	36
Adapting to Climate Change	36
Literature Cited	36

List of Figures

Figure 1.	Prince Edward Island forest from 1900-2010	16
Figure 2.	Distribution of per cent covertime of the forest in Prince Edward Island	18
Figure 3.	Change in broad forest covertime in Prince Edward Island from 1980 to 2010	19
Figure 4.	Age class distribution of the forest of Prince Edward Island in 2000 and 2010	22
Figure 5.	Amount of forest area and total merchantable volume in 1980, 1990, 2000, and 2010	22
Figure 6.	Primary forest products harvested on Prince Edward Island for 2001 to 2010	24
Figure 7.	Per cent distribution of origin for clear cut stands for 2000 and 2010 reporting periods	25
Figure 8.	Sustainable harvest level of total merchantable volume and the operable standing inventory for management scenarios representing i) maximum sustainable harvest, ii) average harvest level from 2000-2006, and iii) average harvest level from 2007-2010.....	27
Figure 9.	Current age class distribution and future age class distributions resultant from 100-years of forest management under three scenarios, including: i) maximum sustainable harvest, ii) average harvest from 2000-2006, and iii) average harvest from 2007-2010	28
Figure 10.	Area treated and total public investment in private land silviculture from 2001 to 2010	30
Figure 11.	Revenue generation and associated harvest and silviculture area on publicly owned forest between 2001 and 2010	32
Figure 12.	Summary of forest fires in Prince Edward Island for 2001-2010	33

List of Tables

Table 1	Land use category estimates for 2010	15
Table 2	Amount of forest area in natural, plantation, and regenerating forest types	15
Table 3.	Net area of forest land use type change from 2000 to 2010.....	16
Table 4.	Forest land ownership categories for Prince Edward Island in 2010.....	17
Table 5.	Summary of protected and natural areas on Prince Edward Island.....	18
Table 6.	Community type and per cent distribution of the forest of Prince Edward Island in 2010	20
Table 7.	Distribution of forest in vegetative community types.....	21
Table 8.	Per cent of merchantable volume by tree species for 1990, 2000, and 2010	23
Table 9.	Product potential of hardwood and softwood described in volume and per cent of total standing inventory	24
Table 10.	J.F. Gaudet Nursery conifer production summary for periods of 1981-1990, 1991-2000, and 2001-2010. Numbers are listed in thousands of trees.....	29
Table 11.	J.F. Gaudet Nursery broadleaf production summary for periods of 1981-1990, 1991-2000, and 2001-2010. Numbers are listed in thousands of trees.....	29
Table 12.	Activity summary of silviculture investment on private land between 2001 and 2010.....	31

A Message from the Minister

I am pleased to release the 2010 State of the Forest Report, one of the products developed using Prince Edward Island's Corporate Land Use Inventory (CLUI). Using aerial photography, interpretation, and ground plots, our CLUI maps land use on the Island every ten years. PEI is the first province in Canada to have completed a second comprehensive inventory, making us the first jurisdiction able to begin looking at land use changes and trends over time.

Although the *Forest Management Act* requires Government to report on forest growth and traditional commodity products, the 2010 State of the Forest Report goes further. Our Government recognizes that forests are important not only for the wood they produce, but also for the range of economic benefits and ecological goods and services they provide. Sustainably-managed forests give us timber, non-timber products such as food and medicine, and services such as wildlife habitat, flood control, clean air and water, and carbon storage, among many others. While this report includes the traditional measures of softwood and hardwood, it also takes a first, preliminary look at long-lived and short-lived forest communities as well as some of our rare forest types.

Over the past decade, Prince Edward Island's forest area declined 1.3%, primarily as a result of the conversion of forest land to agriculture. Our more natural forest types continued to decrease, while the area of plantations and recently harvested forest increased. What happens on the landscape is influenced by market demand and the decisions of some 16,000 individual woodlot owners across the Province. Through my Department's forest management programs, we aim to provide woodlot owners with options for managing their forests, as well as financial assistance for sustainable forest management. As you will see from this report, the focus of this work has shifted over the past decade, based on input from Islanders and our Forest Policy. We have more to do, and this report sets out our priorities for the coming years.

I believe healthy forests are essential for a healthy Island. Forests are a critical component of our natural capital. Through wise management, we can realize both wealth creation and enhanced forest quality, ensuring that we leave future generations with forests better than those we have inherited. Achieving this vision will require partnerships among Government, non-government groups, woodlot owners and industry – we all have a role to play. Information such as that in the State of the Forest Report will help us track our progress.



George Webster, *Minister*

Department of Agriculture and Forestry

Executive Summary

The forest on Prince Edward Island provides many values. It is home to a wide variety of plants and animals and also provides a source of wealth and employment to many Islanders. Additionally, the forest is seen as a source of recreation that contributes to a healthy, active lifestyle.

The forest industry and thousands of landowners benefited from strong economic conditions between 2000 and 2005. A strong export demand for commodity lumber and favorable exchange rates allowed for record softwood harvests and higher stumpages. After 2005, there was a reduction in the demand for softwood commodity products, which resulted in a closure of the Island's largest sawmill (Georgetown Timber). At the same time, surging prices for home heating oil initiated the switch in focus of forest harvesting to hardwood-dominated stands to provide fuel for domestic heating.

Analysis of the Corporate Land Use Inventory and field data indicate that the forest remains the dominate feature on the Island landscape, covering some 250,000 hectares and containing merchantable wood volume in excess of 28 million cubic meters. Compared to 2000, the forest area in 2010 represents a 1.3 per cent decrease. Changes in forest land use are the result of individual decisions made by some 16,000 individual land owners. The Provincial Government is responsible for sustainably managing approximately 12 per cent and tries to influence the remaining 88 per cent through various incentive-based programs.

Accurately predicting the condition of the future forest of Prince Edward Island is extremely difficult. Thousands of individuals collectively own the forest, which is divided into many small parcels. As such, estimating a maximum annual allowable cut (AAC) for Prince Edward Island is virtually impossible and doing so would not be responsible. However, an analysis of computer-based forest management models indicates that a sustainable harvest is achievable under various historical harvest levels, including the record harvest level realized between 2000 and 2005.

As the forest of Prince Edward Island is predominantly privately owned, helping landowners to invest in sustainable forest management is vital if society is to continue to benefit from healthy, productive forests. During the reporting period, a forest policy and forest management manual were released and assisted in the transition towards ecosystem-based forest management. A total of \$9.1 million was invested by the Province of Prince Edward Island in sustainable private land forest management. By making this investment, the Province has indicated a desire to ensure the forest will continue to provide a sustainable supply of values to residents and visitors of Prince Edward Island.

Résumé

À l'Île-du-Prince-Édouard, la forêt a beaucoup de valeur. En effet, elle abrite une grande variété de plantes et d'animaux et est une source de revenu et d'emploi pour de nombreux Insulaires. De plus, elle contribue à un mode de vie actif et sain chez les Insulaires en leur permettant de faire plusieurs activités récréatives.

De 2000 à 2005, l'industrie forestière et de milliers de propriétaires fonciers ont profité d'une bonne conjoncture. Une forte demande pour l'exportation de bois de sciage et des taux de change avantageux ont permis l'atteinte de sommets en récolte de résineux et une plus grande valeur du bois sur pied. Après 2005, il y a eu une diminution de la demande pour les produits de résineux non transformés, ce qui entraîna la fermeture de la plus importante scierie de l'Île (Georgetown Timber). Au cours de la même période, la hausse des prix pour l'huile de chauffage a provoqué un changement dans l'exploitation forestière : l'accent a été mis sur les peuplements de feuillus pour fournir du combustible pour le chauffage domestique.

L'analyse du Corporate Land Use Inventory et des données de terrain indique que la forêt demeure la caractéristique dominante du paysage insulaire. En effet, elle couvre quelque 250 000 hectares et renferme plus de 28 millions de mètres cubes de bois marchand. Si on la compare à ce qu'elle était en 2000, la superficie de la forêt en 2010 a diminué de 1,3 %. Les changements dans l'utilisation des terres forestières résultent de décisions individuelles faites par quelque 16 000 propriétaires fonciers. Le gouvernement provincial est responsable d'assurer la gestion durable d'environ 12 % des terres et tente d'influer sur la gestion du 88 % restant par l'entremise de divers programmes incitatifs.

Prévoir exactement l'état futur de la forêt de l'Île-du-Prince-Édouard est extrêmement difficile. La forêt est divisée en de nombreuses petites parcelles et appartient à des milliers d'individus. Il est donc virtuellement impossible, et irresponsable, d'estimer une limite pour ce qui est de la possibilité annuelle de coupe (PAC) dans la province. Toutefois, l'analyse de modèles de gestion forestière informatisés indique qu'une récolte durable est réalisable à divers niveaux de récolte antérieurs, y compris le niveau record atteint entre 2000 et 2005.

Comme la majeure partie de la forêt de la province n'appartient pas au gouvernement, aider les propriétaires fonciers à investir dans la gestion forestière durable est essentiel si on veut que la société puisse continuer à bénéficier d'une forêt en santé et productive. Au cours de la période à l'étude, des manuels sur les politiques en matière de foresterie et la gestion forestière ont été publiés et ont aidé la transition vers une gestion forestière axée sur l'écosystème. Au total, 9,1 millions de dollars ont été investis par la Province de l'Île-du-Prince-Édouard dans la gestion durable des terres forestières privées. En faisant cet investissement, la Province a montré qu'elle désire s'assurer que la forêt va continuer à être utile aux résidents et aux visiteurs de l'Île-du-Prince-Édouard.

Preface

The 1988 *Forest Management Act* requires the department to prepare a State of the Forest Report every ten years. Clause 6 of the act reads:

The Minister shall monitor forest growth in and, in 1992 and every ten years thereafter, shall provide to the Lieutenant Governor in Council a State of the Forest Report which includes:

- a. an inventory of the forest in the province identifying the area of the forest by covertime, the volume of the forest products available in the forest, the age distribution of the forest, and an estimate of the growth by product type that the forest can sustain with and without management:*
- b. a summary of the forest management activities for both Crown forest lands and private land implemented during each year of the ten year reporting period:*
- c. an estimate of the wood supply shortfalls or surpluses based on the projections of forest growth and demand for forest products:*
- d. an outline of programs proposed to manage the forest in the next reporting period:*
- e. such other information as may be prescribed by regulations.*

This is the third State of the Forest Report prepared for Prince Edward Island.

History 2000-2010

A forest is dynamic. There are many factors that influence the rate of change within a forest, but on Prince Edward Island most are linked to the presence or absence of human activity. The period between 2000 and 2010 had many events that shaped the forest we have today.

There is no way to capture all these changes in and around the forest but the following section highlights some of the items that had a major impact.



Softwood Harvest

During the first portion of the previous decade, the level of harvest for softwood (conifer) roundwood was the highest recorded on Prince Edward Island. This harvest was driven primarily by market demand, destined for export to the American market. Fueling this market demand on Prince Edward Island was a combination of many factors including: high demand for lumber for new-home construction in the United States, low value of the Canadian dollar relative to the dollar in the United States, exemption of Maritime lumber from any countervail duties for import to the United States, and a relatively low cost for transportation.

Land owners capitalized on high prices being offered for their softwood roundwood, which resulted in approximately 3,000 hectares of softwood-dominated forest being harvested each year. While land owners continued to prescribe harvesting on their land, there was a growing concern among the general public that this rate of harvest was not sustainable.

The softwood harvest continued at a high rate until 2007 when it began a decline that continued until the end of the decade. The demand for softwood lumber in the United States shrank considerably with the “bursting of the housing bubble”. Around the same time, the North American economy began to shrink and the Canadian dollar became almost equal to the dollar in the United States. Higher oil prices increased transportation costs, which made even previously economical haul distances too expensive.

The effect of the reduced softwood demand was especially felt in rural Prince Edward Island. Forest contractors were forced to lay off staff and some had to resort to closing their businesses. In 2000, there were approximately 50 forest contractors operating on Prince Edward Island. By 2010, only 10 remained operating at commercial-scale. Additionally, the largest sawmill (Georgetown Timber) closed with resulting job losses. Perhaps almost as important, the sawmill closing meant a valuable local market for softwood roundwood was also lost.

The long-term impact of the market downturn is unknown. However, the effect of the downturn on trained and specialized labour has been already recognized. Much of the forest-based labour force has left the Province and there are challenges for the forest industry to recruit new labour.

Hardwood Harvest

While the softwood harvest was experiencing a steady decline in the later part of the reporting period, the amount of hardwood (broadleaf) being harvested from the forest was increasing. This harvest was largely driven by the demand for domestic fuelwood. As home-heating costs continued to rise, many home owners began to look to the forest as a supply of primary -and supplementary-heat to their homes. As the decade closed, the harvest of hardwood continued to increase, creating another sense of unease in the community about sustainability of the resource.



Forest Enhancement

In 2002, the Province of Prince Edward Island provided support to initiate a new program for sustainable private land forest management. The Forest Enhancement Program (FEP) is incentive-based and was intended to build upon the already established reforestation treatments in the Forest Renewal Program. Essentially, there was funding available for land owners to utilize various silvicultural techniques rather than solely rely on clear cut harvesting and reforestation. The FEP also engaged the technical expertise of private sector forest professionals. Incentives were provided to have consultants prepare sustainable forest management plans, recommend treatment prescriptions to land owners, and delineate and measure boundaries of treatment areas.

The FEP proved to be a success and, as such, was combined with the Forest Renewal Program in 2007 to facilitate efficient service to land owners.

Community Forests

In 2005, the Government of Prince Edward Island signed an agreement with the Environmental Coalition of Prince Edward Island to have this group manage approximately 800 hectares of public forest. This agreement demonstrated the government's desire to test a model of forest management aimed at increasing the economic, social, and environmental values of the land. The Environmental Coalition of Prince Edward Island has made a commitment to manage this forest on behalf of the public and these lands remain fully accessible to all residents and visitors. More information about management of these properties is publically available on the Macphail Woods website.

Forest Policy

A new forest policy was released in 2006. At a time when softwood harvest levels were reaching their highest, there was public support to review and change policies that provided direction for sustainable forest management. Public consultations were conducted by the Public Forest Council in early 2005, and received an unprecedented level of interest; more than 500 people attended the meetings and 100 presentations were received.

The new forest policy (*Moving To Restore A Balance In Island Forests*) set broad direction for all forest on Prince Edward Island with a vision of enhanced forest quality that delivers a range of economic, social and environmental benefits.

Forest Management Manual

In response to a changing philosophy in forest management, the Government of Prince Edward Island developed a forest management manual that utilized an ecosystem-based approach. First released in 2008, the Ecosystem-based Forest Management Manual is a technical document and provided forest professionals with a clear objective: all interventions should be done to improve the quality of the forest as a whole. The manual provided direction for forest restoration and enhancement, protection of riparian zones and wetlands, and identified the value of cover patches and other structural features. Harvesting forest products will continue to be important to provide wealth to residents of Prince Edward Island but modifications to the methods used to obtain them can contribute to forest health and diversity.

Forests, Fish and Wildlife

In 2005, the Government of Prince Edward Island merged the former Forestry and the Fish and Wildlife Divisions. Doing so provided an opportunity to benefit from the expertise of many professionals when managing the forest for more than just traditional forest products. In addition, public lands—Provincial Forests, wetlands, natural areas, and wildlife management areas—could be managed more efficiently.



Introduction

The forest of Prince Edward Island is generally described as complex, found at the zone of transition between the boreal forest to the north and the deciduous forest to the south. Typically, forest stands regenerate by means of small, frequent natural disturbances, which leads to a forest dominated by late successional species.

Prince Edward Island's forest contains a diverse mixture of tree species that are in various states of development. Due to the long history of land use, much of our forest has been impacted by human activity. Historically, about 98 per cent of Prince Edward Island was covered with long-lived, shade-tolerant tree species. The single largest impact on the forest was the extensive land clearing for agriculture in the 19th century, which resulted in removal of approximately 70 per cent of the forest. Much of the forest present today has been harvested at least once, with many areas harvested multiple times. Through these activities, and combined with naturally-occurring variations of soil drainage and nutrients, the current forest contains a mixture of species and ages that is different in proportion than was originally present.

The forest also provides a home to a wide variety of forest plants and animals. These forest-based plants and animals provide many benefits to society including: food, fur, wildlife, recreation, medicine and services such as pollination, flood control, and many more. The plant and animal communities have been impacted by human activity. Land clearing has resulted in fragmentation of large contiguous forest, which some animals require. Additionally, forest growing on land that was once ploughed for agriculture typically has a much simplified suite of ground vegetation and modified soil profiles.

To allow for measurements of the forest (and other land use types), digital aerial photography was acquired in August, 2010. These images were used to identify and delineate many attributes of land use on Prince Edward Island. For photo interpretation, an area has to have an identifiable land use feature to characterize the type. For example, an area that contains large trees would be classified as a forest type while a grain field would be classified as agriculture. Further attributes were collected for forest areas of similar maturity stage, species, and height. The entire Province—including offshore islands—was completed, which provided a complete and accurate picture of land use in 2010.

Additionally, a suite of permanent inventory plots was used to provide a statistical estimate of individual tree species, ages, potential forest products and volumes, tree heights, ground vegetation, soil drainage, wildlife observations, and coarse woody debris. Using a 4 km grid, these attributes were collected on the 803 inventory plots distributed across Prince Edward Island. Using GPS technology, these plots are permanently marked and can be revisited for future measurements.

The forest of Prince Edward Island provides many ecological services that are difficult to quantify. Some examples include: water filtration, soil conservation and surface water runoff reduction, shelter from wind, and storage of carbon. While these services are essential, currently there is no consensus about how to quantify their economic value.

Aerial photography acquisition /interpretation and measurements of the permanent inventory plots are fundamental components that allow updating changes to forest and land use on a 10-year cycle.

Land Use

The total area of Prince Edward Island including land and fresh water is estimated to be 569,290 hectares (ha) or 1,406,744 acres (Table 1). Of the total area of Prince Edward Island, 44 per cent is classified as forest area (36 per cent natural forest, 4 percent plantation, and 4 per cent harvested / regenerating). The total estimate of forest area for Prince Edward Island decreased from 257,645¹ ha to 250,084 ha since the last estimate in the 2000 State of the Forest Report. Of the total forest area, 80 per cent is classified as being natural forest dominated by naturally regenerated tree species.

Table 1 Land use category estimates for 2010.

Type	Hectares	Per cent	Per cent change (from 2000)
Forest (see Table 2)	250,084	43.9	-1.3
Agriculture	215,004	37.8	-1.3
Abandoned Agriculture	22,319	3.9	1.1
Wetland and Sand Dunes	39,366	6.9	0.5
Transportation	12,828	2.3	0.1
Other (e.g., urban, developed)	29,689	5.2	0.9
Total	569,290	100	0

Table 2 Amount of forest area in natural, plantation, and regenerating forest types.

Forest Type	Hectares	Per cent 2010	Per cent 2000
Natural	202,082	80.8	85.7
Plantation	22,452	9.0	6.1
Harvested/Regenerating ²	25,550	10.2	8.2
Total	250,084	100.0	100.0

The next most prominent feature in the landscape is agricultural land, which represents 38 per cent of the area. Since the previous estimate in 2000, the area in agriculture decreased by 1.3 per cent. Over the past decade, the area of abandoned agricultural land increased by 4 per cent to more than 22,000 ha. As much of this area is marginal farm land, there is a low probability that it will serve an agricultural purpose in the short-term. If left alone, much of this area will naturally transition to forest land use.

Although there has been a net decrease in the total forest area since 2000, this is not the lowest forest area that has been experienced. Early in the 20th century, the area of forest was estimated to have been 178,000 ha (Figure 1). As agricultural land was abandoned through the century, the area of forest increased to a peak in 1990 of 280,000 ha (Figure 1). The amount of area in forest that has never been ploughed (i.e., never in agriculture) has decreased over time: 155,000 ha in 2000 and 149,000 ha in 2010. Unploughed land does not necessarily mean undisturbed. Of the 149,000 ha of unploughed forest in 2010, over 6,500 ha were in a regenerating condition.

¹ Forest area reported in the 2000 State of the Forest Report was 256,780 ha. Changes in technology have allowed for a more accurate estimate of the forest area that existed in 2000, which is stated in this report.

² Harvested/regenerating forest classified as a clear cut harvest area within the previous 10 years.

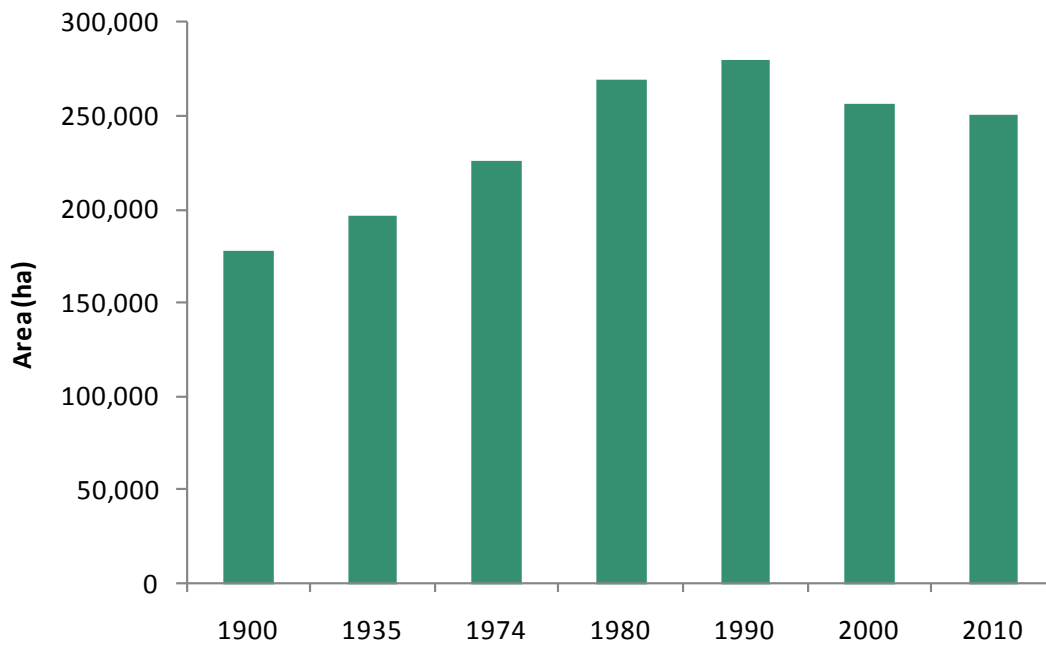


Figure 1. Prince Edward Island forest from 1900-2010.

Since 2000, agriculture accounted for the largest conversion from forest (Table 3). The majority of this land use conversion was due to establishment / expansion of new blueberry fields. The net change in forest area from 2000 to 2010 was -7,561 ha (Table 3). In addition to land use changes that occurred in the previous decade, the increased resolution of the 2010 aerial photography allowed for areas to be classified in more appropriate land use categories.

Table 3. Net area of forest land use type change from 2000 to 2010.

Land Use Forest	Converted Forest (ha)	Created Forest (ha)	Net Change (ha)
Agriculture	-6,511	1,895	-4,616
Industrial / Transportation	-975	464	-511
Wetland	-4,024	1,463	-2,561
Residential	-1,216	286	-930
Abandoned Farmland	-1,627	2,746	1,119
Other	-63	1	-62
Total Forest	-14,416	6,855	-7,561

Forest Land Ownership

Prince Edward Island's land ownership is different from other Canadian jurisdictions in that majority of the forest resource is held by private individuals (Table 4). Forest in this instance is defined as both forest and wet forest. Land owners manage their lands for many values, which has resulted in the diverse composition of the forest today.

Currently, more than 86 per cent of the area classified as forest is owned by more than 16,000 private individuals or organizations. Of this, over half is contained in parcels of 25 ha or smaller. The Government of Prince Edward Island, holding title to approximately 12 per cent of the forest resource, is the single largest holder. The federal and community governments each hold title to less than one per cent of the forest resource (Table 4).

Table 4. Forest³ land ownership categories for Prince Edward Island in 2010.

Ownership	Hectares	Per cent
Small private (<= 25 ha)	120,267	45.7
Large private (> 25 ha)	108,201	41.1
Provincial Government	31,972	12.2
Federal Government	2,090	0.8
Community Governments	445	0.2
	262,975	100

In 2009, the Province of Prince Edward Island, in partnership with Natural Resources Canada and the PEI Model Forest Network Partnership, collaborated on a survey of woodlot owners. This survey built upon a similar study completed in 2002 and provided valuable insight into the socio-demographic profile of woodlot owners. Respondents had the opportunity to provide input and opinions on topics including forest conservation, harvest size and rate, government investment in silviculture, and many more.

Generally, results from 2009 did not vary greatly from the 2002 survey. Of note, there was a 6 per cent increase in the forest area privately held in parcels less than 25 ha. Additionally, most respondents in this category did not have a management plan for their woodlot but would be interested in developing one in the future.

Results also indicated that there exists a wide range of reasons for owning a woodlot. Many still use their woodlots for producing traditional forest products and generating firewood and revenue. However, the majority of woodlot owners prefer to have harvesting activities carried out by independent contractors rather than harvesting wood themselves.

Many owners expressed common views on forest conservation. Many agree that a greater effort is needed to protect ecologically sensitive areas and incentives should be provided to landowners willing to do so. A small portion (approximately 7 per cent) of owners indicated that they have no intention of ever harvesting their woodlots for traditional forest products.

³ Forest area includes wet forest

Parks, Protected Natural Areas, and Wildlife Management Areas

Certain areas of Prince Edward Island are set aside for conservation of wildlife and habitats. These include PEI National Park, Provincial Parks, Wildlife Management Areas, and Natural Areas owned by Government, private groups such as Island Nature Trust and the Nature Conservancy of Canada, or private landowners. The Government of PEI has committed to protecting 7% of the Island; to date, more than 18,400 hectares –3.2% of PEI –has been protected (Table 5). Of this, approximately 10,500 ha is forested.

Table 5. Summary of protected and natural areas on Prince Edward Island.

Protected Area Class	Area (ha)	Per cent total area
Federal Parks	3,714	0.7
Provincial Parks	542	0.1
Private Natural Areas	1,685	0.3
Public Natural Areas	5,376	0.9
Wildlife Management Areas	7,100	1.2
	18,416	3.2

Covertime

The covertime for each unique forest area (stand) on Prince Edward Island is determined using aerial photo interpretation and forest inventory plots. At the broadest scale, tree species were classified as either softwood (conifer) or hardwood (broadleaved), creating four categories of classification based on species abundance. Hardwood-dominated covertime, which include all stands with greater than 50 per cent hardwood species present, account for 62 per cent of the forest (Figure 2). Of this area, 42 per cent is represented by forest stands dominated by more than 75 per cent hardwood species.

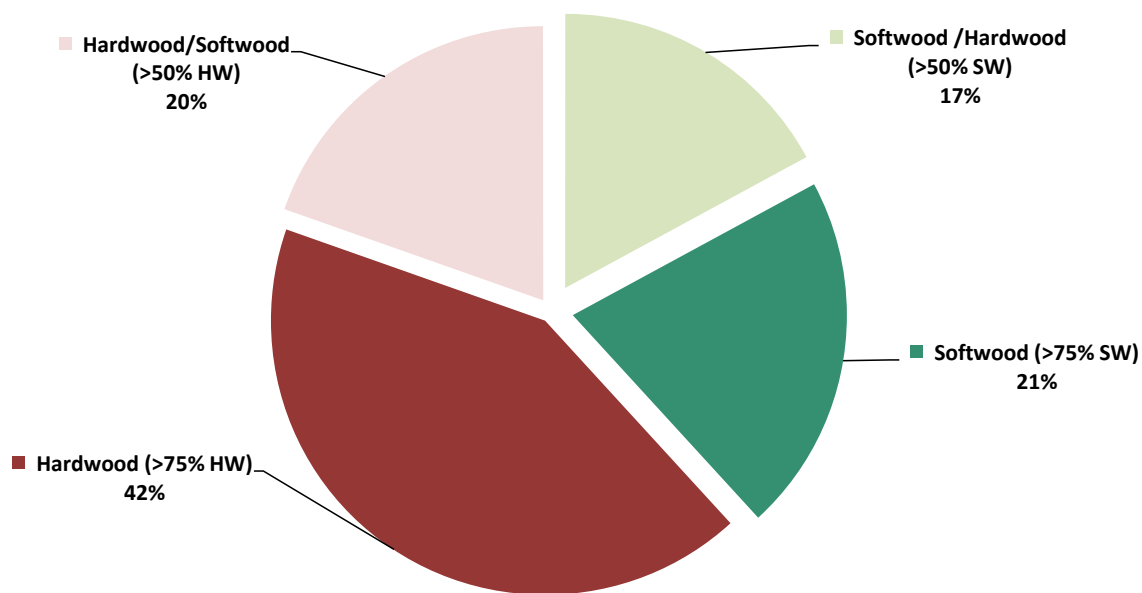


Figure 2. Distribution of per cent covertime of the forest in Prince Edward Island.

Over the past 10 years, there has been relatively little change in these major covertime categories; none changed by more than three per cent over the decade (Figure 3).

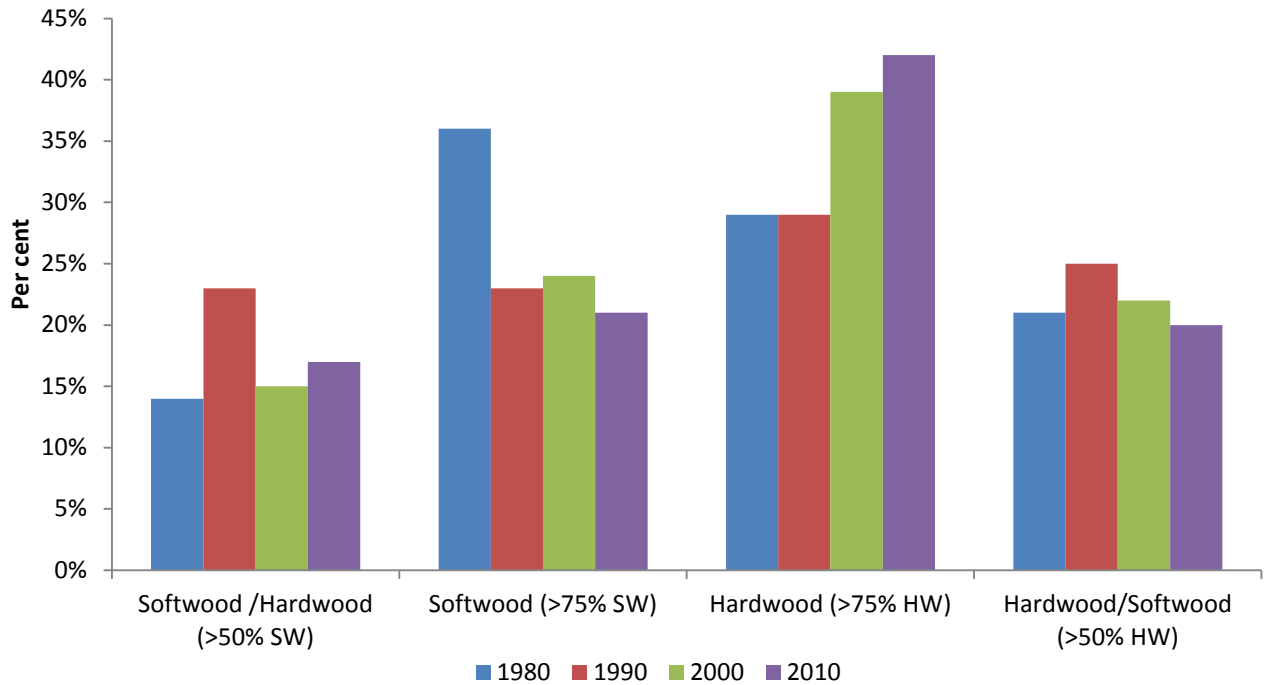


Figure 3. Change in broad forest cover types in Prince Edward Island from 1980 to 2010.

A broad classification provides only very simple information about forests. Species groupings and shade tolerance (regardless of age) provide further valuable insight into the makeup of the forest. In 2010, stands of intolerant short-lived hardwood species accounted for over 26 per cent of the forest area (Table 6). Longer-lived tolerant hardwood-dominated stands accounted for 11 per cent of the forest area, which is less than half that of intolerant stands. The mixedwood component of the forest exhibited a similar pattern with intolerant-dominated stands occupying roughly twice the area of tolerant-dominated stands (Table 6). Typically, the undisturbed Acadian forest (of which Prince Edward Island is a part) is composed of mixed forest stands dominated by shade-tolerant long-lived species.

An effort was made to identify less common community types on Prince Edward Island. Stands that had at least 40 per cent in white pine or red spruce and stands with at least 30 per cent Eastern white cedar, Eastern hemlock, or red oak were identified as those communities, respectively. Overall, these interpreted community types represented very little area in the forest of Prince Edward Island in 2010 (Table 6).

Table 6. Community type and per cent distribution of the forest of Prince Edward Island in 2010.

Community	Per cent
Softwood (pure species)	11.4
Softwood (mixed species)	7.7
Softwood / Intolerant Hardwood	15.1
Softwood / Tolerant Hardwood	0.3
Tolerant Hardwood (pure species)	0.1
Tolerant Hardwood (mixed species)	11.3
Intolerant Hardwood (pure species)	3.1
Intolerant Hardwood (mixed species)	21.8
Intolerant Hardwood / Softwood	15.7
Tolerant Hardwood / Softwood	1.4
Eastern White Cedar	0.1
Red Spruce	1.0
White Pine	0.8
Hemlock	<0.1
Red Oak	<0.1
Regenerating/Harvested	10.2

The forest can also be described by using more than simply the tree component. Using methods developed by Sobey (1995), ground vegetation can be used to further classify the forest. This identifies forest communities with similar plant and tree species composition, site conditions, and development potential. This type of classification is beneficial as it provides a holistic description of the forest and incorporates human-caused disturbances.

The analysis of the forest inventory ground vegetation indicated that the Disturbed Conifer forest community continues to be the dominant community grouping (Table 7). This community is dominated by conifer species; especially balsam fir, white spruce, black spruce, and red spruce. Since the 2000 forest inventory, this community group has increased by five per cent across Prince Edward Island. The Upland Hardwood forest community also increased in area by six per cent. The largest reduction was in the Wet Rich Hardwood community (10.3 per cent reduction). The effect of forest harvesting in hardwood dominated stands for production of fuelwood may explain the large reduction in this category.

Table 7. Distribution of forest in vegetative community types

Community	Per cent		
	1990	2000	2010
Wet Rich Hardwood	15.1	18.1	7.8
Upland Hardwood	19.7	15.5	21.5
Disturbed Conifer	22.3	25.0	30.1
Old Field White Spruce	20.8	15.9	16.8
Wet Transition	0.0	0.0	0.1
Black Spruce	11.9	7.8	7.0
Misc Forest ⁴	10.2	17.7	16.7

Forest Age

In addition to tree species and ground vegetation, tree ages are typically used to categorize forest stands. In some instances, the age of all trees within a forest stand is the same, which is called even-aged. Other times trees of various ages are present within the same forest stand, which is considered uneven-aged. Quantifying the age of the forest is valuable to allow estimates of ecological value, potential timber size, habitat availability, recreational opportunities, and many others.

The forest of Prince Edward Island is heavily influenced by human activity, which is evident in the age class distribution (Figure 4). As a result of forest harvesting and land clearing / abandonment, there is very little area older than 100 years.

When compared to the previous ageclass estimate in 2000, the forest of 2010 had more area in older age classes (Figure 4). This can be partially explained by the fact that as prices for commodity lumber decreased from 2000-2010, the forest harvest was reduced. In some cases, modified clear cut harvests were being used, where clumps and patches of trees were left in harvest blocks. This affected the average age of the harvest block in that it was not zero.

Generally, the forest can be described as young. The age classes are unbalanced with a large proportion of the forest being less than 60 years. Effort will be required, especially in old-field areas, to ensure stands are allowed to grow into the older classes if a more balanced age structure is desired.

⁴ Miscellaneous forest includes recent clear cuts, plantations, and stands dominated by alder.

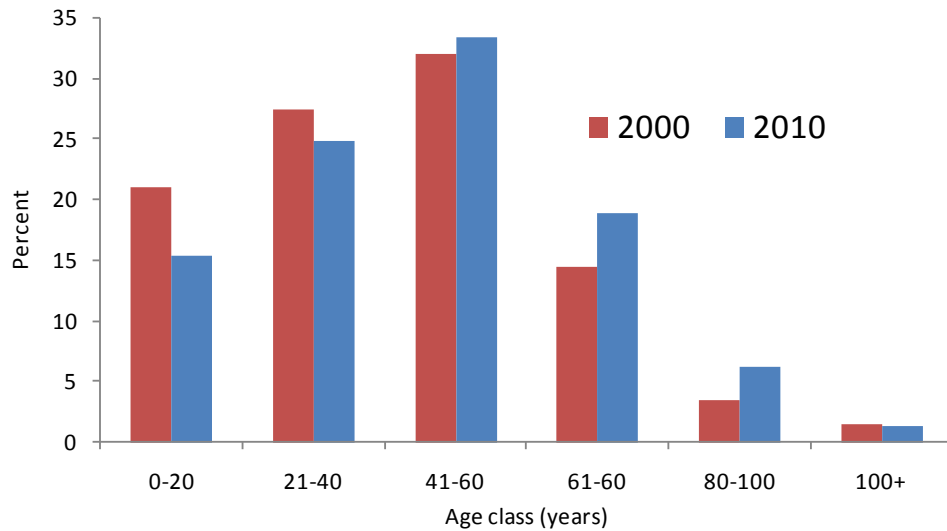


Figure 4. Age class distribution of the forest of Prince Edward Island in 2000 and 2010.

Forest Volume

Species-specific volume equations were used for each tree measured in the permanent forest inventory plots. The total merchantable volume of the forest was determined from extrapolation of this calculated volume of the permanent forest inventory plots. Over the last 10 years, the standing merchantable volume in the forest showed a modest increase of one per cent (Figure 5). This increase occurred even though the total forest area decreased; indicating that the average volume in forest stands increased over the previous decade.

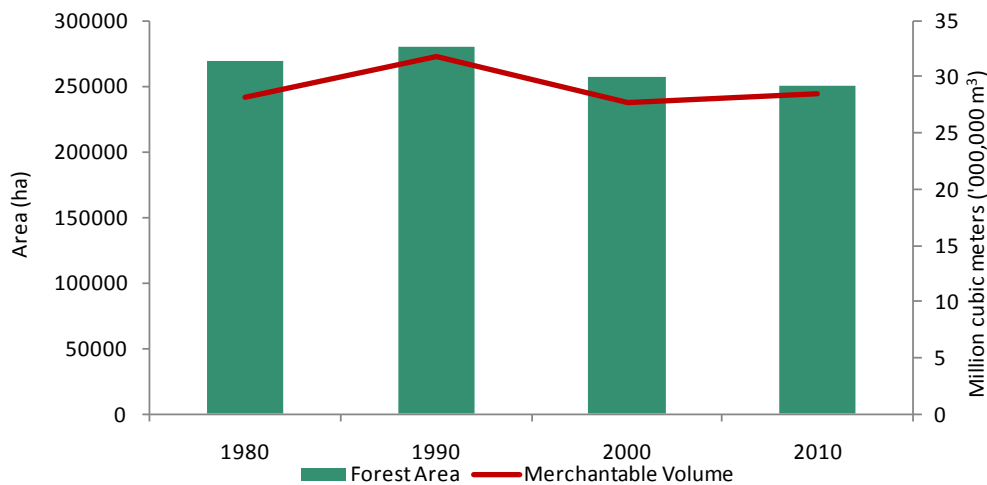


Figure 5. Amount of forest area and total merchantable volume in 1980, 1990, 2000, and 2010.

The distribution of merchantable volume of hardwood and softwood species changed only slightly during the last reporting period (Table 8). Some may consider the small change in distribution of volume a surprise as the forest industry concentrated a large portion of their harvesting effort in high-volume softwood stands early in the reporting period. However, there are high growth rates being realized in the younger forest, which is supporting a stable merchantable inventory. The dominant species (by volume) continues to be red maple, followed by white spruce and balsam fir. Combined, these three species account for more than 56 per cent of the total merchantable volume in the forest.

Table 8. Per cent of merchantable volume by tree species for 1990, 2000, and 2010.

Species	1990	2000	2010
White Spruce	21.5	21.1	18.4
Balsam Fir	14.1	15.6	14.3
Red/Black Spruce	8.5	10.3	10.2
Larch and Other Softwood	5.5	5.0	5.6
Total Softwood	49.6	52.0	48.5
Red Maple	24.2	22.9	23.8
Sugar Maple	4.7	3.5	3.8
Yellow Birch	3.2	2.6	3.3
Poplar / Trembling Aspen	8.0	9.9	8.4
White Birch	7.8	6.1	7.3
Beech	1.4	2.0	1.6
Other Hardwood	1.1	1.0	3.3
Total Hardwood	50.4	48.0	51.5

Characterizing the standing volume in the forest by the potential product quality may be seen as an academic exercise only. In reality, harvested round wood can be used for any end use that technology and economies allow. However, doing so can provide insight for current and future commercial forest operations, value-added manufacturing, and many others. Potential high quality products (i.e. sawlog and veneer) can always be used for products with less stringent quality requirements. The reverse is seldom true.

The overall distribution of total standing inventory between softwood and hardwood is 51 per cent and 49 per cent, respectively (Table 9). The dominant potential product in the forest is hardwood pulp / fuelwood, which accounts for more than 30 per cent of the total standing inventory. Higher quality sawlogs are more readily available for softwood species than hardwood, with a potential of 21.1 per cent and 7.4 per cent, respectively.

Since 2000, biomass availability has become of interest due to increasing costs of fossil fuels for domestic/commercial/industrial heating. As such, the Province of Prince Edward Island developed a biomass policy in 2008, which applies to public land and projects that have an investment of public funds. It states that for sustainable biomass production only the main stem of the tree may be used. In keeping with this policy, biomass was defined as the difference between total and merchantable volume plus all standing dead trees. Softwood and hardwood biomass (all non-merchantable volume) accounted for a total of 26.6 per cent (10.2 million m³) of the standing volume in the forest (Table 9). This represents a significant source of potential bioenergy for various commercial ventures.

Table 9. Product potential of hardwood and softwood described in volume and per cent of total standing inventory.

Product Type	Volume (m ³)	Per cent
Softwood Biomass	5,930,000	15.4
Softwood Pulp	5,573,000	14.5
Softwood Sawlogs	8,115,000	21.1
Total Softwood	19,618,000	50.9
Hardwood Biomass	4,329,000	11.2
Hardwood Pulp / Fuelwood	11,650,000	30.2
Hardwood Sawlogs	2,854,000	7.4
Hardwood Veneer	80,000	0.2
Total Hardwood	18,912,000	49.1

Harvest Statistics 2001-2010

During the 10-year period, the harvest of primary forest products declined. In the early 2000s, harvest rates were high, fueled by high prices for commodity forest products. Many high-volume softwood stands were harvested during this period, which is evident in the large proportion of softwood sawlogs and studwood being produced (Figure 6). The highest harvest level recorded during this period was 656,000 m³, occurred in 2004.

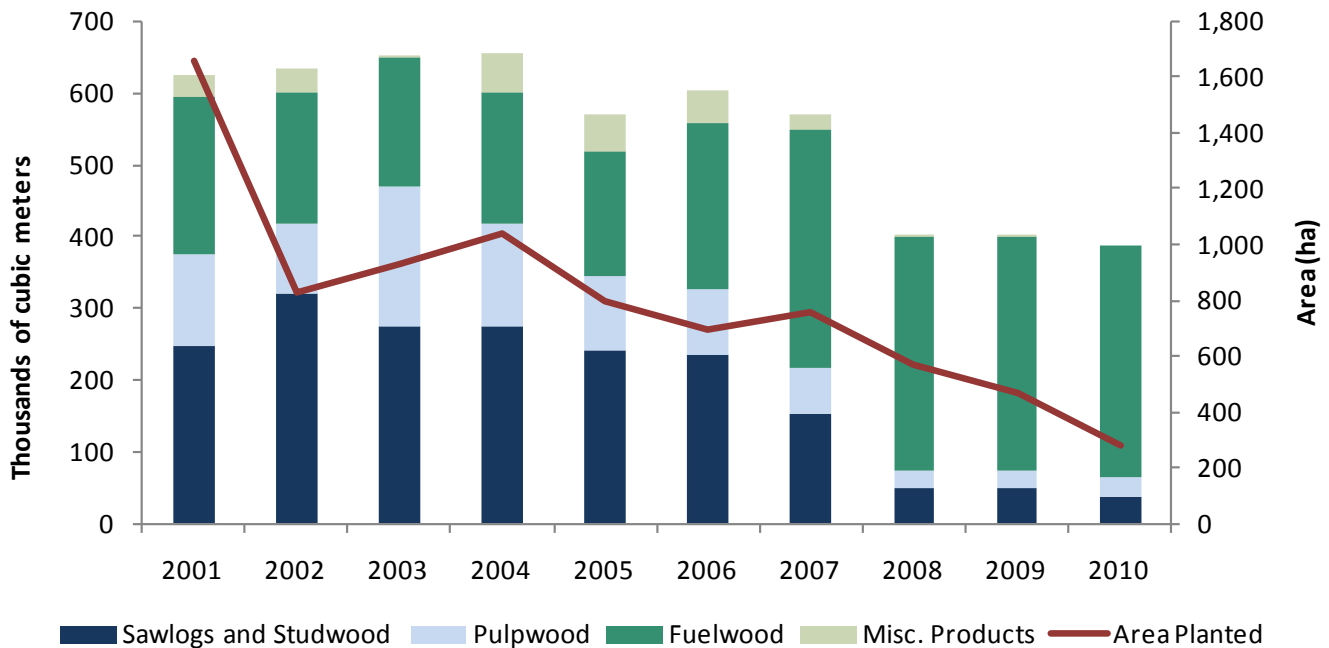


Figure 6. Primary forest products harvested and area planted on Prince Edward Island for 2001 to 2010.

During the later part of this period declining prices for commodity forest products resulted in lower harvest rates for softwood-dominated stands. However, the market for domestic fuelwood remained strong. From 2007-2010, fuelwood harvest accounted for between 60 and 80 per cent per year of the total volume harvested.

The lowest harvest volume of the reporting period— 388,000 m³—was in 2010.

Regeneration of the forest through planting also showed a decreasing trend through the reporting period (Figure 6). Planting levels were highest in the early 2000s when commodity prices for forest products were high and softwood-dominated stands were being targeted by forest industry. Many of these stands were old-field origin, with very little natural regeneration established at the time of harvest; this makes planting an attractive option for a landowner. During the later part of the decade, when the forest harvest shifted from softwood-dominated to hardwood-dominated, planting levels decreased. Historically, hardwood management is accomplished by relying on natural regeneration supplemented with low-density planting to address diversity concerns.

Between 2001 and 2010, more than 33,000 hectares of forest were clear cut, including more than 10,000 ha that were converted to other land uses. Softwood-dominated stands represented 35 per cent of the clear cut harvest areas (Figure 7). This proportion has not changed since the last reporting period indicating that softwood harvesting played an important role in commercial forestry over the past decade. There was an increase in the per cent of clear cut harvests that occurred in hardwood dominated stands. Since 2000, the clear cut harvest in this stand type has risen from 15 to 26 per cent of the total area harvested (Figure 7). These stands may have been targeted to supply the demand for domestic fuelwood.

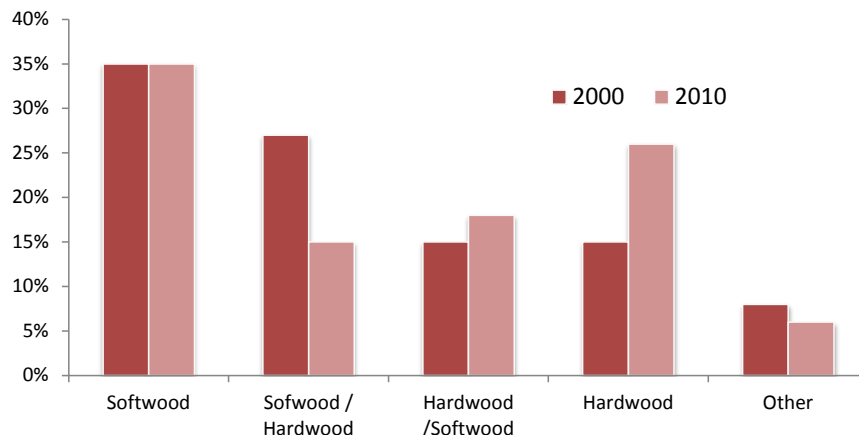


Figure 7. Per cent distribution of origin for clear cut stands for 2000 and 2010 reporting periods.

Sustainable Harvest and Forest Dynamics

Accurately predicting the condition of the future forest of Prince Edward Island is extremely difficult. Thousands of individuals collectively own the forest, which is divided into many small parcels. The goals and objectives for the forest differ on each parcel as owners each have their own priorities for management. At no time is any individual landowner required to prescribe a harvest on their parcel of land. As such, estimating a maximum annual allowable cut (AAC) for Prince Edward Island is virtually impossible and doing so would not be responsible. Rather, what is presented is a suite of possible outcomes that build upon historical management activities.

Forests are valued for many benefits they provide. In recent years, the recognition of non-tangible benefits has increased. However, the availability of primary forest products is still a valuable indicator of forest condition.

The annual harvest of forest products on Prince Edward Island is dynamic and responds to market forces. Between 2000 and 2006, the median annual harvest was 630,000 m³. Between 2007 and 2010, the downturn in the demand for forest products resulted in a median annual production of 404,000 m³, a 35 per cent decrease.

To ensure the estimates of sustainable harvest were as accurate as possible, areas that were unavailable for commercial harvest for reasons related to legislation, geographic location, or owner preference were removed. These areas included:

- a network of riparian buffers for streams, rivers, lakes, wetlands;
- all off-shore islands;
- all federally-owned land;
- all land designated as protected natural area.

All properties were described by their ownership category (i.e. provincially-owned, privately-owned) and general geographic location (i.e. Kings County). Private woodlots, which comprise more than 85 per cent of the forest, were subdivided into two categories: less than 25 hectare parcels and greater than 25 hectare parcels. Woodlot owners own their forest for vastly different reasons but, as indicated in the 2009 woodlot owner survey, owners of larger parcels are more likely to participate in commercial forestry.

To facilitate the modeling effort, all forest stands were assigned ages and placed into one of the following categories: plantation, natural, partially-harvested, old-field, or pre-commercially thinned. These groups were subdivided into one of 17 general categories based on species composition. For the purpose of sustainable harvest supply modeling and forest inventory projections, forecasting the natural development and treatment response of each forest stand is crucial. All areas were assigned to a growth curve (consisting of merchantable volume estimates) that is used to predict future forest condition and harvest estimates.

The harvest treatments included were: clear cut harvest, selection harvest and commercial thinning. Other silviculture treatments included: pre-commercial thinning, planting, and natural regeneration.

The majority of woodlot owners make decisions about the timing, intensity and type of silviculture they conduct on their own properties without consideration of the effect on the overall condition of the forest. Essentially, there exists certain randomness in the management of the forest of Prince Edward Island. The best way to simulate this randomness in analyzing forest dynamics is to build it into the analysis. For this project, a Monte Carlo simulation was used.

Generally, the future sustainable harvest level is related to the current forest condition, the rate of predicted growth, level of silvicultural activities, and the constraints believed to limit commercial forest harvest (i.e. minimum volume per stand). For all scenarios, it was assumed that the amount of area that could receive planting as a silvicultural treatment would not exceed 400 ha per year and pre-commercial thinning would not exceed 200 ha per year. Stand operability for commercial harvest was set at 80 m³ per ha of merchantable volume. Based on historical harvest levels, clear cut harvesting was assumed to comprise 70 per cent of the commercial harvest for the entire 100-year planning horizon with a 70 per cent probability of harvest eligibility. By modeling the harvest in this manner, all stands that have reached commercial operability are equally eligible for harvest, not just the oldest.

Three management scenarios were chosen to represent future forest conditions for a 100-year planning period. These include: implementing the average harvest from 2000-2006 (623,000 m³ per year), implementing the average harvest from 2007-2010 (441,000 m³ per year), and implementing the maximum achievable future harvest (890,000 m³ per year). These scenarios were chosen as they represent very different management strategies, which allows for inferences to be made of conditions between.

In all scenarios, the total volume of harvest (softwood and hardwood) was achievable for the entire planning horizon (Figure 8). However, the different levels of harvesting result in very different forest conditions in the short- and long-term. Under the scenario of maximizing the sustainable harvest, the availability of operable standing volume is decreased by over 40 per cent in the first 20 years of the planning horizon. Backing off the harvesting pressure to the 2000-2006 level has an impact on the operable growing stock (standing inventory) available in the forest. Under this scenario, the operable growing stock declines by less than 20 per cent in the first 20 years and then shows a modest increase by year 40. By implementing the harvest level of the 2007-2010 period, the available operable standing volume decreases only slightly, providing much greater opportunity to adjust to market and environmental pressures (Figure 8).

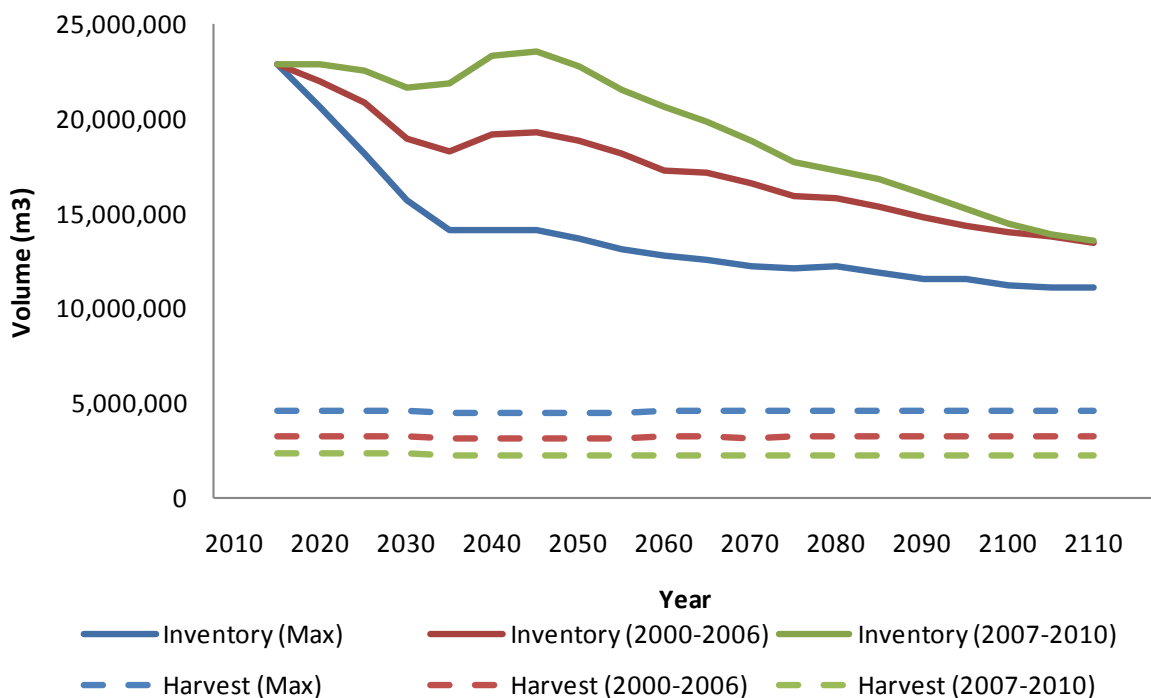


Figure 8. Sustainable harvest level of total merchantable volume and the operable standing inventory for management scenarios representing i) maximum sustainable harvest, ii) average harvest level from 2000-2006, and iii) average harvest level from 2007-2010.

The current age class structure of the forest of Prince Edward Island is unbalanced. The majority of the forest is young and very few stands are older than 100 years. It is clear that as the sustained harvesting increases, there is a trade off in future forest condition (Figure 9). Under the scenario of maximum sustainable harvest, the future forest at the end of the 100-year planning horizon would be much younger than even the forest of today. Under the scenario of implementing a harvest similar to the level in 2007-2010, the ending forest condition is much more balanced, with a much larger component of the forest being older than 100 years.

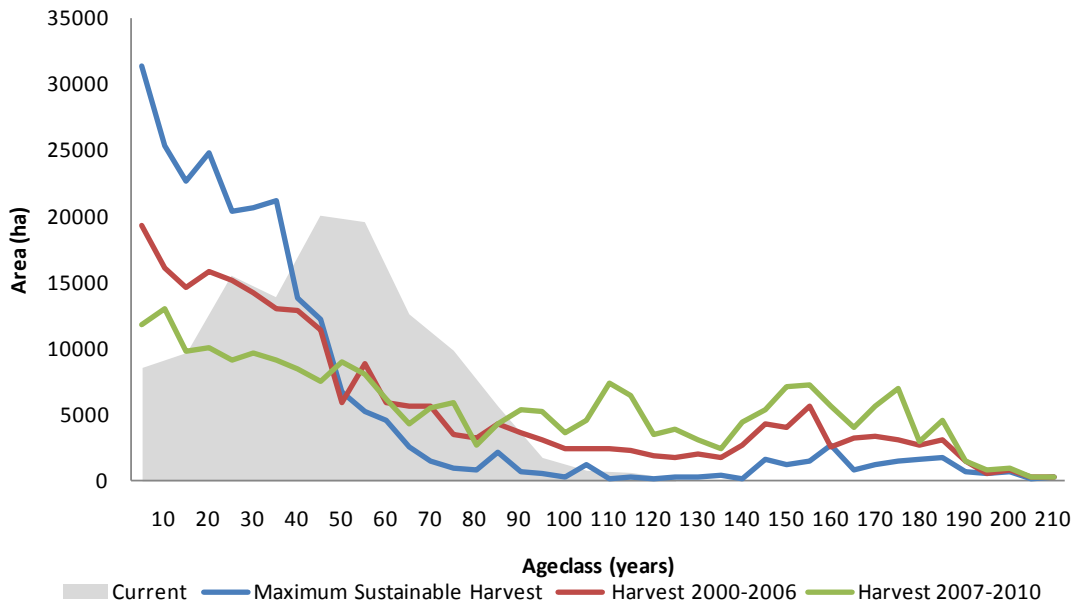


Figure 9. Current age class distribution and future age class distributions resultant from 100-years of forest management under three scenarios, including: i) maximum sustainable harvest, ii) average harvest from 2000-2006, and iii) average harvest from 2007-2010.

There are numerous reasons why the scenarios presented may never be realized. However, they have value to present some extreme examples of cause and effect relations in forest dynamics. No single body has the ability to direct the harvest of the forest of Prince Edward Island in both time and space. However, a collective understanding and awareness of how each forest activity may impact the future forest is valuable to all.

Nursery Production

The production of tree and shrub species from the Provincial nursery provides opportunities for individual landowners to establish new forest stands after harvest or to enhance existing stands with additional tree species.

The Provincial tree nursery currently produces 27 tree species and a variety of shrubs used to enhance the diversity of forest stands. The softwood species form the core of the nursery operation, accounting for 96 per cent of the total production. While production of broadleaf trees and shrubs has grown, they currently account for just four per cent of the total. It is recognized that broadleaf trees and shrubs will become a more significant component of future production. Watershed groups and other community groups rely on the production of these trees to complete their work in forest enhancement. A small portion of the trees and shrubs produced are for supplying local landscaping and garden centers.

During the reporting period, the focus of nursery production shifted from supplying softwood trees to establish new forest stands to that of forest enhancement.

Table 10. J.F. Gaudet Nursery conifer production summary for periods of 1981-1990, 1991-2000, and 2001-2010. Numbers are listed in thousands of trees.

Species	Number of Trees ('000)			Per cent		
	81-90	91-00	01-10	81-90	91-00	01-10
Black Spruce	6,442	5,316	3,965	35.6	21.1	19.9
White Spruce	3,327	6,455	9,497	18.4	25.6	47.6
Red Spruce	0	598	484	0.0	2.4	2.4
Norway Spruce	1	2,132	618	0.0	8.5	3.1
Colorado Spruce	0	0	87	0.0	0.0	0.4
Balsam Fir	1,415	1,167	690	7.8	4.6	3.5
White Pine	454	3,790	1,723	2.5	15.0	8.6
Red Pine	3,337	2,036	1,062	18.4	8.1	5.3
Austrian Pine	484	349	119	2.7	1.4	0.6
Eastern Larch	2,449	2,444	1,293	13.5	9.7	6.5
Japanese Larch	162	859	118	0.9	3.4	0.6
Eastern Cedar	26	36	226	0.1	0.1	1.1
Hemlock	0	22	85	0.0	0.1	0.4
	18,097	25,204	19,967	100	100	100

Table 11. J.F. Gaudet Nursery broadleaf production summary for periods of 1981-1990, 1991-2000, and 2001-2010. Numbers are listed in thousands of trees.

Species	Number of Trees ('000)			Per cent		
	81-90	91-00	01-10	81-90	91-00	01-10
Green Ash	0	0	11	0.0	0.0	1.3
Yellow Birch	0	119	251	0.0	51.5	30.6
White Birch	0	17	76	0.0	7.4	9.3
Hybrid Poplar	0.5	1	9	50.0	0.4	1.1
Red Oak	0	42	170	0.0	18.2	20.7
Service Berry	0	0	4	0.0	0.0	0.5
White Ash	0	40	85	0.0	17.3	10.4
Black Ash	0	1	1	0.0	0.4	0.1
Red Maple	0	3	58	0.0	1.3	7.1
Sugar Maple	0	5	46	0.0	2.2	5.6
Norway Maple ⁵	0	1	1	0.0	0.4	0.1
American Elm	0	1	10	0.0	0.4	1.2
Linden	0	0	5	0.0	0.0	0.6
Mountain Ash	0	0	11	0.0	0.0	1.3
Shrubs	0.5	1	82	50.0	0.4	10.0
	1	231	820	100	100	100

⁵ Norway Maple is now recognized as an invasive species and has not been produced at the nursery since 2002.

Private Land Forest Management

The forest on Prince Edward Island is predominantly privately-owned. As such, investment in sustainable forest management on private land is vital. During 2001-2010, the forest renewal and the forest enhancement programs were combined. This change allowed for a streamlining of service that provides funding to land owners that wish to implement eligible treatments. Funding provided by the Province of Prince Edward Island is done on a cost sharing basis with the private sector / landowners.

A total of 22,164 hectares of silviculture was completed through private land programming between 2001 and 2010. While both funding for private land silviculture and the area treated per year decreased during the decade, the cost per hectare has grown (Figure 10). This may be attributed to a rate increase paid to forest contractors, implemented to reflect their increased expenses for completing silviculture treatments. Additionally, forest landowners and industry have indicated a preference of manual plantation maintenance rather than using chemical herbicides, which are less expensive. The total investment in sustainable private land forest management by the Province of Prince Edward Island was \$9.1 million (Table 12). By making this investment, the Province has indicated a desire to ensure the forest will provide a sustainable supply of values to residents and visitors of Prince Edward Island.

Between 2000 and 2010, the median area that received silvicultural treatment on private land was 2,257 ha per year. These treatments include site preparation, planting, plantation maintenance, and pre-commercial thinning (Table 12).

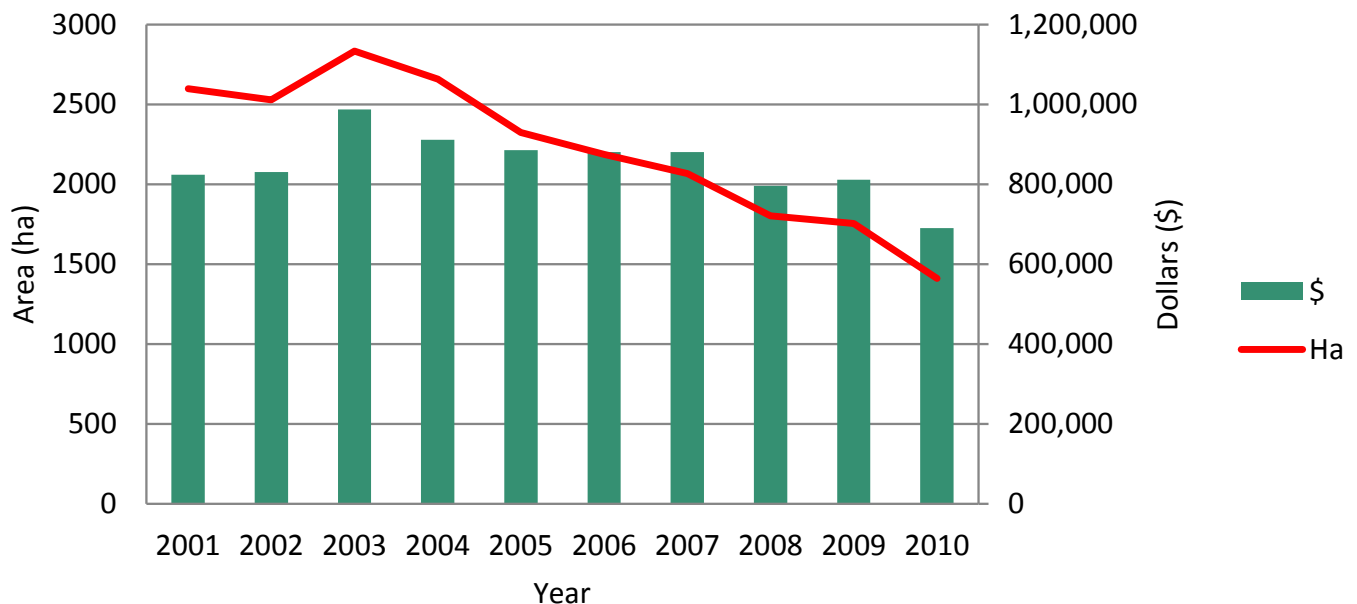


Figure 10. Area treated and total public investment in private land silviculture from 2001 to 2010.

Silviculture activity on private land was mainly focused on even-aged plantation establishment and maintenance. During the reporting period, a total of 88% of the private land investment was dedicated to preparing, establishing, and maintaining forest plantations (Table 12).

Table 12. Activity summary of silviculture investment on private land between 2001 and 2010.

Activity	Amount		Investment (\$)
	(#)	(ha)	
Management plan preparation	994		191,700
Plantation site preparation		6,660	2,662,500
Full and Enrichment planting		7,303	2,569,000
Fill planting		770	186,100
Plantation maintenance		7,140	2,881,400
Tree pruning	319,723		333,100
Pre-commercial thinning		291	197,300
Commercial thinning		197	114,100
Total investment			9,135,200

Public Forest Management

The Department of Agriculture and Forestry manages more than 30,000 hectares of forest on behalf of the Province of Prince Edward Island. This forest represents more than five per cent of the total land base and more than 11 per cent of the total forest land base. Since the last reporting period, this area has increased dramatically due to the amalgamation of the Fish and Wildlife and Forestry divisions in 2008. Forest that was previously managed by Fish and Wildlife is now under the direction of the Forests, Fish and Wildlife Division.

Since the last reporting period, a number of initiatives have begun to address identification and promotion of public land, identification of priorities for land acquisitions, protection of areas of ecological significance, and building of community partnerships.

- a. Identification and promotion** – With the production of a public land atlas and placement of consistent signage on publicly-owned property, residents of Prince Edward Island now have better access and knowledge of their land.



- b. Identification of priorities for land acquisitions** – Although the Public Forest is the largest single-owner entity on Prince Edward Island, there are areas of ecological significance that are currently not represented. These areas are targeted when acquiring new land for the public forest. In addition, there is an effort to acquire parcels of land adjacent to current Public Forest, where appropriate.
- c. Protection of areas with ecological significance** – Since the last reporting period, a total of 843 ha of public land has been assigned a Natural Area designation. Additionally, 48 hectares of public land have been designated as Wildlife Management Area, with a primary goal to provide habitat for forest-based animals.

d. Building of Community Partnerships – In addition to the ongoing partnerships with various community groups (for example recreational trails, educational programs, and special tree plantings), 2005 marked the first community-based management agreement. The Environmental Coalition of PEI now manages about 800 ha of public land in Southern Queens and Kings Counties with the goal of forest restoration and building forest stewardship among the public.

All forest management activities within the Public Forest are implemented under the guidelines described in the Ecosystem-based Forest Management Manual. Since the last reporting period, significant changes to forest management on the Public Forest include the requirement for a publicly-available management plan prior to any silviculture activity and the elimination of both chemical herbicide use and non-native species in forest management.

Silviculture work on the Public Forest is completed by a combination of provincial employees and forest contractors. Silviculture work completed on the Public Forest included: site preparation for tree planting, tree planting, plantation maintenance, and tree pruning. Throughout the reporting period, the amount of area that received silviculture treatment each year showed a declining trend (Figure 11). The reduction in silviculture area may be attributed to reduction in demand for primary forest products. As less area is harvested to supply the demand, less area is required to receive silvicultural treatment after harvest. Additionally, during the previous decade the core funding available for completing silvicultural work on the Public Forest was reduced.

Throughout the reporting period, the median area harvested was 92 ha, which produced median revenue of \$176,000 per year. While the area harvested was generally consistent throughout the reporting period, the associated revenues declined sharply with the reduced demand for primary forest products. From 2001-2005, the median revenue from the sale of primary forest products was \$259,000 per year, which is significantly higher than the median of \$49,000 received from 2006-2010 (Figure 11).

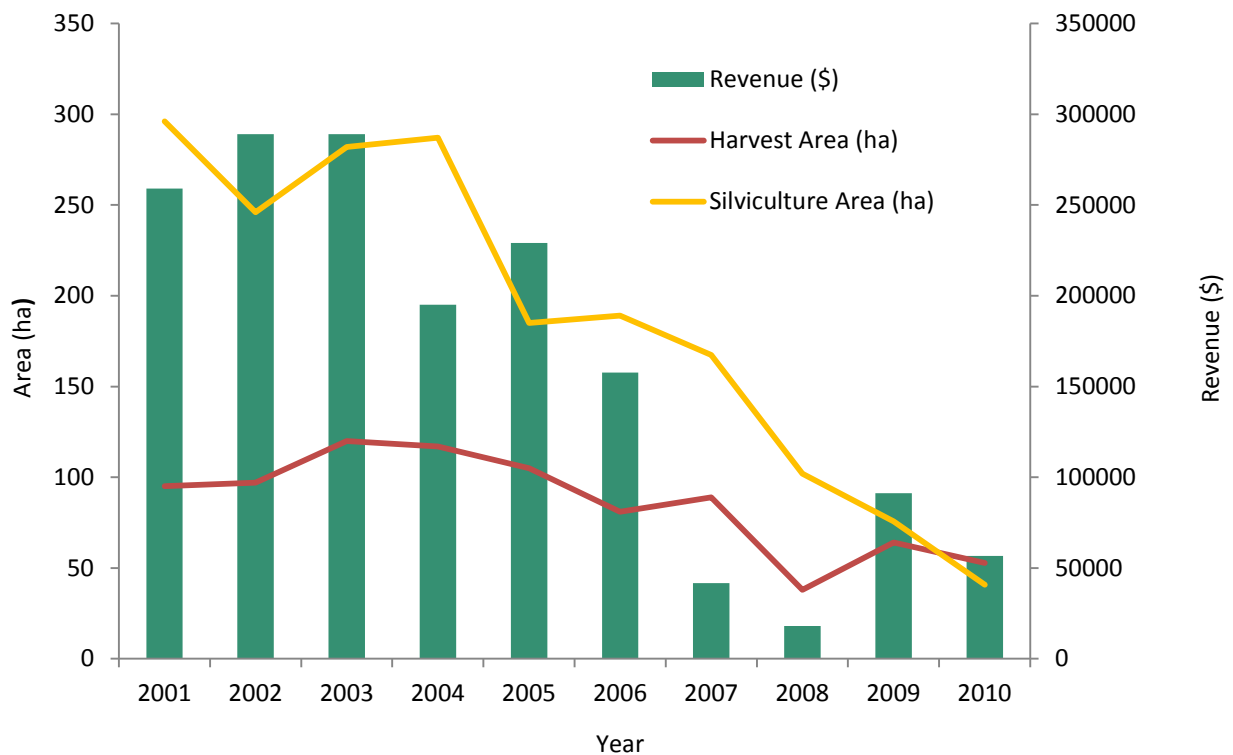


Figure 11. Revenue generation and associated harvest and silviculture area on publicly owned forest between 2001 and 2010.

The volume associated with the reported revenue is generally unknown as the majority of harvesting on the Public Forest is completed by contractors through an area-based public tendering system.

In addition to commercial forest operations, there is a considerable public investment dedicated to other activities that do not generate revenue directly. Over the last reporting period, a total of 760 kilometers of forest road maintenance was completed, which facilitates use by the general public. Additionally, new trails were created and existing trails were maintained and improved. This investment in the public forest is important and underscores the broad values residents expect from their forest

Forest Fire Protection

During the reporting period, forest fires in Prince Edward Island were generally small and few. For the reporting period, the median forest fires per year was 14, which burned a median of 19 ha in total (Figure 12). The median is much lower than that reported between 1990 and 2000 (29 fires burning 75 ha). The vast majority of fires in Prince Edward Island are caused by human activity; naturally-occurring fires are rare compared to central and western Canada. The drop in fire occurrence and forest area burned may be attributed to greater public awareness of fire weather index conditions, fewer areas cleared for agriculture through burning, or the well-organized government and community-based forest fire suppression efforts.

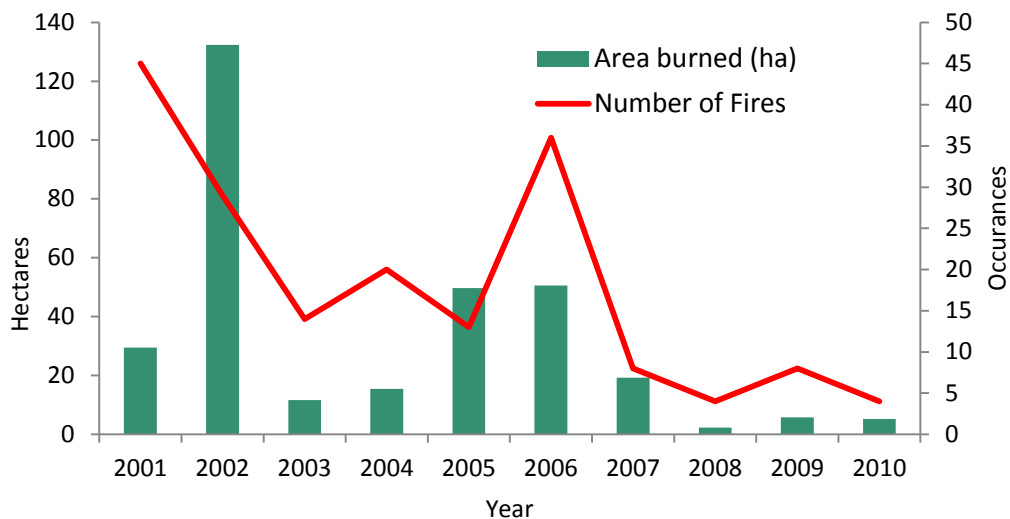


Figure 12. Summary of forest fires in Prince Edward Island for 2001-2010.

There is a growing concern from forest fire professionals in regards to residential development and the potential for a catastrophic fire. Over the past decade, new home construction continued to expand into and adjacent to large tracts of forest. Without proper planning, home owner education, and continued support of specialized forest fire protection staff and equipment, there exists a danger to the general public and high-value infrastructure.

Future Programming



Prince Edward Island's Forest Policy has a vision of healthy, diverse Acadian forests. Such forests host a range of plants and animals and deliver economic benefits as well as ecological goods and services essential to our well-being. This Policy sets the context for future programming within the Forests, Fish and Wildlife Division. Some of the main areas of focus will be:

- Diversifying forest-based wealth creation;
- Setting clear goals and targets for Public Land;
- Increasing forested protected areas;
- Linking forests and wildlife;
- Increasing community involvement in forest management;
- Planning at the landscape level;
- Balancing private-land incentives between plantation and non-plantation management; and
- Adapting to climate change.

Diversifying Forest-based Wealth Creation

Having good markets for sustainably-produced forest products stimulates forest management and creates economic opportunities in our rural communities. Prince Edward Island's forests have the potential to play a much larger role in the Island economy while still contributing the social and environmental benefits Islanders expect. The production of higher-value wood products using PEI grown wood and the development of lesser known non-timber forest products can add to the economic benefits Islanders derive from the forest. Future programming will look at ways to promote the diversity of high-quality Island-made forest products, communicate the environmental benefits of this renewable Island resource, and enhance Islanders' awareness of the range of options for generating income from forests.

Setting Goals and Targets for Public Land

The Forests, Fish and Wildlife Division manages approximately 30,000 hectares of land. Traditionally, these lands have been managed for the broadest range of values, from commercial timber production, to recreation, research, demonstration, education and conservation, among others. It is impossible to manage for everything on every hectare. With the consolidation of the various types of properties (Provincial Forests, Wildlife Management Areas, Natural Areas and Public Ponds) and our new inventory data, we can now develop a holistic plan with clear goals and targets.

Increasing Forested Protected Areas

Prince Edward Island has committed to setting aside 7% of its land as protected area. To date, 3.2% is protected, including more than 10,500 hectares of forest. Work has begun to identify rare or ecologically significant forest types on public land and have these protected under the Natural Areas Protection Act. On private lands, landowners may voluntarily protect such areas, either through the province, or through any of several non-government organizations. These initiatives will result in an increase in the area of protected forest sites on PEI.

Linking Forests and Wildlife

The health of our wildlife is linked to the quality and availability of their habitat. For this reason, habitat inventories such as that done for the State of the Forest Report can be used to provide information about the likely state of wildlife populations. For example, changes in the area of Trembling Aspen can result in changes in the Island's population of Ruffed Grouse. The area of old mixedwood forests is important for Barred Owls. Integrating wildlife survey data with the forest inventory will lead to a better understanding of the relationship between wildlife such as Ruffed Grouse or Barred Owl and PEI's forests. The Corporate Land Use Inventory data, combined with advances in GIS technology, will allow assessments of habitats for a range of animals. This, in turn, will help us develop practical actions woodlot owners, watershed groups and Government may take to enhance specific forest-dependant wildlife.

Increasing Community Involvement in Public Land Forest Management

Prince Edward Island's Public Lands are managed on behalf of the people of PEI, often in partnership with community groups. In 2005, the partnership model was taken to a new level with an agreement assigning management responsibility for 800 hectares of public land to the Environmental Coalition of PEI. In 2011, a similar agreement for 270 hectares of public land was signed with the Abegweit First Nation. Such partnerships can deliver innovative funding arrangements and volunteer support while building forest management capacity and a sense of stewardship for these lands within the local community.

Planning at the Landscape Level

Traditionally, forest management planning has been done at the property level. Sometimes, adjacent stands are combined into management blocks, but even these are tiny when considered in the context of the greater landscape. Often, the benefits we expect from our forests –timber and non-timber products, clean water, or wildlife habitat, for example –can be enhanced when planning occurs at a scale larger than a single stand or property. Similar to development of goals and targets for public land, there is room for discussion about the role of forests in our landscape, how Public Forests can contribute, and how we can support private landowners who want to voluntarily become involved.

Balancing Private Land Incentives

Through extensive consultations on the Forest Policy, Government heard clearly that the public supports a better balance between plantation management and alternative, forest-enhancement-style management. At the time of the consultations, 90% of private land funding went towards plantations, with 10% to enhancement; today the ratio is 80:20. The Forest Policy commits to a 50:50 balance, and future programming will continue to move in that direction. This is expected to contribute to further changes in the ratio of conifer to broad-leaved tree production at the J. Frank Gaudet Tree Nursery.

Adapting to Climate Change

No one knows for certain what effects climate change will have on our forests and wildlife. Through modelling, we can make educated guesses about individual tree species under one or more possible climate change scenarios. We can expect that fire, insects, disease, and severe storms will become more serious problems. We can anticipate that forest communities will be unlikely to respond as a unit: some plants and animals within them may fare well, while others may be stressed by a changing climate. Future programming will include monitoring to detect climate-related changes, research on mitigation and adaptation strategies, a focus on forest health and diversity, and management that keeps as many options open as possible. Working with uncertainty will be more effective than trying to guess the future.

Literature Cited

Sobey, Douglas. 1995. Analysis of the ground flora and other data collected during the 1991 Prince Edward Island Forest Inventory: II – Plant Community Analysis. The Institute of Island Studies, University of Prince Edward Island. Charlottetown, PEI.

