FORESTS AND FORESTRY IN PRINCE EDWARD ISLAND

Backgrounder to a Public Forum
December 12, 2001
(condensed version)

Wendy MacDonald

Foreword

Traditionally on Prince Edward Island, the forestry sector has been the runt of the litter among the resource-based industries. Farming and fishing have LONG enjoyed a higher profile, generating far more income and employment. Indeed, it may be fair to say that -- at least in the eyes of the general public -- our Island forests have been rather undervalued and taken for granted. And this in spite of the fact that they cover roughly 50% of the province's land mass.

This mood of complacency changed in the decade of the 1990s: the price of softwood rose substantially and the rate of harvest increased dramatically. The amount of wood harvested in 1999 was double that of a decade earlier and five times that of 1975. People were beginning to wonder if this rate of cut was sustainable. Environmental issues were also coming more to the foreground. At the same time, woodlot owners were organizing against what they saw as government-regulated infringement of their property rights. Wendy MacDonald sums up the situation well (cited from the current publication):

. . . the 1990s can be likened to a place where three tides meet: the market forces driving the industry, the continuing momentum of the industrially oriented forestry policies of the past, and the burgeoning environmental awareness of an increasingly urbanized society. In this context, the policy turbulence, cross-currents, and muddied waters of the past decade are understandable.

In this time of change and controversy, old policy doctrines have been called into question. And, indeed, it may be time to consider some new approaches, particularly with the role of woodlot owners in stewardship.

As a contribution to this policy dialogue, the Institute of Island Studies has organized a Public Forum on *Forests and Forestry in Prince Edward Island*, to be held at the Farm Centre on December 12, 2001. The Institute also commissioned Wendy MacDonald to research and write this background document on the history of Island forests and forestry policy, with an emphasis on the developments of the past decade. This Backgrounder is available in two versions, one about double the length and detail of the other. You are now reading the condensed version.

The Institute of Island Studies has a legacy of organizing Public Fora on pressing issues of the day. In this way, we hope to involve Islanders more directly in the discussion and formulation of public policy affecting all our lives.

Harry Baglole
Director, Institute of Island Studies

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Introduction

Throughout much of the past four centuries, PEI's forests have been viewed largely as a resource to be exploited, or an impediment to be eliminated. In recent decades, a broader societal awareness has emerged of the environmental and aesthetic value of forests, and greater public policy emphasis has been placed on enhancement and management of forest resources to increase their economic value. The 1990s saw an intensification of these trends, coupled with a sudden increase in market demand which led to rapid expansion, mechanization, and restructuring of the forestry industry, and a massive increase in harvesting activity. By the late 1990s, the interplay of these trends resulted in efforts to strengthen the industry's regulatory environment, sparking a significant backlash by forest landowners. The current increasing value -- on many levels -- of this resource makes it an opportune time to reflect on these events and consider directions for the future.

An examination of forestry events, public policy, and choices for the future has relevance well beyond the sector. Forestry in the 1990s exemplifies, in intensified and accelerated form, many of the factors and forces affecting all of PEI's resource-based industries -- agriculture, fisheries and aquaculture, and tourism. In response to the pressures of global competition, these industries are shifting to corporate structures, mechanized approaches, an increased scale of operations, and reduced employment levels -- with often wrenching and difficult adjustments within and among industry players. Meanwhile, an increasingly urbanized population looks to government to strengthen public stewardship of forest, soil, and water resources -- even when privately owned. Shifting political philosophies and constrained public resources are leading governments explore on regulatory solutions in addition to the incentives and supports of previous decades. Caught between the rock of globalization and the hard place of increasingly critical public scrutiny, PEI's resource-based sectors face the challenge of remaining competitive while operating sustainably. The forestry sector also offers a fascinating case study into the evolution of public policy in an area dominated by specialists, the government's struggles to adapt its policies in a shifting and complex environment, and the pitfalls of participative policy-making.

This paper provides background information on the evolving roles of PEI's forests -- social, economic, and ecological -- and on the public policy issues sketched out above. The paper opens with a history of forests and forestry, then examines more closely the modern era of forest management which began in the late 1970s. The following section provides statistical information on the past and current distribution and nature of PEI's forests and the forest industry. The paper closes with an overview of current issues related to forests and forestry, and some reflections on their broader implications for PEI.

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History

Prior to European settlement, the Island's forests served as habitat for wildlife, and as a source of food, fuel, and housing materials for aboriginal peoples. The forest, as described by early observers, was an outstanding example of an Acadian Forest, with high-quality hardwoods on the uplands and boreal conifers in the lowlands. Diversity was high, with the beech, sugar maple, yellow birch, and red oak of the hardwood forest mingled with white pine, hemlock, and cedar; and the fir, spruce, and larch of the softwood forest, accompanied by white birch, poplar, and willow.

As the Island was settled by Europeans, this Acadian Forest disappeared, first slowly to pioneer land-clearing and fires, then more rapidly in the nineteenth century, as the shipbuilding industry emerged and became the engine of the colony's economy and a leading producer of ships for the British market -- ships that sailed to England loaded with cargoes of lumber. Although the industry brought prosperity to many Island communities, it also spelled the end of the Acadian forest through its harvest of the best of every species. Ship construction records of the time show that the vessels of the 1850s were constructed of hardwoods and pine; two decades later, the ships were constructed almost entirely of spruce. By the late 1800s, production had dropped significantly, and, by the turn of the century, the industry was almost defunct -- partly due to the growing role of steam-powered iron ships, but also due to the exhaustion of the forest resource. By the mid-1800s, few, if any, undisturbed stands remained on PEI, and most had been highgraded more than once.

Settlement also played a major role in depleting the forests. As early as the 1820s, Island settlers were being warned to reserve a portion of their lands in forests for fuelwood. It was not until 1903, however, that the first public effort to manage the resource took place, with the passage of *An Act Respecting a Forestry Commission*. In its report, submitted in 1904, the Commission warned that "a timber famine is in sight" and called for reforestation, selection cutting, shelter belts, forest management instruction in the public school system, and the establishment of a public nursery.

Their concern is understandable: in 1900, only 440,000 acres or 31% of PEI's surface area was forested, according to the Department of Forestry's origin interpretation of aerial photos taken in 1935. However, this represented the nadir of PEI's forests in terms of acreage. During the next five decades, PEI experienced successive waves of farm abandonment and out-migration as Islanders, especially the young, left the province to seek opportunities elsewhere and to serve in the armed forces during the two World Wars. These farms rapidly reverted to white spruce stands. More than three decades were to pass before forestry briefly returned to the public policy arena.

In 1937, the Province sent a number of young men to take a forestry course in New Brunswick, followed by another group on 1938. The following year, PEI's first tree nursery was established at Dalvay, and a National Forestry Program was launched which employed the graduates in forest improvement activities in visible locations throughout the province. Due to the war, these

efforts lapsed in 1941. Limitations in both forestry knowledge and the quality of the resource resulted in very poor outcomes in many of the improved sites; extensive blowdown and little improvement in remaining trees led to public disillusionment with forestry management.

By 1950, post-war economic growth was spurring high demand for wood products, leading to massive increases in harvesting activity, including 100,000 cords of pulpwood annually. That year, the *Provincial Forestry Act* was passed, creating a mechanism to limit softwood clearcuts through a requirement of landowners to obtain a permit for every clearcut in excess of two acres or 20 cords. As market demand soon eased, however, and cutting activity abated, the Act was never enforced. However, the Province did take action to build its resource management capacity. During 1951, PEI entered into a five-year 50:50 cost-shared Forestry Agreement with the federal government, established the Forestry Division, and hired two professional foresters, J. Frank Gaudet and Wendell Profitt. The Agreement enabled the establishment of a forest nursery at Beach Grove in 1952, and its expansion over the next several years. Over the next quarter-century, the Forestry Division produced 4.5 million seedlings at the nursery and planted them throughout the province, on lands obtained by the Crown through property tax default or through the *Agricultural Rehabilitation Development Act*, and also on private lands, notably hedgerows and shelterbelts, where requested by landowners. During roughly the same period, farm acreage in the province declined a further 150,000 acres, much of it regenerating naturally in white spruce stands. By 1971, woodland covered some 47% of the provincial land surface, or almost 700,000 acres.

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The Forest Management Era

The Comprehensive Development Plan, initiated in 1971, marked the start of a new era in forest management, far more intensive, interventionist, and commercially focussed than in the past. The forestry plan emphasized long-range forest management to improve economic returns through more productive use of the resource, and rationalization of harvesting and processing activity. Less attention was given to the ecological roles of forests, such as shelterbelts, soil conservation, water quality, and air quality.

In 1973, the Royal Commission on Land Ownership and Land Use commented briefly on forestry, expressing concern about the fragmented ownership of the forests in 7,000 woodlots, 3,000 of them under 30 acres in size. "Such small holdings have defied serious management over the years and have degenerated in both quality and species composition." The Commission further noted that less than half the total annual growth was being harvested each year, and that much of the harvest was being sold for pulp while Islanders relied largely on imports for quality certified lumber. To address these issues, the Commission called on the Province to seek to develop larger management units of forest, and to provide supports and incentives to the sawmill industry to enable them to produce quality lumber competitively.

During the 1970s, more policy emphasis was placed on the acquisition of public forest land than on development of privately owned forest management blocks. The Comprehensive Development Plan's restructuring of the agricultural sector into larger farm units yielded substantial quantities of forest land as the Land Development Corporation purchased land from retiring and exiting farmers throughout the decade. This increase in public forest lands in turn spurred major increases in seedling production and planting, which had previously dwindled in the early 1970s as available lands became planted. During Phase II of the Development Plan, in the late 1970s, seedling production facilities were upgraded and new greenhouses constructed at a new site on Upton Road, the J. Frank Gaudet Nursery, and three regional offices were established, with some costs shared on a 90:10 federal-provincial basis.[1]

In 1979, as the Comprehensive Development Plan approached its final phase, the Department of Agriculture and Forestry commissioned a study by DPA Consulting to identify future directions and priorities for forest management. The study set out a rationale for a further increase in emphasis by the Province on the development of a commercial softwood forest resource -- aimed at fostering a forest industry, enhancing rural community development, and promoting greater self-reliance in energy and lumber needs. The study set out detailed recommendations for a $12 million, four-year program to achieve the objectives, with over half the funds devoted to forest enhancement and the balance divided among industry development, services such as research and resource mapping, and extension, planning, and evaluation.[2] This study laid the foundation for a major increase in forest management funding and activity, directed towards the restoration of the forests as a commercial resource, initially supported through the final phase of the Development Plan, and then through a five-year $20 million Canada-PEI Forest Resource Development Agreement signed in 1983.

In addition to its direct investments in forest enhancement, the Agreement called for the development of a Twenty-Year Forest Plan. Accordingly, in 1986, the Province commissioned Dendron Resource Surveys to prepare a plan. Warning that financial outlay would continue to exceed returns until the forest resource warranted private-sector investment, the study called for continued commitment to forest management in order to overcome the depleted state of the resource and to recover the integrity of PEI's forest as a healthy and productive unit. The study set out 20-year industry development objectives, then assessed the state of the resource, spelling out clearly for the first time an issue that was to drive much of forest policy for the next decade-and-a-half: the impending loss of quantities of short-lived, overmature old field white spruce, followed by a 40-year shortage of merchantable softwood from 2005 to 2045. To address these concerns, the study advocated extensive harvesting of older stands and softwood reforestation over the next two decades, complemented by thinning of younger stands, especially hardwood, to enhance vigour and increase wood availability from 2005 to 2025, at a 20-year cost of just under $100 million. Following that, the study noted, shortages would be lessened as the plantations currently being established came on-stream.

In 1987, as the Canada-PEI Agreement approached its end, the Province initiated a public consultation and planning process on forestry, leading to the release that August of its *White Paper on A Forest Policy for Prince Edward Island*. The document differed from earlier studies, in its emphasis on non-economic considerations, reflecting a new environmental consciousness within government: ". . . everywhere the Island landscape illustrates how forests protect soil and

water resources, provide habitat for a diversity of wildlife, create windbreaks for homes, livestock, crops, and roads, and contribute to the Island's renowned landscapes. . . . The forests of Prince Edward Island are intimate forests, perhaps more so than anywhere else in Canada. They are an integral part of a rural mosaic within which people live, work, play, and travel. They are part of the Island's life support system. . . ."[3]

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The White Paper then set out objectives, principles, and strategies which sought to balance economic, ecological, and social considerations. The priorities remained focussed on the restoration of a "productive forest" through a comprehensive silviculture program, in order to increase employment, value, import substitution, and exports, with emphasis on high value-added products. However, the policy also included a new emphasis on market development; increased participation of private landowners in management of their woodlots; attention to multiple use and conservation in program delivery; training; research and development; and public involvement. To underpin these, government proposed to introduce new legislation, and to seek the cooperation of the federal government in renewing cost-sharing arrangements.

In 1988, the *PEI Forest Management Act* was passed, embodying the directions of the White Paper. In the same year, the Province commenced a new five-year Canada-PEI Forest Management Agreement. Despite the more balanced range of priorities in the White Paper and Act, the renewed agreement maintained the softwood reforestation focus of its predecessor -- attributed to the fact that the federal funding which accounted for 60 to 80% of program funds from 1983 to 1994 was contingent on compliance with the Canadian Forestry Service's national guidelines favouring softwood reforestation.[4]

Later in 1988, the Province established the Royal Commission on the Land, with a broad mandate to inquire into and make recommendations on matters related to land ownership and land use. The Commission released its massive report in October 1990, reserving its longest chapter for the subject of "Trees." The title was deliberately chosen to reflect the Commission's view that government had lost sight of the trees in its focus on forests and specifically on the development of commercial forests. Following a detailed history of trees in PEI, government's forestry efforts, and the more recent evolution of the resource, the Commission made almost 20 recommendations aimed at redressing this imbalance.

In 1993, the Province released its first *State of the Forest* report, arising from a requirement of the 1988 Act to prepare an inventory in 1992 and every 10 years thereafter. These inventories were to include an analysis of the resource, a summary of past forest management activities, an estimate of wood supply shortfalls or surpluses, and proposed forest management measures. The report was based on comparisons of aerial surveys carried out in 1980 and 1990, as well as results from over 1,000 sample plots across the province. Detailed findings of the report are incorporated into the statistical section of the pages that follow; here it will be noted that the report strongly reiterated the issue first raised in the 1986 Dendron study: the impending shortages of sawlogs and studwood beginning early in the next century, unless current forest management approaches were continued. "If a non-management approach is taken, the graph

spells disaster. Harvest levels would already be exceeding sustainable harvests, and the collapse of the sawmill industry would be a certainty within 10 to 30 years," the report warned.[5]

External events were unfolding, however, which were to have a major impact on the nature and level of forest management activity in PEI. In 1993, the federal government, struggling to control its deficit, embarked on a sweeping program of expenditure reduction -- and federal-provincial economic development agreements were among the first areas to be cut. In March of 1994, despite efforts to secure extension funding, the Canada-PEI Forestry Agreement came to an end, and public funding for forest management dropped sharply, notwithstanding an offsetting increase in provincial spending from 1995 onwards, and industry support through a controversial $2/cord checkoff introduced by regulation in April 1996.

Forest management became even more narrowly focussed on seedling production, reforestation, and maintenance of existing plantations; other forest activities, such as stand improvement work and woodlot management advice to private landowners, declined sharply.

At the same time, lumber markets improved strongly throughout North America as the economy emerged from recession. With the loss of their traditional silvicultural employment, a number of small Island contractors turned to harvesting, while several large mechanized operations also emerged or expanded, leading to an era of intense competition and rapid restructuring within the industry. By the mid-1990s, harvesting activity was at a level not seen for half a century, much of it concentrated in old field white spruce. Public concern about the rate and nature of harvesting activity and agricultural conversion mounted rapidly, and pressures on the provincial government for action increased apace.

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In June 1995, the Forestry Division released an Inventory Update, based on a 1994 survey, which was reassuring in tone.[6] By 1996, however, public concern was intensifying about resource land use practices in Prince Edward Island, including "the rapid expansion of the potato industry, increased soil erosion, accelerated land clearing, clearcutting of forests, increased pesticide use, and conflicts between producers and their non-farming neighbours."[7] Accordingly, in its 1996 Speech from the Throne, the then Liberal government announced its intention to develop a Resource Land Use Strategy. Following the next provincial election, in November 1996, the newly elected Conservative government followed through on this commitment, establishing the Round Table on Resource Land Use and Stewardship. The Round Table submitted its report the following year, with a broad range of recommendations to protect the resource land base of the province and to promote sustainable resource land use. Forestry issues constituted a major theme in the report.

The report noted that the industry had taken action to respond to public concerns, through the development of a voluntary Code of Practice for forest contractors by the government-industry Forest Partnership Council and its introduction on April 1, 1997. The report endorsed this Code of Practice initiative, but gave further consideration to the issues of overharvesting, clearcutting, and inadequate reforestation. The report reviewed various policy options to address these, including quotas, permit systems, and tax incentives, before concluding with a recommendation

to legislate controls if the industry and government were unable to agree on a system of softwood harvesting controls and reforestation by March 31, 1998.

The report also reviewed the Province's forest management approach, expressing some doubts about the focus on softwood reforestation and the minimal effort in encouragement of selective harvesting or hardwood silviculture. Although the softwood plantations were successful for the most part in terms of growth, this approach was perceived as very expensive, costing an average of $600 an acre and affecting only a relatively small proportion of the total forest. "There are many who believe that this money could have been better spent," the report observed with regard to the $65 million in funding over the preceding 15 years, "and that, at the very least, the emphasis in future must change."[8] Accordingly, the report recommended a shift to a broader range of species, including hardwoods; an expansion of approaches to include a variety of silvicultural options other than cut-and-plant; elimination of landowner incentives for single-species plantations and non-native species; reduction of subsidized application of herbicides; strengthened penalties for premature harvest or conversion of plantations; and waiving of reforestation fees in some instances -- recommendations broadly consistent in tone and direction with those of the Royal Commission on the Land.

Harvesting activity, which had abated slightly in 1996, began to increase again in 1997. In the fall of 1997, the Department initiated a survey of compliance with the voluntary Code of Practice by both certified and uncertified contractors, including an assessment of whether stands were an appropriate age for harvest, buffer strips along streams and roads met the new standards, proper wildlife corridors and cover patches were left, and the site was left in good condition. Findings indicated shortfalls both in participation in the Voluntary Code, and in compliance among those who had registered. By the spring of 1998, controversy was mounting both within the industry and beyond on the sustainability of the resource, fuelled by the findings of the survey. In early April 1998, the Department announced its intent to introduce amendments to the *Forest Management Act* to allow for regulations to ensure forest health and productivity. The Minister indicated that these regulations were being developed by the Forest Partnership Council, and would be brought to the public for consultation.

In the spring of 1998, the Forestry Division released two resource updates in rapid succession, drawing on 1997 survey data. The Inventory Update, in April, showed a major increase in the rates of both harvesting and conversion.[9] The Forest Resource Update, in May 1998, was released in concert with the tabling of amendments to the *Forest Management Act* providing for a regulated Forest Contractors Code of Practice. Based on "discussing various options with the forest industry and woodlot owners," it set out scenarios showing disaster unless regulations were introduced.[10]

The amendments to the *Forest Management Act* pursued these goals by providing for measures prohibiting harvest of immature stands and providing for appropriate harvest practices. In June 1998, the Forest Partnership Council released a discussion paper setting out details of the proposed regulatory approach.[11] During the summer, the Council conducted consultations on the Code within the industry, and, in September 1998, it held public meetings across PEI on the proposed Code, at which some concerns were expressed regarding landowner reaction to the controls. In October 1998, the Council recommended to government that it proceed to implement

the regulations. Landowner resistance to the regulations mobilized rapidly. Protest meetings were held across the province, attracting hundreds of landowners, and a new organization, the United Landowners, was founded by January 1999. Over the following year, the UL worked actively to defeat the Code of Practice.

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In January 1999, the Forest Partnership Council released revised recommendations on the Code of Practice, modifying some restrictions. However, landowner opposition continued and, in April, the Standing Committee on Agriculture, Forestry, and Environment undertook to examine the regulations. Over 40 groups and individuals made presentations, the majority of them expressing opposition to inclusion of landowners in the Code. In June 1999, the Committee submitted its report. While it supported strengthened regulation of the forestry harvest, it called for the Code of Practice to apply to contractors alone, and to exempt landowners conducting their own harvest from having to obtain an Intent to Harvest form. The Committee also called for strengthened public education and contractor training, better tracking of the harvest, a new industry advisory body, and examination of other means to promote forest management by landowners, including a trust to protect young stands, and tax incentives.[12]

In August 1999, the Department released an 11-point Forest Action Plan responding to most of the recommendations of the Standing Committee.[13] Later in the fall, amendments to the *Forest Management Act* were introduced. These fell short, however, of addressing the concerns of landowners, and public controversy mounted again. In December 1999, the Department established the Forest Improvement Advisory Council as a ministerial advisory body, and asked it to take over the responsibility of advising on the amendments. This measure did not stem the tide of landowner concern, however, and, in January 2000, Premier Binns announced at a landowners' meeting that the regulations would be withdrawn and revised to address their concerns. In October 2000, a substantially modified Code of Practice was released to the industry, focussing on larger contractors and on containment of environmental damage through logging activity. There were no provisions for regulation of the level or nature of the harvest in the revised Code.

Clearly, the government's foray into regulation of forestry activity has been a difficult experience. The final section of this paper outlines some of the policy issues underlying the twists and turns of forestry policy over the past decade. First, however, this paper examines statistical data related to the forest and the forestry industry, to provide a quantitative foundation for the analysis.

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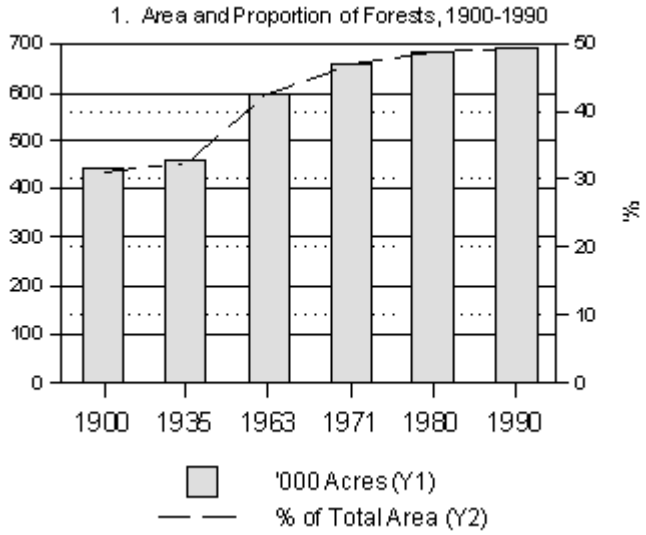
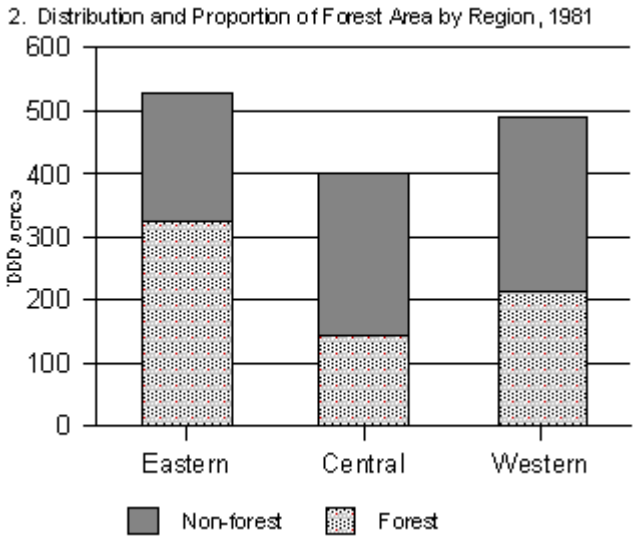
Forests and Forestry: A Statistical Overview

To complement the narrative set out above, this section provides a quantitative description of the evolution of the forest resource -- its size, distribution, species composition, and age -- and of the forest industry, including harvesting activity, value, employment, and exports.



Area As indicated in Chart 1, the total area of forested land increased from 440,000 acres or 31% of PEI's surface area at the beginning of the century, to just under 700,000 acres or 49% by 1990. (The dates represent local surveys, used in preference to the Agricultural Censuses, which only identified forested area of occupied farms.)[14]

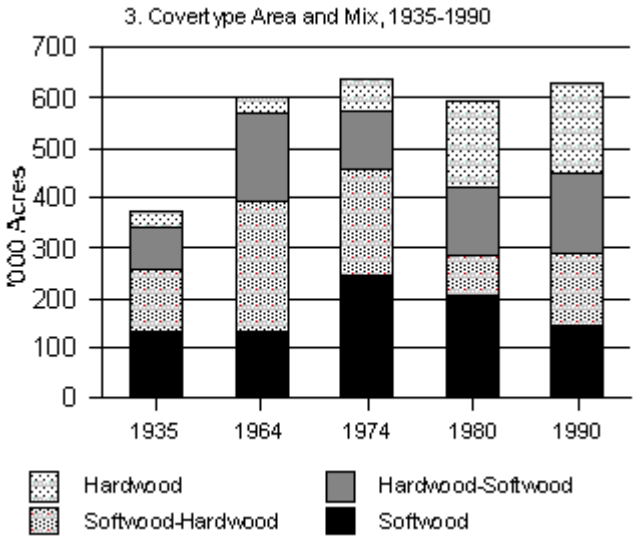
While harvesting and conversion activity during the 1990s reduced this level, their effects would have been offset in some measure by reversion of clear land to forest in other areas of the province. The extent of net reduction in forest area will not be fully known until the results of the 2000 aerial survey and inventory of forest land are released, in 2002.



Distribution Relatively few publicationss have quantified the distribution of forested land among PEI's regions over time. Descriptions make it clear, however, that settlement and farming has long been concentrated on the more fertile lands of central PEI, and forests have

predominated in the eastern and western regions of the province, as well as the central hilly lands. Forest cover had long been particularly heavy in the wet low lands surrounding Egmont Bay, the forest belt extending along PEI's northeastern coast, and the hilly lands of southeastern PEI -- areas whose poor drainage, light droughty soils, or topography, made them marginal for

agriculture. The data in Chart 2 is drawn from the Dendron study in 1986,[15] indicating that almost half of PEI's forest area was in Eastern PEI, where it covered over 60% of the surface area. Central PEI accounted for one-fifth of the forest area, and Western PEI for just under one-third. (It should be noted that these are forestry administrative divisions and correspond only approximately to county boundaries.) Although the harvesting activity of the 1990s may have led to some net reduction in forest area, the distribution of harvest activity was similar to the distribution of forest, and hence each region's share of forest has likely remained fairly constant.



Covertype Four main categories have been used to describe the type and mixture of forest cover in PEI: softwood (75% or more conifers), softwood-hardwood (50-75% conifers), hardwood-softwood (50-75% broadleaf trees), and hardwood (75% or more broadleaf trees).

Surveys over time indicate major fluctuations in the mix of these types, reflecting the successional patterns of the forest. Observers have long noted that each time PEI's forest cover is removed or destroyed, the forest regenerates in what is commercially viewed as poorer-quality species. Thus, the long-lived shade-tolerant hardwoods of the Acadian forest such as sugar maple, yellow birch, beech, and oak were replaced by the shorter-lived shade-intolerant species of the early successional forest, such as red maple and white birch. Abandoned farmlands grew up in white spruce seeded from hedgerows. If left undisturbed, the spruce stands shifted naturally to a mixed hardwood stand as the spruce collapsed and hardwoods grew up in the gaps. If harvested, the cuts, unless reforested, regenerated in species such as pin cherry, poplar, white birch, and fir.

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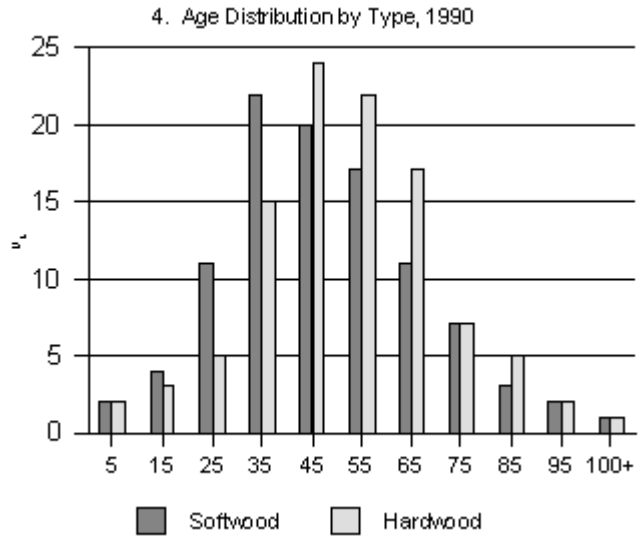
Chart 3 shows the shifting distribution of these covertypes over time, in the context of changing forest area.[16] The total area is somewhat less than that shown in Chart 1 due to the omission of clearcuts, alders, and unclassified areas. The chart highlights several trends:

- Overall forest cover increased strongly from 1935 to 1964.
- The proportion of pure softwood (old field) stands peaked in 1974 at 39% of the total, dropped to 37% in 1980, and dropped further to 23% in 1990 (mostly due to a natural increase in the proportion of hardwood in all covertypes).

- Hardwood stands, which were almost decimated in 1935 and which only accounted for 5% of covertypes as recently as 1964, recovered to comprise the single largest category, at 29% in 1990, despite the heavy harvests of fuelwood during the 1980s.
- In 1990, the covertypes were more evenly distributed than at any time in the preceding six decades, with each category roughly one-quarter the total, and the overall resource almost equally divided between softwood and hardwood, mixed woods and pure stands.

Species Composition Looking beyond the overall hardwood-softwood mix to the species composition of the forest, a less balanced picture emerges. A single species, red maple, accounted for one-quarter of the forest biomass in 1990, according to the first provincial State of the Forest report. Unlike PEI's major softwood species, red maple has remained relatively unscathed by diseases and pests, and, despite its prevalence, is little noticed by the public. Fir and white spruce accounted for a further 19% and 16% respectively. Eight other species accounted for most of the remaining 40%, with white birch, poplar, sugar maple, and black spruce each comprising 5-6% of the total, and smaller quantities of yellow birch, red spruce, larch, and beech, each accounting for 3-4% of the total. During the 1980s, the resource increased overall in terms of biomass, and, within this context, became more dominated by red maple and white spruce.[17]



Age Class Distribution The Department's surveys indicate that a disproportionate share of PEI's trees are in the intermediate-aged categories, with few trees older than 75 years, and, more disturbingly, very few trees aged 15 years and younger. As noted in the State of the Forest report,

"The ideal in forest management is to have an age class structure which has equal area in all classes . . . as mature areas are harvested, they revert to the young category, to complete the cycle." Instead, as is clear in Chart 4, PEI's woods are full of "aging boomers." In 1980, the average age of softwood was 41.4 years while hardwood averaged 40 years. Between 1980 and 1990, the average age of hardwoods increased 9.1 years to 49.1, indicating that the entire resource moved forward with little mortality. The average age of softwood, meanwhile, increased by 6.6 years to 48, indicating some mortality in the stands, according to the State of the Forest report.[18] The concentration of the harvesting activity of the 1990s on softwood stands may extend this pattern of diverging average age.

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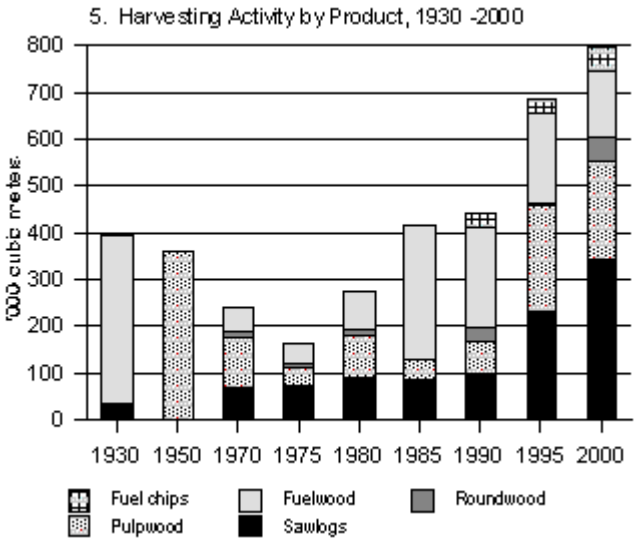
Chart 4 also highlights the issue of such concern to the Department over the years: the very low proportion of younger trees, pointing to major shortages of merchantable trees some two decades hence. This impending decline has formed the rationale for the Department's core focus for the past two decades; however, forecasts of the nature and timing of this decline have varied significantly over time, depending on the assumptions and variables underpinning the analysis. Technology has played a key role in these changing forecasts, by enabling industry to harvest stands previously considered uneconomic.



Level and Nature of Harvesting Activity
Chart 5 shows harvesting activity over the past seven decades, highlighting the massive increase in harvesting activity of the past decade, concentrated in sawlogs and pulpwood.

The data are drawn from several different sources,[19] and may not be entirely comparable, as well as being approximate or partial in the early decades; however, the broad trends are clear:

- an increase in harvests in the 1980s, followed by a massive jump in the 1990s;
- a shift in the composition of the harvest from fuelwood to industrial wood (sawlogs and pulp) from 1985 to 1999; and
- a near quadrupling of the sawlog harvest over long-term averages by 2000 (although it should be noted that the definition of sawlogs has expanded due to new processing technologies that allow lumber to be cut from wood previously classed as pulpwood).

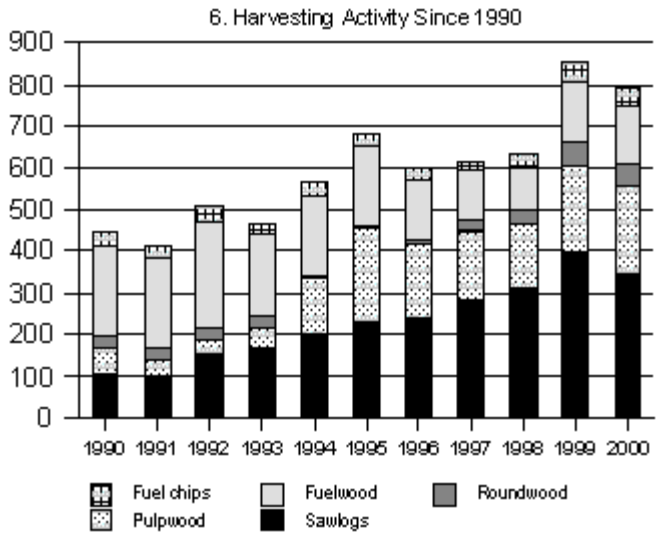


Chart 6 contains a more detailed examination of harvesting in the past decade,[20] showing activity climbing to a peak in 1995, dropping slightly over the next several years, and returning to an even higher peak in 1999, spurred by a major increase in both sawlog and pulp production as well as a recovery in fuelwood production, which had been declining throughout the decade. Although not highlighted in the graph, OSB (oriented strand board, using hardwood fibre) has also emerged as a growing category, first appearing in the statistics in 1996 at 8,000 cubic metres and increasing to 56,000 cubic metres by 1999. Production was down in 2000, partly due to a market softening in mid-year, and partly due to a reduction in production at the Georgetown mill to accommodate a major retooling by the new owners. In the spring of 2001, according to industry information, demand and prices are strong and harvesting activity is increasing again.[21]

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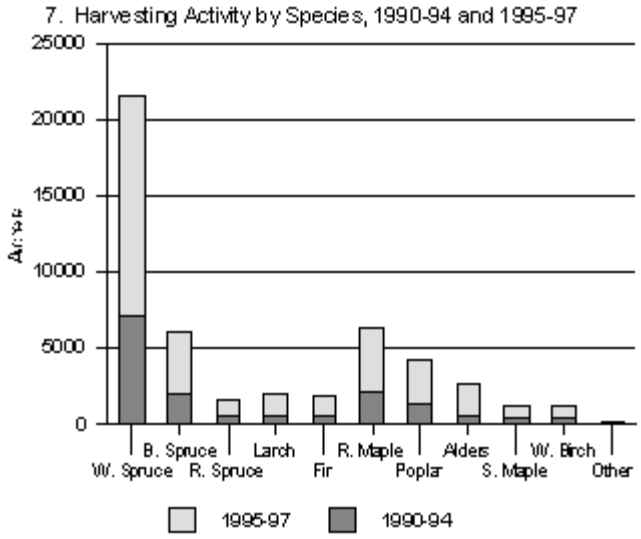
Harvesting Activity by Type and Species The foregoing graphs serve to explain the mounting public concern over the level of harvesting activity during the 1990s. The harvest in 1999 was double that of a decade earlier, and quadruple that of 1975. It is understandable that such a high level of activity would raise widespread concerns about the sustainability of the resource. Given the uneven age structure of the forest, however, and the impending demise of many stands, the extent to which the cut is "unsustainable" depends in considerable measure on what is being cut. Drawing on the 1994 and 1997 Inventory Updates, Chart 7 shows the species distribution of harvest activity during the 1990–94 and 1995–97 periods, while Chart 8 shows the age structure and Chart 9 shows the geographic distribution of the harvest.



As can be seen in Chart 7, the harvest was overwhelmingly focussed on white spruce, which accounted for over 44% of the 49,000 acres harvested over the seven years. Red maple and black spruce accounted for a further 13% each, while poplar and alders made up another 14% of the cut. [22]

The remaining 17% was spread fairly evenly over the other five main softwood and hardwood species in the province. This harvesting pattern suggests that the 2001 inventory is likely to show a substantial reduction in the share of forest held by white spruce, and a further increase in the shares held by red maple and balsam fir, whose share of the harvest fell considerably short of their share of the total resource. In the case of fir, this increase in share was moderated by the collapse of some older stands.

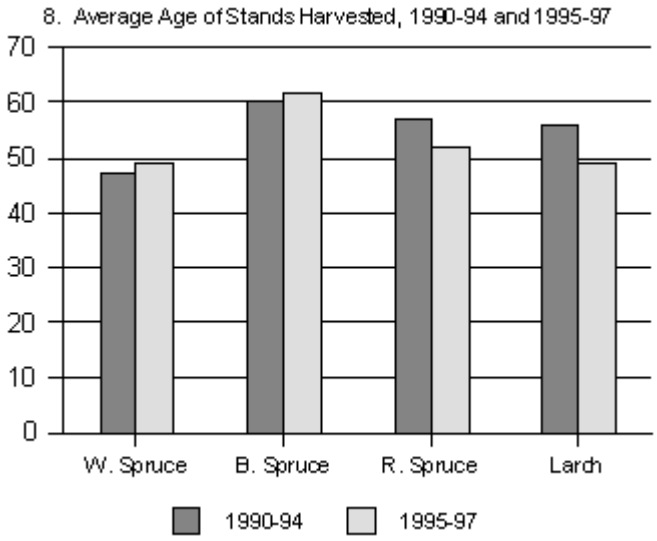
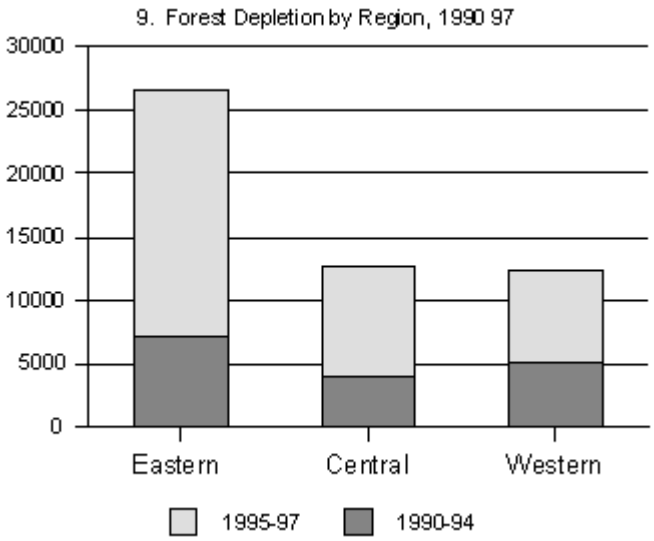


Chart 8 indicates that the average age of the two main softwood species harvested over the period -- white and black spruce -- increased in the second period. The average age of red spruce and larch declined somewhat, but, as shown in Chart 7, their share of the overall harvest was only modest.

The average stand age for all species harvested in the 1995-97 period was 52 years. Only 1% of all sampled softwood stumps were less than 30 years old, and a further 16% were aged 30 to 40 years. This latter was, however, a relatively high proportion compared to the small amount of the forest in this age class.

Quality of wood is also a consideration. The inventories in 1994 and 1997 measured the proportion of softwood stumps showing rot or stain (a condition which is a precursor to rot and reduces the value of the wood). The 1994 inventory found a range of 12 to 25% rot in softwood stumps on harvest sites, depending on species, and a range of 12 to 38% stain, with larch faring the best in both categories and red spruce the worst. The 1997 inventory found significantly lower levels of rot and somewhat lower levels of stain in the white spruce, black spruce, and larch stumps harvested during 1995–97. The survey omitted red spruce, and instead provided data on balsam fir, 16% of which showed rot and 63% of which showed stain.[24]



As indicated in Chart 9, the reduction in the forest resource was far from evenly distributed across PEI -- although when the uneven distribution of the resource itself is taken into account, the proportions are more comparable. The Eastern District, with 48% of the forest resource, accounted for 52% of the cut, and the Central District, with 21% of the resource, accounted for 24% of the cut. The Western District, meanwhile, with 31% of the forests, saw a relatively lower rate of forest reduction, at 24% of the total. The purpose of cutting also varied between districts, with the highest commercial harvest in the Eastern District, relatively high rates of blueberry conversion in both the Eastern and Central Districts, and a comparatively high rate of agricultural conversion in the Western District.[25]

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Industry Revenues Only limited data are published on the economic contribution of the industry, in striking contrast to the extensive information base on the forest. Although the Department of Agriculture and Forestry gathers statistical data on the industry, it does not report them to the public on a regular basis. Discontinuities exist in major series such as the industry's contribution to GDP, and the small scale of the industry in the national context results in its omission from federal data or losses of accuracy due to rounding. Major aspects of the industry, particularly fuelwood and custom sawing by small mills, fall at least partially within the informal economy, and thus are not fully captured by formal statistics. Traditionally, a component of both wage and sales transactions in the sector has been on a cash basis, although this may be declining given the shift of the past decade to large-scale corporate logging and processing. As such, formal statistics

have historically fallen well short of capturing the full value of the industry to the economy. With these caveats, existing data from the Province's Annual Statistical Reviews indicate that the reported value of the industry increased from a minimal level throughout the 1960s to the early 1980s, to substantial levels in the 1990s, including:

- an annual contribution by the industry to provincial Gross Domestic Product averaging $9 million annually from 1996 to 1999;
- value-added by the province's wood industries rising to a peak of $11 million in 1997, the latest figure available, and a value of shipments peaking at $61 million in 1999 before dropping to $55 million in 2000;
- a tenfold increase in international exports between 1994 and 1999, from $2.1 million, to $21.8 million, before dropping to $16.3 million in 2000.

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Industry Profile Formal data on the industry are also relatively limited. Throughout much of PEI's history, forestry activities have been carried out by landowners themselves for fuel and farm lumber, and a minor source of cash income. With the advent of forest management in the 1970s, a silvicultural industry emerged to carry out the reforestation and stand improvement activities supported by public funding. As well, a staff capability was developed at the Department of Agriculture and Forestry, comprised of professional foresters and forest technicians. By the late 1980s, a few larger contractors were beginning to emerge and to mechanize, as described earlier in this paper. By the mid-1990s, the Round Table estimated that five large mechanized contractors accounted for about half the harvesting activity, while over 40 small contractors using manual crews cut the other half. During 2000, the market slowed and the local market restructured as described below, leading to an abatement of activity and some reduction in the number of contractors actively engaged in harvesting. In the spring of 2001, however, the industry rebounded strongly, and by June, prices had risen to all-time highs. The effect of these trends on the level and nature of harvest remains to be seen.

The sawmill industry has been a feature of rural PEI since the early 1800s. These small mills played a key role in the shipbuilding industry, as well as providing building materials for homes and other buildings within their communities. Although the latter role has continued to the present day, the sawmill sector is in the midst of a restructuring. The local industry is dominated by a large mill at Georgetown, which saw extensive upgrades and modernization throughout the 1990s before changing hands to become part of the Irving group of companies in 2000. Since taking over the mill, the Irvings have carried out further upgrades and are introducing significant changes in practices, approaches, and expectations of their suppliers. Only a handful of other mills operate year-round, and many of those are engaged in or moving to niche production such as long dimension lumber, processing of underutilized species, zero-waste production, and specialty products, in efforts to remain viable. The traditional small, family-run, often seasonal, community sawmills, once numbering over 50, are dwindling year by year as their owners retire or cease operations. In their place, a sector of mobile sawmills is emerging to meet ongoing demand for small lots of custom lumber by Islanders. Non-PEI processors also play a role: all

pulpwood harvested in PEI, plus small quantities of high-quality veneer wood and an unknown and fluctuating proportion of sawlogs, are sold outside the province by harvesting contractors.

Employment in the industry has not increased at the same rate as production, value, or exports. In 1951, only 353 people were employed in logging and wood industries. By 1981, a total of 660 people were employed in the sector, half in the wood industries. Notably, of the remainder, 220 or one-third of the total were employed in "forest services" and only 75 people or 11% were working at logging. In 1989, the total number employed in the forest industry remained unchanged at 650. The 1996 census indicated total employment of 455 in logging and forestry, although this did not include the wood products manufacturing industry. Anecdotal reports indicate that during the 1999s, an increasing proportion of the logging crews in manual operations were made up of out-of-province workers, mostly from Newfoundland.

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Issues

The story of PEI's forests raises some of the key public policy issues of our time, including the globalization-driven changes in the structure and operation of our resource industries; the emergence of environmental awareness and a focus on sustainability among the public and policy-makers; the shifting balance between the public good and private rights; the federal government's reduced role and presence in many important fields; and efforts to develop more participative approaches to public policy development. In the case of forestry, the challenge of resolving these issues has been exacerbated by the lack of a consensus on the role and purpose of PEI's forests and by the limited public understanding of the nature and condition of PEI's forest resource and forest industry. In the absence of such consensus and understanding, the 1990s can be likened to a place where three tides meet: the market forces driving the industry, the continuing momentum of the industrially oriented forestry policies of the past, and the burgeoning environmental awareness of an increasingly urbanized society. In this context, the policy turbulence, cross-currents, and muddied waters of the past decade are understandable.

The initiative by the Institute of Island Studies to hold a Public Forum on forestry offers an opportunity for public discussion and debate of these issues in an objective way. This paper has sought to provide an information base for this forum. As well, some of the key policy issues arising from the foregoing description are noted below:

- Sustainability -- definitions, forecasts, and means to address it:
    - International and national definitions of sustainability have been evolving towards a broad holistic approach which takes into account ecological and social considerations. In Prince Edward Island, however, the infrastructure, programs, and policies of the past mean that, despite commitments to a broader focus in official statements of policy, the bulk of government's financial and human resources remained concentrated on the commercial softwood forest.

    - Although PEI has undergone historical cycles of deforestation, sustainability of the harvest in the current policy era is a relatively recent concern, coinciding with the intense harvesting activity of the mid-1990s onward. Prior to this point, sustainability concerns focussed on the poor quality of the resource in terms of species mix and age class rather than its quantity. Over the 1990s, this shift gave rise to changing forecasts of available resources and sustainable harvest levels, based on different variables and assumptions. These fluctuations and lack of continuity have meant that, despite their scientific quantitative aura, the forecasts are viewed with increasing scepticism by the industry. This lack of an accepted, consistent, understandable information base played a part in the controversy surrounding the efforts to implement the Code of Practice. The forthcoming State of the Forest report, in 2002 or 2003, offers an opportunity to address this issue.
    - Attaining sustainability has also proven an elusive challenge. The first early decades of forest management, up to the mid-1990s, featured strong emphasis on government programs and supports to bring about improvements in the forest resource, and to utilize mature and overmature trees for which there was no market demand. The withdrawal of federal funding, coupled with growth in market demand, brought about an attempted shift to a regulatory approach to control harvest levels. The public resistance to this approach, and the subsequent softening of regulations by government, suggest that other policy approaches may need to be explored — approaches that take fuller account of the unique role of PEI's forest landowners in managing the resource.
    - At the same time, the role of the market requires consideration. The forces of globalization dictate that PEI's forest industry will face continuing pressures to compete on price. At the same time, however, worldwide, markets are increasingly demanding that forest products come from sustainably managed resources -- although there is limited willingness as yet to pay a premium for such products. Nonetheless, this trend is beginning to affect PEI. The American Pulp and Paper Association, a major US body which the Irvings are seeking to join, requires its members to adhere to the Sustainable Forestry Initiative. This initiative, one of over 75 certification systems worldwide, requires companies to use "environmentally responsible practices that promote the protection of wildlife, plants, soil air and water quality." It appears likely that certification will eventually become a requirement for any harvest contractor operating on a commercial scale and serving export markets. The effects of this trend on the sustainability of the forest and the competitiveness of the industry remain to be seen.
- In PEI, 86% of the forest was privately owned as of July 2001, compared to 12% nationally, and private woodlots account for 97% of the harvest. These circumstances mean that the private landowner is crucially important to effective forest management in PEI. While government policies have long acknowledged this reality, efforts to incorporate it into forest management approaches have met with many challenges, including the large number and diverse range of landowners, the small size of many of the holdings, and the limited economic return to landowners from their woods. Although the programs of the 1980s succeeded in engaging some 2,500 landowners in management plans, the withdrawal of funding has limited this approach. It may be time to consider

other approaches, such as tax measures, trust funds, and direct funding to woodlot owner groups, which increase incentives and capacity for landowner-directed forest management activities, individually and/or collectively -- an approach traditionally dismissed or overlooked in PEI in favour of government-led, "professional" forest management.

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- At a broader level, the overall role and approach of government needs to be scrutinized. The past two decades have seen an increasing focus by the Department of Agriculture and Forestry on the aspects of its mandate related to establishing and maintaining softwood plantations, and managing Crown forests. This is understandable in light of historical events and the current nature of the Department's infrastructure, human resources, and collective policy orientation. Although the public at large tends to accept reforestation as a "Good Thing," many informed stakeholders question the Department's continued concentration of its resources in this area. A business case has never really been made for this focus and for the investment of several million dollars of public funds a year, in terms of anticipated return on public investment. At this time, the social and economic benefits of government's approach are difficult to assess, and its aesthetic and environmental effects are a subject of controversy. In short, the rationale for current approaches to forestry management needs to be demonstrated.
- Linked to this, the Department faces the challenges of defining its role with regard to its key stakeholders -- forest landowners and harvest contractors — and of realigning its organizational culture and its policies and services to a made-in-PEI approach that better responds to the structure of the industry, the evolving nature of the forest resource, and the realities of market forces.

Conclusion

Where does this leave us today in terms of defining and attaining sustainability in our forest resource? A need would seem to exist for an informed public debate on our forests and on forestry, leading to a new, more balanced, widely shared consensus on the purposes of our forests, medium- and long-term goals for the quantity, quality, and nature of the resource, and a realignment of resources as needed to achieve those goals. The Public Forum this paper supports is an important first step in pursuing that goal.

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Notes

1. The historical information in the foregoing section is drawn from Dendron Resource Surveys Ltd., *Prince Edward Island Twenty-Year Forest Development Plan* (Charlottetown: PEI Energy and Forestry, April 1986); J. Frank Gaudet, *Forestry Past and Present on Prince Edward Island* (Charlottetown: Department of Agriculture and Forestry, 1979); Royal Commission on the Land;

Chapter 20: "Trees," *Everything Before Us*, Volume One (Charlottetown: Queen's Printer, 1990), pp. 365–410; and the *Round Table on Resource Land Use and Stewardship, Cultivating Island Solutions* (Charlottetown: Government of PEI, August 1997), pp. 76–79.

2. DPA Consulting Ltd, *Towards a Forest Industry Development Strategy for the 1980s* (Charlottetown: PEI Agriculture and Forestry, 1979), pp. 8–9.

3. PEI Department of Energy and Forestry. *A Forestry Policy for Prince Edward Island: White Paper* (Charlottetown: Queen's Printer, 1987), p. 3.

4. Round Table op. cit., p. 84.

5. PEI Department of Agriculture, Fisheries, and Forestry, *Prince Edward Island State of the Forest Report* (Charlottetown: Queen's Printer, 1993), pp. 30– 31.

6. PEI Department of Agriculture, Fisheries, and Forestry, Forestry Division, *A Report on Forest Resource Issues: An Update of the 1990 Forest Inventory* (Charlottetown: Queen's Printer, 1995).

7. Round Table op. cit., p. 1.

8. Ibid., p. 84.

9. PEI Department of Agriculture and Forestry, "1997 Prince Edward Island Forest Inventory Update: Summary" (Charlottetown: DAF, April 1998).

10. PEI Department of Agriculture and Forestry, 1997 *Forest Resource Update* (Charlottetown: DAF, May 1998).

11. PEI Forest Partnership Council. *The Forest Code of Practice Regulations: Discussion Paper* (Charlottetown: June 1998).

12. PEI Standing Committee on Agriculture, Forestry, and Environment. *Final Report on Proposed Forest Contractors Code of Practice* (Charlottetown: Legislative Assembly, June 1999).

13. PEI Department of Agriculture and Forestry. *Sustaining Prince Edward Island's Public and Private Forest: The Forest Action Plan* (Charlottetown: Government of PEI, August 1999).

14. Data compiled from Glen, op. cit. p. 5, re 1900, 1935, and 1990; Royal Commission, op. cit., p. 369, re 1964; and Dendron, op. cit., p. 4, re 1981.

15. Dendron, op. cit., p. 48.

16. Shows the data in Figure 3 of the State of the Forest Report, op. cit., p. 10, in a different visual format.

17. Ibid., pp. 11–12.

18. Combines data from Figures 6 and 7 of the State of the Forest Report, op. cit., pp. 15–16.

19. 1930 data from Glen, op. cit.; 1950 data from Dendron; 1970–1985 data from Economics, Statistics, and Fiscal Analysis Division, *Prince Edward Island Statistics: Past and Present* (Charlottetown, Department of Finance, 1990) Table 48; 1990–1999 data from Provincial Treasury, A*nnual Statistical Review*, 1991, 1996, and 2000 editions (Charlottetown: Provincial Treasury, 1992, 1997, 2001), Table on Estimates of Primary Forest Production in each edition.

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20. *Annual Statistical Reviews*, Ibid.

21. PEI Forest Improvement Association, Newsletter (Charlottetown, PEIFIA, June 2001).

22. Department of Agriculture, Fisheries, and Forestry, *1994 Prince Edward Island Inventory Update* (Charlottetown: DAFF, June 1995), Tables III and IV, p. 3; and Department of Agriculture and Forestry, *1997 Prince Edward Island Inventory Update* (Charlottetown: DAF, April 1998), Tables III, p. 3, and IV, p. 4.

23. 1994 Inventory, Ibid., Table IX, p. 6; 1997 Inventory Update Ibid., Table IX, p. 9.

24. 1994 Inventory, Ibid., Table XI, p. 6; 1997 Inventory Update Ibid., Table XI, p. 9.

25. 1994 Inventory, Ibid., Tables I and II, p. 2; 1997 Inventory Update, Ibid., Table I, p. 2.

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