The Working Group on Community Involvement in Forest Management (WG-CIFM) has convened five times during the meetings of the Intergovernmental Panel on Forests in Geneva and New York from 1995 to 1997. Over 157 individuals have participated in working group sessions, representing forest departments, donor agencies, NGOs, and academic institutions from most of the world's regions. The sharing of national experiences provides a clearer picture of common issues, creating opportunities to improve national, regional, and international policies. The WG-CIFM is committed to discovering better ways to engage communities in the sustainable management of forest lands.

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Cover Photo:

The spectacular beauty of North American forests, like this one from Desolation Wilderness Area in the Sierra Nevada Mountains of California, is widely appreciated by the public in both the United States and Canada. Recreational demands are growing steadily, often generating greater employment opportunities and revenues than conventional timber enterprises. Forest-dependent communities and the larger society increasingly support conservation-oriented management and are demanding a greater say in decision making that impacts vast public forestlands. (photo: Poffenberger)

Back Cover Photo:

Forestry technician, Nick Swan, inspects ponderosa pine trees after a lightning fire burned 2,000 acres of forest on the Yakama Indian Reservation in southcentral Washington. The Yakama have rejected clearfelling, and instead adopted a mixed-age, selective felling system for their 600,000 acre timber reserve that generated $45 million in 1996. (photo: Edwin Lewis)

Graphics:

COMMUNITIES AND FOREST MANAGEMENT IN

CANADA AND THE UNITED STATES

A REGIONAL PROFILE OF THE WORKING GROUP ON
COMMUNITY INVOLVEMENT IN FOREST MANAGEMENT

FOREWORD TO THE REGIONAL PROFILE SERIES

This series of regional assessments was initiated by an international group of individuals concerned about the future of the world's forests. We began meeting during the sessions of the Intergovernmental Panel on Forests (IPF) convened by the United Nations in New York and Geneva between 1996 and 1997. In order to promote regional exchange and better inform international policy dialogues, we formed the Working Group on Community Involvement in Forest Management (WG-CIFM). The World Conservation Union (IUCN) agreed to facilitate our activities and administer our support which was provided by the Ford Foundation and the United Kingdom's Department for International Development (DFID).

The Working Group currently includes forest administrators, planning officers, forest scientists, environmental activists, and diplomats. Our discussions of the underlying causes of deforestation and promising strategies to bring greater stability to the world's forests revealed many similarities between our regions. Most group members agreed that the expansion of government and private industry control over forests in the past century had increasingly undermined the management role of communities in their nations. In some cases, this was reflected in the deterioration of indigenous forms of resource stewardship; in others, policies did not allow for localized systems of forest rights and responsibilities to be established. Many participants reported that a growing number of communities in their countries are attempting to gain greater control over their forest resources. Nations in both the South and the North are beginning to address this imbalance by developing policies and programs to re-engage communities in forest management decision making.

During the meetings of the Working Group we noted that many government forestry agencies are underfinanced, their budgets cut over the past decade due to political changes and economic restructuring in both developed and developing countries. While the rapidly shrinking public forest base is under unprecedented pressure from industry as well from local and urban public forest consumers, many forestry agencies have been faced with severe financial constraints and staff reductions that frustrate their attempts to sustainably manage their national forests. Economic recessions and government downsizing have been catalysts for innovative solutions to forest management problems. Working side by side with local communities, some forest agencies are forging new partnerships and approaches to forest management. While the subtle pace of this change cannot stem criticism from conservationists, industry, and local communities not experiencing change, the dialogues and partnerships have sparked a new dynamic animated by citizens coalitions and regional processes incorporating diverse stakeholder groups. Our group concluded that these parallels warranted a sharing of community forest management experiences between countries in the hope of accelerating the development of more effective strategies to engage forest stakeholders in sustainable forest management.

Throughout the discussions of the IPF, the Working Group sought to introduce language to the draft recommendations that could contribute toward creating new policies that support greater community involvement in forest management. The Working Group convened six times during the meetings of the IPF between 1996 and 1998. Over 150 individuals have participated in Working Group sessions. The WG-CIFM
was able to effectively influence the final text of the IPF that resulted in some 135 proposals for action approved by governments in June 1997 at the United Nations General Assembly Special Session.

In order to extend our exchanges to colleagues and other interested readers who were unable to participate in the Working Group, we decided to establish a monograph series that characterizes some of the diverse community forest management experiences from each of the world's regions, emphasizing community perspectives. We defined "community" broadly to include small forest-dependent settlements, indigenous peoples, as well as the greater national civil society. This broad definition presented the challenge of capturing the inevitable diversity of opinion present in the realm of forest "stakeholders," namely, all those who have ties to or needs that are met through forest environments. Members of the WG-CIFM agreed that the profiles should reflect a range of views of communities, planners, foresters and other stakeholders within each country. The profiles attempt to be both a synthesis and a mosaic of these complex and diverse national and regional realities.

The reports are designed for diverse audiences including international policy makers, national planners engaged in shaping forest management strategies, forestry practitioners, development specialists, and other stakeholder groups. To familiarize our cross-cultural audience with the national contexts, each regional profile provides a brief summary of the region's forest management history, human ecology, and administrative organizations, followed by a series of case-based experiences with community involvement in forest management.

Each profile is compiled with the collaboration of many individuals and organizations engaged in the countries of the region under review. The editorial and writing team includes a mix of generalists and in-country specialists who draw on an extensive collection of existing histories, policy reviews, ecological assessments, personal interviews, and case materials. During the assimilation of materials for review, the writing teams participated in national and regional meetings to capture contemporary views and policy trends. Outside reviewers read and commented on a succession of draft manuscripts to better ensure a balanced presentation. Nonetheless, given the controversial nature of the forest policy debate, numerous differences over the interpretation of data or the validity of information are likely to occur. For this reason, the Working Group felt it important to act independently of any organization or institution.

The findings of each regional report are therefore the responsibilities of the authors and editors alone. We hope our readers find these materials useful in seeking solutions to forest management problems.

Mark Poffenberger

ACKNOWLEDGEMENTS

This report brings together a broad range of experiences with community involvement in forest management from the two large and diverse nations of Canada and the United States of America. In trying to achieve this complex goal, the editors and contributing authors sought both to document national trends and to capture local learning. This required drawing on the oral and written accounts of dozens of individuals.

The editors would like to express their sincere appreciation to the contributing writers of this profile who took time from their busy schedules to draw together case materials and provide information for the sectoral assessments. Special thanks are due to Andrew Deutz for his review of the Cree experience in Québec, Thomas Beckley for his discussion of Mistik Corporation of Northern Saskatchewan and the Lower St. Lawrence, and Diana Boylen for her contributions to the review of the evolution of Canadian forest policy. The editors are also grateful to Claudia D'Andrea for her report on the ways civil society is shaping forest management, and to Lynn Jungwirth, Jonathan London, and Rosemary Romero for their case studies of small forest-dependent communities in California and New Mexico.

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For their generosity in sharing the forest management experiences of First Nations and Native Americans, I

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Mark Poffenberger and Steve Selin, Editors

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PART I: INTRODUCTION

The forests of Canada and the United States existed for millions of years before the arrival of human beings, their range and composition shaped and transformed by climate change, fires, and floods. Today, these nations possess 17 percent of the Earth’s forestland, representing a variety of ecotypes and immense biodiversity (see Figure 1). Extending from the boreal forests of northern Canada and central Alaska to the Southeastern pine forests of Florida, from the temperate rain forests of the Pacific Northwest to the eastern mixed forests of the Atlantic coast, they cover 750 million hectares.
Over the last two centuries the expanding populations of Canada and the United States have diminished the region's forest resources, both through industrial exploitation and conversion to agricultural and residential needs. Where forests remain their biodiversity and health has often been eroded through human disturbances, leaving them more vulnerable to fire, disease, and insect damage. While many of the forests of Canada and the United States were placed under the custody of governmental agencies and the forest industry during the nineteenth and twentieth centuries, commercial and bureaucratic modes of forest management have not been able to sustain these important environments. In both countries the public is expressing growing concern over forest health and is increasingly demanding changes in the way their nation's forestlands are managed.

Local communities and the larger civil society are organizing in new ways to gain greater influence over the ways forest use priorities are set. They are no longer content to leave decision making to politicians, forest agency staff, and corporate executives. At the same time, policy makers and leaders of industry are increasingly aware that community needs and priorities must be incorporated in setting the goals of forest management. Political representatives in Canada and the United States are cognizant that environmental values and economic stability rank high in the minds of many citizens. While the attitudes of leadership are changing, the structure and operations of government and industry have been slow to adjust to these new public environmental priorities. Lack of knowledge, vested interest in maintaining the status quo, and the sheer scale of management transformation required have slowed adaptation of forest stewardship systems. The spread of localized grassroots initiatives and the expansion of regional and national coalitions are intensifying pressures for reform. This report documents some elements of this process. It attempts to present some of the diverse perspectives of communities, governments, environmental organizations and industry.

In Canada and the United States, as in many parts of the world, the late nineteenth century paradigm of public lands management through scientific and industrial forestry has been called into question. A shrinking minority view timber as the primary value of a forest. Adaptive management approaches to forest ecosystems are increasingly replacing older silviculture practices. But guided by what values? Who should determine the goals of management, and how? Many observers sense that a new management paradigm is evolving, but its shape is not yet clearly developed. But what is apparent is that a process is unfolding based on intensifying stakeholder dialogues, a new breed of organizations and coalitions, and financing mechanisms. In both
Canada and the United States, a variety of formal and informal institutions, coalitions, agencies, and individuals is influencing the forest dialogue, once controlled by government and industry. Regional environmental coalitions, often endorsed by political leadership, are articulating forest management priorities in new ways. Where conflicts have brought old systems of decision making into question, the judiciary has become extremely influential. National environmental organizations, that now count tens of millions of Americans and Canadians as members (or at least supporters), have become powerful lobbyists for conservation.

Indigenous peoples are asserting their long-denied rights to their ancestral domain, and they are gaining increasing autonomy to manage their forests according to their own holistic values and cultures. Local communities are no longer willing to stand by and see their neighborhood forests clear-felled by transnational logging firms. New community coalitions are emerging and demanding a voice in management decision making. Communities and conservation organizations are also developing trust funds and other mechanisms to buy and protect wildlands from development.

Governments have proceeded cautiously in devolving public forest management rights and responsibilities to communities, but they have made considerable progress by initiating discussions with stakeholders. Agencies like the Canadian and U.S. Forest Services acknowledge they are entering a period of rapid change, while struggling with budgetary uncertainties. They recognize the need for new partnerships and that their old relationships with industry are changing. Political representatives and government forest administrators are seeking ways to engage the public in defining their changing roles and articulating the values that are to guide the management of the public forest domain.

As the first in a regional series, this report examines the forest management experiences of Canada and the United States because of their interrelated histories, economies, and similar ecological and social systems. Differences in government structures and policy-making processes allow for interesting comparisons of each nation's search for sustainable forest management. The report attempts to highlight important trends for a global audience, as well as problem areas and points of progress, especially those that may have relevance in other national contexts. As a monograph targeting readers from other nations, this report provides a brief history of forest use and ecology in Canada and the United States as a background for the case materials that follow.

This regional profile provides a written forum to foster exchange between regions and nations regarding the rich experiences of the people of Canada and the United States in responding to threats to their forestlands. While illuminating the underlying causes of deforestation, this report also attempts to document and communicate emerging solutions. By drawing on the research and writings of many community leaders, professional foresters, non-governmental organization (NGO) organizers, and researchers, the Profile's editor and authors have attempted to capture some of the diversity present in the forest management debate ongoing in Canada and the United States. Many of these experiences have relevance in other parts of the world with similar problems and parallel or related forest management transitions.

This first regional profile examines changes and trends in public participation in Canada and the United States. The report explores the growing interest of local communities, government forestry agencies, and political leaders in the greater engagement of communities' management of public forestlands in Canada and the United States. In Part II, a national overview of forest use history is provided beginning with the ways native peoples shaped forest ecology prior to the arrival of Europeans, then on through the colonial and industrial periods.

Part III describes important human-forest contexts found in Canada and the United States. This section briefly reviews biological characteristics of major forest types, forest use trends, and regional management issues. Part IV describes the evolution of national and provincial government systems of forest administration in Canada and the United States, giving an overview of evolving policies and operational strategies, especially as they relate to local communities.

In Part V, over a dozen case studies from across Canada and the United States are presented illustrating both local initiatives and national policy dialogues. The cases reflect three major contexts of community involvement in forest management including those involving indigenous peoples, local forest-communities, and broader civil society engagement in forest management decision making. For each type of collaborative management setting, examples of facilitating or networking organizations are given. Part VI, the concluding section, discusses emerging trends toward greater community collaboration in public lands management offering scenarios for broader future societal transitions in Canada and the United States.

This report illuminates forest management trends in societies entering a post-industrial age. In both the United
States and Canada, the public is demanding and acquiring greater input into forest management decision making. The emergence of new stewardship strategies in the form of adaptive approaches for managing dynamic forest ecosystems offers hope of more effective modes of regulating human interactions with nature. Ideas that build on ancient traditions with holistic perspectives can provide a framework for socially diverse environmental values. While Canada and the United States cannot provide easy answers regarding pathways to sustainable forest management, these societies are raising important questions and their experiences, like those of other nations, have relevance as human beings seek ways to live in balance with nature.
PART II

A BRIEF HISTORY OF HUMAN-FOREST RELATIONS

In contrast to Africa, Europe, Asia, and Australia, the human settlement of the Americas is a very recent event. Prior to the arrival of humans, forests were a dominant feature of the North American landscape, modified largely by ice ages, interglacial warming periods, and natural fires. Forests first appeared 350 million years ago in the Silurian period, reaching their greatest territorial extent 220 to 270 million years ago during the Carboniferous period when the planet was frost free between 60 degrees north and south latitudes. The massive glaciation of the subsequent Permian period greatly reduced forest cover world wide, as well as many earlier plant and animal forms, with contemporary forest ecosystems only emerging 50 million years ago during the Tertiary period (Note 1).

Ten million years ago coniferous forests became increasingly dominant at intermediate elevations throughout the western United States and Canada, stretching from present-day Alaska, through British Columbia into Oregon, gradually displacing deciduous forests. Deciduous species like hickory, elm, sycamore, beech, and oak remained prevalent in the some eastern parts of the continent.

Until recently most archeologists believed that human beings started settling in North America approximately 20,000 years ago, though recent finds indicate their arrival could have been as early as 40,000 years ago. The Bering Straits land bridge linking Siberia with what is now western Alaska was above sea level between 70,000 and 10,000 BCE, allowing plant and animal movement between the continents. Bone tools discovered in the Yukon have been radiocarbon dated to about 22,000 BCE.

PRE-EUROPEAN CONTACT POPULATIONS AND CULTURES

The Arctic was not inhabited until approximately 2000 BCE, after glaciers began to recede, although migratory hunters from Asia had passed over the Bering land bridge tens of thousands of years earlier. Occupying lands beyond the tree line, the Inuit peoples of Canada and Alaska, together with other groups like the Aleut, Yupik and Dene, were primarily dependent on fishing and hunting to survive in a difficult climate. The Inuits are believed to have traveled eastwards across the Arctic as far as Greenland to establish settlements by 1000 CE, where trading relationships with Norsemen began. The Subarctic region of Canada stretches from the Atlantic Ocean west to the mountains bordering the Pacific, and from the tundra south to within 300 kilometers of the U.S. border. Land cultivation is not possible because it was once heavily glaciated, has poor soils and drainage, and short summers. As a consequence, the region's inhabitants relied primarily on hunting moose and caribou, and on fishing. Speaking Algonquian languages in the east and Atabascan languages in the west, the aboriginal inhabitants of much of Canada's northern forests traveled by sled in winter and canoe in summer. Many members of these first nations continue to survive or supplement their household economies by trapping, fishing, and hunting.

To the south lived the peoples of the Great Basin, hunters of buffalo and other grazing animals, inhabiting what is now southern Alberta, and Saskatchewan, Montana, Idaho, and western Oregon and Washington. Further south and to the west were located the tribes of present-day California, Nevada, and Utah. Along the Pacific coast, stretching from southern Alaska, through British Columbia as far south as California, were the Northwest Pacific Coast cultures. The Tlinit, Haida, and other tribes lived on the edges of the densely forested mountains next to the Pacific Ocean and inland sounds. They possessed a wealth of natural resources including sea mammals, salmon, and halibut from the sea, and mountain sheep, goats, elk, and wild fruits and vegetables found in the forest. The coastal communities were also engaged in trade for iron and other goods with northern Asia.

The eastern forests included a vast area of forest east of the Mississippi, as far north as Newfoundland in Canada and as far south as North Carolina. Eastern forests peoples included the Iroquois, Menominee, Micmac, and other Algonquian speakers. Cultivation of squash, maize, sunflower, and other local species supported large populations. Extensive trading networks and political alliances among different indigenous tribes were well developed prior to European contact.

In the southwestern United States, the Hohokam began using irrigation to cultivate maize, beans, and squash over 2,000 years ago. The Anasazi civilization supported substantial towns of terraced stone or adobe apartment blocks built around central plazas based on maize agriculture. The descendents of the Anasazi are the Pueblo peoples who still inhabit the region. Over the long term civilizations grew and collapsed, often due to large climatic changes. Indeed, the population of the eastern forests may have reached its peak by 3000
BCE, then declining and not to recover until 1200 CE, while the Mississippian Civilization City of Cahokia may have had a population of 50,000 in 750 BCE, only to eventually disappear.

In the late fifteenth century, up to 10 million people may have inhabited present-day Canada and the United States (see Figure 2). Their hunting and farming practices often involved extensive manipulation of forest ecosystems. It is estimated that there were between 500,000 and 2 million Aboriginal inhabitants in Canada, the vast majority living in boreal or temperate forests, while the indigenous population inhabiting the United States is believed to have been around 8 million. These estimates are rough figures since by the time colonialists began making demographic estimates the Native American populations had already been substantially reduced due to diseases and epidemics brought from Europe, war, famine, and forced labor (Note 2).

![Figure 2: Cultural Regions in North America — ca. 1500](image)

Population densities were higher among indigenous groups that practiced more intensive agriculture or lived near rich marine resources. The Huron of Ontario may have had population densities of up to 24 persons per square kilometer, while other tribes in the Midwest that were primarily dependent on hunting often had one person or fewer per square kilometer. The pre-European contact population of native Californians, who were largely dependent on hunting and gathering, is estimated to have been around 250,000. Population levels of indigenous groups fluctuated according to conditions of social stability and conflict, and relative abundance or scarcity of food.

**FOREST USE PRACTICES OF INDIGENOUS PEOPLES**

Pre-European contact Canada and the United States were regions well-populated by a diversity of linguistic groups, each with its own territory, cultural tradition, and resource use system. Since substantial human populations existed in this region for thousands of years, a variety of sophisticated technologies and management strategies evolved to enhance the productivity of the environment, especially the predominant forest ecosystems. By the time Europeans began arriving, native peoples had already significantly modified the region's forest ecosystems.
Compared to the depleted forests of many parts of England and continental Europe, however, the woodlands of eastern Canada and the United States appeared pristine and relatively undisturbed. According to extant records, European settlers on the east coast of Canada and the United States in the late sixteenth and early seventeenth centuries were deeply impressed by the dense, extensive forests that covered the region. Writings from the period are full of descriptions extolling its virgin beauty and unparalleled abundance such as, “the leafy continent,” “one immense uninterrupted forest,” and “an ocean of woods.” (Note 3)

Aboriginal communities shaped the forests in many ways. Forests were cleared for settlements and agricultural fields. Archeological studies indicate that a Huron village of 1,000 people in Ontario, Canada required 7 to 46 acres of forest to build a stockade. Additional trees were felled for fuelwood, which gradually depleted the surrounding forests. Growing fuelwood and timber scarcities eventually led to the relocation of the village.

Agriculture was extremely important for some Indian tribes. The Indians of southern New England are estimated to have derived one-half to two-thirds of their diet from cultivated corn, beans, squash, and other crops, maintaining seven times the population density of the northern New England tribes who were dependent solely on hunting (Note 4). Most Native Americans in the eastern parts of Canada and the U.S. practiced shifting agriculture, using a field for five to ten years until crop yields began to decline, which necessitated the opening of a new patch of forest. After harvest in the late summer, many eastern tribes would move to hunting, gathering, and fishing camps. Acorns, chestnuts, groundnuts, berries, and other wild plants within and on the boundaries of the forest were important supplements to the diet. Fall and winter hunting would supply deer and bear meat for the tribe (Note 5). In this way, the Indians interacted with the larger forest ecosystem; subsistence production was intricately tied to the woodland environment. Soil fertility, grass yields, fuelwood standing stock, berry harvests, and the availability of wild game were all monitored closely, determining when and where the tribe would move their settlements.

Forests were occasionally felled with axes, but more commonly brush and logs were piled around large trees that were burned down. Ash enriched the soil, and burning proved faster than felling. The impact of human occupancy on the surrounding forest vegetation was substantial. One study of an Iroquois village that existed from the fourteenth to seventeenth centuries in southern Ontario documents the clearing of an original forest of sugar maple and beech, and the subsequent cultivation of maize, resulting in the later growth of oak and white pine on the abandoned site. (Note 6)

While the human ecology of Native Americans involved a significant amount of mobility, many tribes did identify specific territories as their own. As Roger Williams, an early New England settler, wrote: “The Natives are very exact and punctual in the bounds of their Lands, belonging to this or that Prince or People.” (Note 7) More commonly, tribes would negotiate use rights with one another. With the arrival of the Europeans a new system of private land ownership arose, coming into conflict with indigenous systems of forest use and land custodianship.

Fire was the primary tool for forest manipulation. While felling of trees by ax was certainly done, burning was the method that most transformed the environment. Indigenous communities involved in agriculture would use fire to clear forests for planting, and to release nutrients from trees and shrubs to fertilize the soils. Fire drove animals into traps and created habitats that supported larger populations of wildlife. Scientists speculate that early humans preferred a grassland environment, and that transitional zones between forests and pasture were often more productive for hunters. Fire was used to create openings in the forest, as well as to eliminate underbrush. The annual burning of scrub and grasses created a clear passage for hunters and travelers. Burning that naturally occurred in the summer, could be shifted into the spring and fall to better meet the needs of human populations (Note 8).

Aboriginal peoples throughout pre-European contact Canada and the United States used extensive burning to increase the grazing area, stimulate grass production, and move herds to facilitate hunting, except in areas too wet to burn or so dry they lacked sufficient vegetation for broadcast burning. The impact on forest vegetation varied depending on forest type and management goals of specific tribes. Many of California’s native tribes used frequent small burns to check succession, reduce competition, and remove aged and diseased trees. “Tree rings show that the forests used to burn regularly at intervals of three to 10 years.” (Note 9) By reducing debris and the thick mat of pine needles covering the forest floor, shrubs and herbaceous plants would become more abundant, resulting in increasing numbers of deer and other browsing game, making hunting easier and more productive.

The Indians of southern New England reportedly set ground fires in the spring and fall to clear areas for hunting, encourage the growth of berries, prepare soils for planting, and reduce rodent and pest populations. By starting regular ground fires, flammable debris was not allowed to accumulate, and the incidence of catastrophic crown fires was reduced. By removing undergrowth and sick and dying trees, regular burns set by Native Americans or caused by nature created the park-like environment so loved by John Muir and other early
conservationists—often in ignorance of their origin:

The inviting openness of the Sierra woods is one of their most distinguishing characteristics. The trees of all the species stand more or less apart in groves, or in small irregular groups, enabling one to find a way nearly everywhere, along sunny colonnades and through openings that have a smooth park-like surface.  

In California alone historians of human ecology have begun to identify a wide range of burning practices for different ecosystems including grasslands, chaparral, and coastal and montane coniferous forests. Native Americans controlled the forest through the regularity and frequency with which fires were set. As Joaquin Miller noted for Yosemite over one hundred years ago:

In the Spring... the old squaws began to look about for the little dry spots of headland and sunny valleys, and as fast as dry spots appeared, they would be burned. In this way the fire was always the servant, never the master ... By this means, the Indians always kept their forests open, pure and fruitful, and conflagrations were unknown.  

Reports of explorers in the sixteenth and seventeenth centuries describe the burning practices of Native Americans from Texas to Florida and New England. LaSalle and Lewis and Clark also observed burning in the Mississippi and Missouri River Valleys, respectively. Thomas Jefferson suggested that burning by Native Americans was “the most probable cause of the origin and extension of the vast prairies in the western country” (Note 12). Indeed, the use of fire by nomadic hunters may have created sufficient open forests and grasslands to allow the plains buffalo to move east of the Mississippi River by 1000 CE, and enter the southern United States by the sixteenth century, moving as far east as Pennsylvania and Massachusetts by the seventeenth century. According to Pyne,

The general consequence of the Indian occupation of the New World was to replace forested land with grassland or Savannah, or where the forest Persisted, to open it up and free it from underbrush. Most of the impenetrable woods encountered by explorers were in bogs or swamps from which fire was excluded.  

Seasonal forest burning and other management practices of Native Americans fell into decline as the population of indigenous peoples decreased due to exposure to European diseases like smallpox and the plague, and the disruption of their way of life.

THE COLONIAL ERA: 1600-1750

While archeological evidence indicates that small groups of Norsemen visited North America as early as 1000 CE, followed by more extensive European exploration in the late fifteenth and sixteenth centuries, it was only at the beginning of the seventeenth century that European colonization began. This marked the onset of interactions between native systems of resource and forest management with those of the European colonists. The growing scarcity of timber in England, reflected in parliamentary restrictions on tree felling as early as 1543, contrasted dramatically with the abundant forest vegetation the colonists found in New England. (Note 14) While early reports of colonists are a mixture of propaganda to attract settlers, romantic accounts, or estimates of the commercial potential of the forests, some attempts have been made to assess the condition of the forests at that time. America's forests were often characterized as taller and denser than European forests, frequently referring to trees of large size and age, with great quantities of humus on the forest floor. Since many of the first colonies were in moister parts of New England, the forests that settlers described may have experienced less burning by Native Americans and consequently had greater biomass.

The colonial old-growth forests in the eastern regions of the United States and southeastern Canada are estimated to have possessed around 250 tons of biomass per hectare, though in the hemlock and white pine forests of southern Indiana extremely high biomass values of 750 tons per hectare were not uncommon. These primary forests could generate 20,000 to 100,000 board feet per acre, while the same degraded second-growth forests of the nineteenth and twentieth centuries might be reduced to 1,000 board feet per acre. (Note 15) After their initial awe at the natural beauty, economic value, and basic abundance of the forests of the New World when contrasted to the depleted forests of Europe, colonists began thinking of ways to develop the woodland environments. The management objectives of the settlers were often in conflict with those of the natives. Privatizing the forests and populating the land with agricultural settlements were common goals of early management policies. Twenty million forested acres, an area the size of Maine, were granted or sold between 1603 and 1878. By the 1820s a major land boom was under way, driven by an expanding migrant settler...
population, speculative purchasers, and lumber operators. In one case, a parcel of over 2 million hectares was sold to a single individual. Some lands were set aside as public reserved lands, with settlement blocks for churches and schools.

By the late 1700s, approximately two-thirds of the timber taken from the forests of Canada and the United States was used for fuel. A single household consumed between 20 to 40 cords of wood (the dimensions of one cord is a row of wood four feet high, four feet wide, and eight feet long) each year, more than was required to build the family's house. Wood scarcities were already being experienced by settlers on the east coast of Canada and the United States in the early 1800s. Even adjusting for inflation, the price of timber rose 500 percent at this time. One response to the over utilization of fuelwood was the patenting of over 800 wood stove designs between 1790 and 1845. Generally five times as efficient as traditional fireplaces, these cast-iron stoves gained popularity as fuelwood scarcities increased. Despite technological advances, however, as late as 1879, over 95 percent of fuelwood was used for domestic heating and cooking. (Note 16)

BUILDING NATIONS FROM FOREST RESOURCES: 1750-1900

Aside from energy for domestic uses, wood fueled America's emerging industries. A factory producing 1,000 tons of iron annually needed between 20,000 to 30,000 acres of forest just to provide fuel for the furnaces. Unlike England, which had shifted entirely to coal products by 1810, industries in Canada and the United States continued to rely on wood and charcoal throughout much of the nineteenth century. It is estimated that five to six million acres of forest went into iron furnaces alone during the 1800s. Brick and tile kilns required over one million cords of wood in 1879, while railroads consumed nearly two million cords. (Note 17)

Forest clearing in the eastern United States and Canada accelerated during the first half of the nineteenth century as population growth was hastened by massive migration.

While it required 150 years for the colonies to reach a population of 3 million people, only 65 years were needed (1785 to 1850) the U.S. population to grow to 23.3 million people. During this period 95 percent of the country's inhabitants was rural and dependent on agriculture. Each person needed about three acres of cropland to meet their food requirements. The farmers of the time cleared over 50 million acres of forest to create the new agricultural land, while forest clearing for hay and pasturage may have been twice this acreage. Tobacco farmers had to continually open new forests to maintain harvest levels on their low fertility soils.

Forest clearing was difficult work, often requiring a month for a man to open one acre of land. The technique of girdling required the removal of a strip of bark around the tree. The waste and destruction resulting from the process shocked European visitors. William Strickland, an eighteenth-century English writer, noted on a visit to western New York:

The poor unenlightened inhabitants first girdles the trees, and next attempts to plow, that is to say be tears the ground a little among the stumps and turns over with his plow the loose stones.... The scene is truly savage. Immense trees stripped of their foliage, and half consumed by fire extend their sprawling limbs, the parts of which untouched by fire, now bleached by the weather, form a stronger contrast with the charring of the remainder. (Note 18).

Coming from a land of well-manicured farms, Europeans with scarce forest and land resources were shocked by the waste they perceived in America. Yet, with the scarce labor and limited technology, the early settlers were forced to use girdling and fire to quickly transform natural forests into productive fields and pastures prior to the onset of winter. Like pioneers in the rain forests of the Amazon or Borneo, many American and Canadian settlers utilized slash and burn methods and the forest receded rapidly. After the need for fuel and timber was met, forests were viewed as an impediment to progress.

As forests disappeared and wood scarcities grew, in some parts of New England as early as the late eighteenth century, farmers began to maintain woodlots. In the 1850s, a woodlot of 15 acres was considered sufficient to meet the needs of the family farm, provided the farmer had "tight rooms and good stoves." Yet, poor management and the need for additional wood, especially for fencing, left many woodlots in poor condition. Fencing required large amounts of timber. Prior to the invention of barbed wire, most fences were constructed of wood or stone. By 1850 there were about 3.2 million miles of wooden fence in the United States, sufficient to encircle the earth 120 times. (Note 19)

An 1846 report by naturalist George Emerson to the Massachusetts legislature decrying rapid deforestation noted:
Those old woods are everywhere falling.... The new settler clears in a year more acres than he can cultivate in ten, and destroys at a single burning many a winter's fuel, which would better be kept in reserve for his grandchildren. (Note 20)

In both Canada and the United States, the first "roads" were rivers. Wooden keel-boats moved people and goods up and down the great rivers, like the St. Lawrence, the Mississippi, and the Yukon, as well as along their tributaries and other smaller streams. By the 1830s, steamboats began to transport goods, relying on wood for fuel. Nearly 900,000 cords of wood were used for steamboat fuel in 1840, representing 20 percent of the entire fuelwood market. Forests along major routes were often cleared miles inland as a result of felling for steamboat fuel.

The construction of the continental railroads also had an immense impact on forest resources. Except for the engine and the rails, rail transport systems were almost entirely constructed of wood. Every mile of rail bed was made of 2,500 crossties, or "sleepers," that needed replacement every five to seven years. It is estimated that maintaining over 300,000 miles of railroad track required 15 to 20 million acres of forest land in 1910. (Note 21) By the mid-1800s, as forest resources in the eastern United States and southeastern Canada became increasingly scarce, lumbermen and farmers began to look westward. The growth of new urban centers and industries was also requiring supplies from the better-stocked forests of the northern and western regions of the continent.

THE DEVELOPMENT OF SCIENTIFIC, INDUSTRIAL, AND PRESERVATION FORESTRY: 1900 TO THE PRESENT

If the rapacious appetite of settlers for land was the primary force impacting the forests of Canada and the United States from 1650 to 1900, then the interplay of industrial timber, science, and environmentalism was the dominant impetus directing forestry during the past century. In Canada and the United States, concerns over deforestation led to the birth of a preservation movement. Many individuals had personally witnessed the loss of 80 percent of the old-growth forests over first half of the century. Henry David Thoreau, George Perkins Marsh, and Frederic Starr wrote about the dangers of abusing the environment in the 1850s and 1860s, and groups with common interests were establishing protected areas around the country: Yosemite in California (1864); Yellowstone in Wyoming (1872), and the Adirondack Preserve in New York (1885), decades before federal conservation bills were passed. Writers and environmental crusaders like John Muir worked tirelessly to mobilize public support for conservation, establishing organizations like the Sierra Club in 1892. Muir's work lead to the recognition of Yosemite as a national park in 1892. The first American Forestry Congress was held in Montreal, Canada in 1882 to address the problems of rapid forest loss and impending shortages. The United States Congress approved policies to conserve land resources in 1891, and by 1897 over 40 million acres of land were designated as forest reserves. In Canada, forest reserves began to be established in 1884, and by 1906 they totaled over 2.9 million acres.

In the United States the federal Forest Service was established in 1905, with Gifford Pinchot as its first chief. President Theodore Roosevelt moved quickly to allocate an additional 148 million acres to a growing pool of national forests. A forestry branch was created within Canada's Department of Interior with a series of Dominion Forest Reserve Acts in 1906 and 1911. Elihu Stewart was appointed Superintendent of Forests for Canada in 1899. Stewart sought the advice of U.S. Forest Service Chief Pinchot who suggested Canada maintain a single forest agency, and reserve all remaining forest land in western Canada as quickly as possible. In 1930, the federal government turned over public forestlands to the prairie provinces.

Over the coming decades the two nations became some of the first in the world to set aside large blocks of forest land for conservation, and today vast areas are managed by their federal, provincial, and state governments. In the United States, Gifford Pinchot and Theodore Roosevelt were convinced that the nation was on the verge of serious wood scarcities unless its rapacious appetite for timber could be regulated. They laid the groundwork for scientific forestry. The movement viewed conservation as "wise use," and was premised on the view that land use should protect the fundamental productivity of the land for future generations. Government leaders stressed the importance of creating management institutions and systems that would be guided by scientific, rational thought. Both nations began establishing forestry training colleges in an attempt to expand the pool of professional foresters.

While the preservation movement was gaining followers and having a growing impact on national thinking in Canada and the United States, while governments were creating new federal and provincial management structures based on the emerging field of forest science, industry, too, was changing and expanding. Throughout the latter part of the nineteenth century and into the twentieth century, wood products were the foundation of the U.S. and Canadian economies. Up until 1850, the sawmills of Canada and the United States
were small operations, generally employing between two and five persons. Figures from the 1840s indicate that there were around 31,500 small mills in the United States, or 25 mills per county. Between 1850 and 1910 lumber output soared 800 percent, from 5.4 to 44.5 billion board feet annually.

Uncontrolled slash fires were common, sometimes resulting in catastrophic burns. In 1900, wildfires burnt 20 to 50 million acres annually. There were 80 million acres of forestlands that had been heavily logged and abandoned. Annual timber cuts far exceeded sustainable yields in much of the United States and Canada. Wood milling was inefficient, as were logging operations. There were few policies or programs that supported reforestation.

Throughout the nineteenth century, Americans and Canadians continued to rely on fuelwood for 80 to 90 percent of their energy needs, consuming an annual average of four cords per person. However, by 1920, with the development of oil and coal sources for energy, the total amount of wood consumed dropped dramatically to 10 percent of the U.S. energy requirement, with similar declines in Canada (see Figure 3).

By the early 1900s, the age of forest clearing for agricultural land was largely over and the primary force altering forest cover was the expanding timber industry. By 1920, the Midwestern and northeastern United States had lost 96 percent of their old-growth timber (Note 22). Old-growth forests had been the primary source of American and Canadian timber and fuel and as these resources were depleted, concern grew both within government and among the public. The maps shown in Figure 4 were prepared by William B. Greeley, the Head of the U.S. Forest Service, to generate public and political concern over the rapid disappearance of America’s virgin forests. Greeley knew that industry would target the Pacific Northwest when he was appointed in 1920. He wrote that “industries seek their cheapest source of raw material... cheap virgin timber directed the geographic course and molded the character of the timber business in America.” (Note 23) Greeley insisted that sustained-yield practices be implemented to provide communities with stability. Not everyone believed that was possible. In the 1930s a local fruit grower in Washington State asked Greeley:

*Just when do you expect this sustained-yield proposition will go in? I presume that it will be after the timber has been cut, and the timber barons will then want the taxpayers to foot the bill. Can you show me a sawmill town that will not be a ghost city when the mills run out? (Note 24)*

Greeley struggled on through the 1940s, lobbying for stronger sustained-yield policies, but with the post-war
timber boom, these efforts met with little success. In 1944, the Sustained-Yield Act was passed, although the Forest Service did little with the new policy beyond establishing five sustained-yield units on national forest land in the 1940s.

Canadian provincial governments were also concerned about bringing greater stability to the timber industry and its workers so in 1947, British Columbia and Ontario passed a series of forest management acts to achieve those goals.

The sustainability of forest industries also became a growing issue in Canada in the 1960s and 1970s. In 1985, Donald Mackay's book, *Heritage Lost: The Crisis in Canada's Forests*, drew attention to the erosion of the nation's forest resources, noting that nearly one-quarter million square kilometers of land, an area the size of the United Kingdom, had been clear felled and was regenerating poorly. Mackay observed that "most of the old logging towns of Canada were surrounded by junk forests." (Note 25). At that time clearcutting was being used for 85 percent of all logging, some as large as 50,000 acres, and many of the more fragile boreal ecosystems were not regenerating well. Young secondary forests needed thinning, without which they became crowded and susceptible to pests. With old secondary forests diminishing, if cutover forests did not regenerate with a suitable crop, Canada's industry would be in jeopardy.
In the early 1980s, the public was receiving $3 billion a year from the timber industry, but government was only reinvesting six cents on the dollar in forest renewal (Note 26). In many small northern Ontario communities, as well as other forest-dependent towns, logging and milling was the only game in town. Logged-over forests were simply not regenerating at a rate that could deliver the volume needed to keep the mills in business.

In both Canada and the United States government forestry agencies gave timber harvest leases to private firms for federal and provincial forestlands. Government management and changes in the industry tended to
favor larger companies. Small mill operators serving local markets disappeared as new technologies and
growing urban centers required large investments of capital for equipment and transport. As government
organized to regulate forest use practices, rapidly expanding timber corporations created a powerful trade
organization. In the United States in the 1920s, the National Lumber Manufacturer's Association (NLMA)
formulated its own policies to manage production and marketing. The Canadian Pulp and Paper Association
and its counterpart to the south, the American Forest and Paper Association, proved to be effective lobbying
groups. During much of the second half of the twentieth century, tens of millions of acres of public forest lands
in Canada and the United States were under harvesting leases to several dozen multinational timber
companies. For example, in 1996 Domtar, one of Canada's leading timber corporations, held nearly 13 million
acres of cutting rights to Crown lands as well as one million acres of private forests. (Note 27) In British
Columbia, three companies, MacMillan Bloedel, Interfor, and Doman/Western Forest Products, were
responsible for 50 percent of the annual allowable cut in the entire province. (Note 28)

In the Pacific Northwest of the United States, most of the old growth forests were cut by the late 1970s. Market
conditions, not commitments to community stability, have been the overwhelming determinant of harvest levels
on private forestlands. Mechanization continued throughout the period, cutting labor costs, and also throwing
thousands out of work. In the 1980s, as federal environmental protection laws began restricting logging on
federal lands, mills began closing at accelerating rates.

The forest industries of Canada and the United States increasingly accept the limits of remaining old-growth
forests to meet expanding market demands for wood products, especially pulp. In the United States, industrial
tree planting increased from only 7,000 hectares per year in 1950 to approximately 1.4 million hectares in
1988. By the early the 1990s, 73 percent of productive forestland was privately held, generating about 80
percent of the U.S timber harvest. While Canadian industry remained more dependent on forests on Crown
lands, private forestry was also rapidly gaining importance.

By the early 1990s, public concern over the disappearance of old growth led to substantial declines in the
allowable cut on federal lands in the western United States. Where commercial felling is allowed on U.S. public
lands it increasingly needs to be justified on the grounds of fire, disease, or insect control, or for purposes of
eco-restoration. While Canadian forests on Crown lands continue to be allocated for industrial use, at the end
of the twentieth century, social pressures to balance the needs of the timber industry with those of other
segments of the society are growing. In both countries, policy makers, planners, and forestry professionals are
seeking greater input from local communities and the greater society in setting forest management priorities. In
Part III, this report describes some important forest bio-regions found in Canada and the United States. For
each zone a short description of forest composition is provided, along with a review of contemporary
management issues and strategies.

NOTES

   pp.1 -10


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   Temperate North America From 1500 to the Present* (Cambridge: Cambridge University Press, 1994) p.53

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5. Cronon, p.47

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12 Jefferson to Adams, May 27, 1813, quoted in "Thomas Jefferson on Forest Fires," Forest Conservation News, 13 (April 1952) p.31

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17. Whitney, p.219


21. MacCleery, p.19

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PART III

FOREST ECOSYSTEMS IN CANADA
AND THE UNITED STATES

The forests of Canada and the United States are largely located in boreal and temperate biomes. Forests cover half of Canada's land area, totaling 418 million hectares (1.03 billion acres). In the U.S., nearly 300 million hectares (1.03 billion acres) of land are forested, representing one-third of the national territory. In many parts of the United States and some regions of Canada, the forest ecosystems that existed prior to human settlement have been significantly transformed and their species composition altered. Some classification systems identify the types of trees that could potentially exist on the site if humans allowed succession to progress without interference. Other classifications identify existing vegetation, often by combining two or three dominant species. For example, we can find a white-red-Jack pine zone in the eastern U.S. and a fir-spruce zone in western Canada and Alaska.

The forests of the United States can broadly be divided into three areas. In the west, coniferous forests dominate, stretching from the Rocky Mountains to the Pacific coast. Important species include Douglas fir, ponderosa pine, western white pine, Engelmann spruce and white fir. Over half of the softwood lumber produced in the U.S. comes from the Douglas fir forests of the Pacific Northwest. In the South Atlantic and Gulf states, much of the remaining soft woods harvests occur largely from longleaf, loblolly, shortleaf, and slash pines. One-fourth of U.S. timber production is from hardwood species growing east of the Mississippi River. Dominant production species include oaks, black walnut, yellow poplar, and sugar maple. The Renewable Resources Evaluation Group (RRE) of the U.S. Forest Service, formerly known as the Forest Survey, identifies 20 forest zones in the U.S. broadly grouping them between those in the conifer forests of the west and the mixed deciduous and pine forests of the eastern United States (see Box 1).

Canadian forests cover approximately 49 percent of the total land area of the country stretching in a belt across the continent from approximately 800 to 1300 kilometers (600 to 950 miles) in width. Production forests cover some 3 million square kilometers (approximately 1.2 million square miles). Coniferous trees comprise about 80 percent of all forest cover, with the remainder deciduous. One regional classification system identifies eight major regions further divided into 90 forest sections, which characterize the dominant tree species (see Box 1). The 1996

BOX 1

CLASSIFYING FOREST ENVIRONMENTS

UNITED STATES

The Renewable Resources Evaluation Group (RRE) of the U.S. Forest Services, formerly known as the Forest Survey, identifies 20 zones in the U.S:

<table>
<thead>
<tr>
<th>Eastern</th>
<th>Western</th>
</tr>
</thead>
<tbody>
<tr>
<td>White-red-Jack pine</td>
<td>Douglas-fir</td>
</tr>
<tr>
<td>Spruce-Fir</td>
<td>Hemlock-Sitka spruce</td>
</tr>
<tr>
<td>Longleaf-slash pine</td>
<td>Ponderosa pine</td>
</tr>
<tr>
<td>Loblolly-shortleaf</td>
<td>Western white pine</td>
</tr>
<tr>
<td>Oak-Pine</td>
<td>Lodgepole pine</td>
</tr>
<tr>
<td>Oak-Hickory</td>
<td>Larch</td>
</tr>
<tr>
<td>Oak-Gum-Cypress</td>
<td>Fir-spruce</td>
</tr>
<tr>
<td>Elm-Ash-Cottonwood</td>
<td>Redwood</td>
</tr>
<tr>
<td>Maple-Beech-Birch</td>
<td>Noncommercial</td>
</tr>
<tr>
<td>Aspen-Birch</td>
<td>Hardwoods</td>
</tr>
</tbody>
</table>

CANADA

While there is no nationally recognized forest cover classification for Canada, regional classifications have been done, the best known is Forest Regions of Canada (Rowe, 1972), which identifies eight major regions.
National Ecological Framework categorizes Canada into 15 terrestrial ecozones. At present, Canada retains more old growth in contrast to the United States.

Canada and the U.S. have a great diversity of environments varying from the ice packs of the Arctic Ocean to the tropical wetlands of southern Florida. A broad categorization of forest environments is revealed in major belts reflecting latitude, elevation, climate, and soils. The five categories presented below are helpful in understanding larger ecological patterns. These include the Boreal Forest, the Eastern Mixed Forest, the Pacific Coastal Forest, the Mountain Forest, and the Southeastern Forest (see Figure 5). A diversity of local variations occurs with changes in climate, elevation, and soil conditions. The geographic locations and composition of forests have also affected the ways humans have manipulated them, especially in the past few hundred years. In the following pages, a brief description of the species composition of each forest type is presented together with a discussion of how societal forces are shaping management policies and practices.

**BOREAL FORESTS**

While there is no international definition of boreal, here it is used to refer to northern arctic forests dominated by conifers. Long, cold winters and high annual fluctuations in temperature characterize the climate of boreal forests. They are located north of the farthest occurrence of maple and oak, and represent one-third of the planet’s forests. In North America, boreal forests are found south of the tundra, reaching 4,000 miles from the Pacific to the Atlantic Oceans, from Alaska to Minnesota and Ontario. Black spruce (*Picea Mariana*) and white
spruce (P. glauca) are characteristic species with stands rarely exceeding 40 to 70 feet in height. As one moves north through the boreal forests, the trees diminish in size and density. One Aboriginal name for the northernmost boreal forests is "land of the little sticks."

In Alberta and Saskatchewan, the boreal forest fades out into a transitional zone dominated by quaking aspen (Populus tremuloides), and finally into the northern section of the Great Plains. Moving eastwards from northern Wisconsin and Michigan into the Canadian Maritime Provinces and northern New England, the boreal forests merge into the Eastern Mixed Forest. Red spruce (Picea rubens), eastern white pine (Pinus strobus), red pine (P. resinosa) and eastern hemlock (Tsuga canadensis) begin to appear replacing black and white spruce and balsam fir.

This boreal forest near Fairbanks, Alaska is dominated by black spruce, a common species in this forest region. Long winters and poor soils result in stunted stands rarely exceeding 20 meters in height. Such boreal forests of the far north are known as "land of the little sticks" by some Aboriginal groups (photo: Poffenberger)

Boreal forest ecosystems experience regular disturbances, usually by fire. In wetter areas, known as "fire refugia," trees can mature into old-growth stands. Where good soils exist after a fire, deciduous trees act as pioneer species in the early stages of forest succession. Deciduous trees like aspen (Populus), alder (Alnus) and birch (Betula) are gradually replaced as mixed, intermediate age forest stands mature into pure stands of conifers. All plants in the boreal region require a high tolerance to poor soils and extreme cold. In these slow-growing forests, a succession to a mature spruce or fir forest may take 300 years or more. (Note 1)

Despite very low human population densities, small communities of indigenous peoples are widely scattered throughout the region. Inuit and other Native Americans in Alaska, and a range of Aboriginal groups in Canada, including the Cree, Innu, Metis and Blackfoot, have inhabited the region for thousands of years, developing sophisticated techniques for surviving in a difficult environment. Over the past century, a number of towns have been established by settlers, including miners, loggers, and employees of oil companies and hydroelectric facilities.

The Yukon and Alaska gold rush era of the late nineteenth century significantly increased human impact on boreal ecosystems. Timber harvesting to support mining and develop railways and roads systems was extensive around settlements and transportation routes. Over the past 25 years human pressures on the boreal forests of Canada and the United States have grown substantially. The development of oil reserves on Alaska's North Slope throughout the 1970s sped the expansion of urban centers and road networks. In both Alaska and Canada, the growing international timber trade and the expanding role of transnational companies (TNCs) has drawn much greater attention to the region's boreal forests. The increased demand for pulp over timber has allowed the poorer wood of boreal forests to gain value in world markets. New technologies have created market opportunities for species once thought to have little commercial potential.

As populations have grown, state and provincial governments have often encouraged TNCs to log boreal forests to generate employment. Subsidies have been so generous in Alaska that in 1988 only one percent of the funds invested in timber by the state was received as revenue from logging companies, primarily due to "sweetheart deals" with two pulp mills supplying the Japanese market. In the Canadian province of Alberta, 17 percent of all forestlands were leased to two Japanese TNCs (Note 2). In British Columbia, one study reported that timber subsidies cost Canadian citizens Can$0.65 for each cubic meter of timber felled in 1989. (Note 3)

Accelerated logging in Alaskan and Canadian boreal forests raises concern among many communities, First Nations, as well as conservation groups. Often carried out through clearfelling techniques, boreal logging can endanger wildlife habitats and disrupt soil and water regimes. Fragile permafrost conditions can be significantly altered during logging through exposure to sunlight after the removal of the forest cover. Due to the impact of logging in the 1950s and 1960s in Ontario's boreal forests, much of the dominant black spruce failed to produce healthy new growth after clear felling. Poor regeneration is attributed to the large size of the cuts and the use of heavy harvesting machinery that damaged new growth and compacted fragile soils. Communities dependent on hunting, fishing, and trapping can suffer economically if extensive boreal logging reduces the productivity of the habitat.
Canada’s eastern boreal forests have also suffered from severe infestations of an insect known as the spruce budworm, estimated to have attacked over one-third of the nation's standing timber since the beginning of the twentieth century. Infestations appear to have increased over the past century and some foresters feel it is a result of the rapid increase in unhealthy, regenerating forests. Massive aerial pesticide spraying programs were implemented in many parts of eastern Canada and Maine in the early 1980s, though not before 1 million hectares of fir forests were defoliated in Newfoundland (Note 4).

Mining and oil exploration and extraction also pose a threat to boreal forests. Wilderness tourism can also cause problems, especially where there is a rapidly growing use of snowmobiles and other off road vehicles for hunting.

Finally, boreal forests are threatened by climate change. Some scientists predict that up to 40 percent of boreal forests could eventually disappear and be replaced by temperate forests, woodlands, and steppe ecosystems (Note 5). The combination of climatic change, logging, and other human activities has created a growing debate in Canada and the United States regarding how the boreal forests of the region should be managed. While provincial governments have held managerial responsibility for the vast majority of the nation's boreal forests for over a century, other stakeholders are now seeking a greater voice in decision making. Land tenure reforms are being explored by a number of provinces spurred on by pressure from small forest-dependent communities and First Nations.

EASTERN MIXED FORESTS

These temperate deciduous forests begin in the Great Lakes region, the southern Maritime Provinces, and northern New England as the boreal conifer forests make a transition into broad leaf species. The Eastern Mixed Forest extends westward to the Mississippi River and south to Tennessee and the lower slopes of the Appalachians to northern Georgia. Richly endowed with nearly 150 tree species, the mix varies with oaks and hickories dominant in the west, maples in the north, and pines more common in the sandy soils of the south. This is the largest and most extensive temperate deciduous forest in the world. Precipitation in the region is generally favorable for plant growth, averaging between 40 and 60 inches per year and is well distributed throughout the season. This moist climate supports a rich diversity of plant and wildlife, particularly in the moist coves and north-facing slopes. Much of the topography is steep and hilly, but broad valleys and some level uplands also occur. Over the past 400 years, since the arrival of Europeans, much of the Eastern Mixed Forest has been felled, although much of the forestland has regenerated during the past century.

In Maurice National Park, southern Québec, are excellent examples of Eastern Mixed Forests at their northern boundary. Comprised of sugar maple and beech that turn bright yellow and red in the fall, the region's woods attract millions of tourists. They also include a mix of white pines and red spruce. (photo: Poffenberger)

The northern transition from boreal to the Eastern Mixed Forest takes place over a 200-mile belt across Canada, characterized by the presence of sugar maple (Acer saccharum). Important to local communities as a source of maple syrup, maple and beech (Fagus grandifolia) turn bright yellow and red in the fall, creating a show of color that has attracted tourists for decades. Eastern white pines, red spruce, and other boreal trees are mixed into these transitional forests.

Moving into the Appalachian Mountains, to the south of the transition zone, white basswood (Tilia heterophylla), red oak, yellow poplar (Liriodendron tulipifera), white ash (Fraxinus americana), and eastern hemlock (Tsuga canadensis) can be found. The upland hardwood forests of the Appalachian Mountains are prized for their high quality sawtimber and veneer logs as well as the shade they provide to outdoor recreationists and communities in the region. West of the Appalachians, the forests contain greater numbers of oaks and hickory including shagbark hickory (Carya ovata) and bitternut hickory (C. cordiformis). West of the Mississippi, before the Great Plains replaces the forests, oak and hickory forests continue into the rugged...
Ozark Mountains.

Human activity has greatly influenced the current condition of the Eastern Mixed Forest region. European settlers cleared much of the lowland forest in this region for fields, pasture, and communities. By the late 1800s, much of the upland forests of oak, red spruce, and hemlock had been harvested by commercial logging. Cut-over land left slash and bare soils prone to fire, flood, and widespread erosion. "Balds" on mountaintops in the Appalachian Mountains can still be seen today where the topsoil was stripped away. However, the deciduous forests of the eastern region have shown remarkable resilience. Despite periodic pest infestations such as the chestnut blight and gypsy moth, forests have grown back through natural regeneration and re-seeding on cut-over forestland and abandoned farms and are now approaching commercial maturity.

The private ownership of land has largely dictated forest use in this U.S. region. Seventy-five percent of forested land is owned by small, private landowners, the rest being split between industrial forest owners and public agencies. Public forest holdings are largely held in state forests-having been reverted to the state by tax delinquency during the depression of the 1930s. Though much of the upland forests are in rural, mountainous states, they are within a day's drive of 60 percent of the country's population and are increasingly valued for their recreation and tourism potential.

The Eastern Mixed Forest region is at a crossroads in planning for the future. A highly valuable timber resource is approaching commercial maturity with an influx of primarily domestic companies poised to intensively manage the forest resource. Urban- and rural-based conservation groups are concerned that the amenity, water quality, and biodiversity values of these forests will be compromised by the rapid escalation of timber harvesting in the region. This regional debate has already led to significant changes in forest policy. In 1973, a federal district court in West Virginia ordered the Forest Service to halt clearcutting on the Monongahela National Forest as inconsistent with the law. This ruling led to provisions in the National Forest Management Act of 1976 that limit clearcutting on all national forests in the United States.

This regenerating stand of Sitka spruce and Alaska cedar in Chugach National Forest in southern Alaska was selectively logged in the early 20th century to supply timber for a nearby gold mine. Pacific Coastal Forests like these rarely burn; instead, rotting vegetation decays for decades under thick mats of mosses that cover the forest floor. (photo: Poffenberger)

Given the dominance of privately owned forest in the region, it is not surprising that community forest management initiatives emphasize voluntary incentives to encourage private landowners to be thoughtful stewards of their land. A number of community-based forestry initiatives, like the Northern Forest Lands initiatives in northern New England, have started up in the past decade, emphasizing community benefits through value-added manufacturing like furniture-making, ecotourism, and the harvesting of wild products like ginseng.

Due to its location in the most densely settled and industrialized sections of Canada and the U.S., the eastern forests have experienced greater pressure, initially from settlers, and later from industry. Acid rain threatens both the woodlands and their wildlife. Growing public awareness has resulted in an expanding and increasingly effective conservation movement, often community-based, although urban development continues to conflict with efforts to sustain these rich ecosystems. Land trusts, financed by individuals, philanthropic organizations, and private companies are particularly active in the eastern forest region, buying and setting aside private forestlands for conservation purposes. Increasingly, community groups are organizing to place zoning restrictions on private forests to maintain them as wildlife habitats, watersheds, and undeveloped areas. In some areas urban centers are subsidizing upland communities to maintain their forests and watersheds. To protect its municipal water supply, New York City recently agreed to provide $1.4 billion to small communities in the Catskills and Delaware to maintain critical watersheds. Under the New York City Watershed Agreement funds will be used for conservation easements, improved local water treatment plants, and sustainable forestry and agricultural programs (Note 6).
PACIFIC COASTAL FORESTS

On the western fringe of Canada and the U.S., extending down the southern coast of Alaska, along British Columbia's fjords, past Washington and Oregon, to central California are the magnificent Pacific Coastal Conifer Forests. Often extending no more than 50 miles inland, coastal forests are rarely found above 1,000 feet. In Alaska, the towering Sitka spruce (Picea sitchensis) dominates the forests, along with western hemlock (Tsuga heterophylla) and Alaska cedar (Chamaecyparis nootkatensis). Sitka spruce can grow to over 200 feet in height and 10 feet in diameter, living for more than 700 years. Moving into British Columbia, Douglas fir (Pseudotsuga menziesii) grow up to 250 feet and create high canopied rain forests. The coastal temperate rainforest reaches its wettest in Washington's Olympic Peninsula, where 3.7 meters (12 feet) of rain falls annually, more precipitation than in many tropical rainforests. Mosses, lichen, bracken and sword ferns cover the forest floor. Due to the moisture, fires are rare so the forest is matted with rotting vegetation. Saplings often sprout from fallen spruce logs. Gaining elevation and moving into the coastal mountains, Douglas fir and western hemlock replace Sitka spruce and eventually subalpine fir and mountain hemlock.

From southern Oregon to central California, the coastal forests become the habitat of the redwood (Sequoia sempervirens) and the giant sequoia (Sequoiadendron giganteum), some of the oldest and largest trees in the world. Coast redwoods grow only in a narrow strip within 30 miles of the often foggy, misty Pacific Coast, up to 3,000 feet in elevation. The giant sequoia can be found farther inland on the western slope of the Sierra Nevada mountain range. The redwood and sequoia are all that remain of similar species that existed more than 60 million years ago and covered much of the Northern Hemisphere.

Giant sequoias can grow to 20 to 30 feet in diameter at their trunks and up to 300 feet in height, as tall as a 26-story building. One giant sequoia has a trunk diameter over 36 feet, with its first major branch 130 feet above ground level and 7 feet in diameter. It is estimated to be approximately 2,700 years old. The giant sequoias are the largest trees in the world, with a single tree weighing 1,400 tons or more. The giant sequoia is highly fire resistant and is covered with thick, porous bark up to 6 inches thick. The coast redwoods grow even taller than the sequoia, over 350 feet, making them the tallest trees in the world. These giants can live for 2,000 years or more. Coast redwoods often regenerate by sprouting from the stump of the parent tree.

The immense size and straight trunks of the coast redwoods and giant sequoias, and the rot-resistant chemicals in their wood, made them highly prized by the timber industry. By the middle of the nineteenth century, logging of old-growth stands had accelerated with devastating impact. In 1890, early leaders of the conservation movement mobilized community support leading to the creation of Sequoia National Park with over 400,000 acres, followed by Yosemite, and later Kings Canyon National Park to protect some important sequoia stands. The Save the Redwoods League was created in 1918, working for decades to raise funding and mobilize support that ultimately led to the founding of Red-wood National Park in 1968. As conservation groups organized to restrict commercial logging of old-growth forests in the United States, timber interests moved northward into British Columbia's forests. The expanding Canadian conservation movement, however, is gaining effectiveness in protecting British Columbia's old growth.

Oregon and Washington have nearly 20 million hectares of forestland, 57 percent of which is federal property. Seven million hectares is privately held, with 62 percent owned by the forest industry, primarily large corporations. Private forest harvest rates and volumes are not regulated, though state agencies have legislation to promote reforestation and protect water quality, wetlands, and endangered species. Despite efforts to ensure that sustainable use practices are observed, one study concluded that monitoring and enforcement were limited and compliance with forest practices rules are voluntary for most forest owners (Note 7). Still, many specialists concur that while private forestlands are primarily managed to maximize timber output, reforestation efforts have generally been more successful than on public lands. Private holders have converted over 70 percent of their natural forests to even-aged timber stands less than 70 years old. Designed to meet commercial goals through single species planting, these new forests possess less bio-diversity and may be more vulnerable to pests and fire.

Perhaps the most controversial management issue on the public forestlands of the Pacific Northwest is the question of federal timber sales. The management plan for Tongass National Forest took nearly 10 years to finalize due to the intense public interest over the question of timber harvests. Communities, non-governmental organizations (NGOs), industries, and other stakeholder groups made over 30,000 inputs. Public concern over industrial timber harvesting in the Pacific Northwest of the United States and Canada is based on the rapid rate of felling that has occurred, especially in the post-World War II era. Between 1955 and 1990, 57 percent of the old growth on Forest Service lands (3.4 million acres) in Oregon and Washington was clear cut. Further, as late as 1986, harvest levels in the region exceeded the net yearly growth by 70 percent (Note 8). Largely as a result of this intensive commercial exploitation, the northern spotted owl and an additional 47 other species dependent on old-growth forests were considered at high or moderate risk of extinction. Further, the rapidly growing tourist industry of the region was also placed in jeopardy.
Public concern over old-growth felling, especially in the Pacific Northwest, has generated growing pressure on the U.S. Forest Service to reevaluate guidelines for commercial users. Until the early 1980s, conventional wisdom held that the best way to regenerate Douglas fir was to clearcut, burn post-harvest debris “slash,” and expose the soil (scarcification). Over the past 15 years, however, U.S. Forest Service researchers and other scientists have gained a deeper understanding of the ecology of the old-growth forests in the Pacific Northwest. They uncovered both the complexity and diversity of the forest environment and recommended a new approach for management to adopt (Note 9). In 1992, the Forest Service established a new policy to practice forest ecosystem management, sometimes referred to as “New Forestry.” It prescribes that some patches of old-growth forests be left unfelled, as well as dead wood and snags.

A wide range of discussion groups has formed in the Northwest because of federal and provincial lands management issues. Clayoquot Sound on Vancouver Island in British Columbia became a topic of national and even international debate when its old-growth forests were scheduled for felling. With 25 percent of the world’s remaining temperate rainforests in coastal British Columbia, provincial management policies and industrial timber practices are coming under growing scrutiny.

In the northwestern United States, community stakeholder networks and dialogues like the Applegate Partnership and the Quincy Library Group have received national recognition for their efforts to balance timber production and ecological protection on public lands. Other programs, like the Watershed Research and Training Center in Hayfork, a small town nestled in the center of the Shasta-Trinity National Forest in northern California, are smaller initiatives based in a few communities dealing with the economic impact of shifting away from commercial timber industries. The Hayfork group was organized after 150 jobs were lost when the courts halted logging to protect endangered species. In response, the community initiated a retraining program in ecosystem management and began developing new felling, processing, and milling techniques.

**MOUNTAIN FORESTS**

Mountains create unique forest environments, as altitude changes and climate and temperature shifts in ways similar to those found traveling across degrees of latitude. For example, conditions on the top of a 12,000-foot peak in Arizona may resemble the tundra in northern Canada. In Canada and the United States, mountain ranges are usually situated north to south, beginning with the Sierra Nevada-Cascade-Pacific Coast Range that extends from Alaska to southern California and the Rocky Mountains that run from northern British Columbia to New Mexico.

The Rocky Mountains include over 60 smaller ranges, forming the backbone of the North American continent, with the continental watershed divide extending along their crest. More than 50 peaks rise over 14,000 feet. The western slopes of the Rocky Mountains catch rain moving across the continent from the Pacific Ocean, whereas the eastern slopes are drier. Plant species change with location and elevation, although Douglas fir (*Pseudotsuga menziesii*), lodgepole pine (*Pinus contorta*), and western larch (*Larix occidentalis*) are common on both slopes. In the valleys on the moister western slopes are found western red cedar (*Tsuga plicata*) and western hemlock (*Tsuga heterophylla*), with Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*) more common on the dry eastern slope. Above the timberline are plants similar to those that grow in the Arctic tundra.

The Pacific Coast Mountains begin in south central Alaska with Mount McKinley, which, at 20,300 feet, is the highest point in North America. Stretching southward through the Wrangell, Chugach and St. Elias Mountains, they enter British Columbia where they join the Coastal Mountains. This complex of ranges merges into the Cascade Mountains as they enter the United States, continuing down through Washington and Oregon where they mesh into the Sierra Nevada Mountain Range in northern California.

Coastal, inland mountain, and boreal forests cover almost two-thirds of British Columbia’s land area. In addition to the hemlock and western red cedar of the coast forests, drier inland forests are primarily comprised of Douglas fir, Engelmann spruce, and Ponderosa pine. Since logging began in the nineteenth century, nearly 16 percent of the forest area has been logged. Like much of the Pacific Northwest, British Columbia experienced a period of very rapid timber exploitation during the decades following World War II. Throughout the 1970s, large tracts of forests were clearfelled, oriented towards unprocessed whole log exports to Japan. The provincial government manages all public lands, representing 95 percent of the land area, and now requires reforestation with native species on any harvested land. In 1991, the Canadian government began a treaty negotiation process with over 45 of the Aboriginal First Nations, transferring management authority to them for some of the forestlands.

Due to the great natural beauty and relatively pristine conditions of the forests of British Columbia,
conservationists value them highly. So, too, do industry and the provincial government, with timber generating 60 percent of provincial exports and creating 15 percent of all employment in 1994. Conflict between industry, government, local communities, and Aboriginal peoples over forest management goals has led to greater emphasis on establishing participatory planning processes. About 9 percent of the provincial land area has been set aside for parks and conservation areas, with a target of 12 percent. The provincial Ministry of Forestry has sought to establish policies supportive of sustainable management through its Forest Practices Code. Environmentalists, however, are concerned that many habitats and biodiversity are not protected within existing conservation areas or by industry practices. One-quarter of the province, some 25 million hectares, has been designated for industrial timber harvesting. At present, all felled timber is from virgin, old-growth stands, though this is projected to shift to second-growth forest over the next 50 years. In past years, British Columbia has frequently exceeded its own annual allowable cut (AAC). In 1996 the AAC was 71.6 million cubic meters, while harvest was nearly 75 million cubic meters (Note 10). While the harvested area was 190,000 hectares, another 500,000 hectares were damaged by insects and fire, raising concerns that provincial policies for sustained-yield management were not achieving their objective.

This mountain forest in the central Sierra Nevada range of California is a complex mix of red and white fir, lodgepole, and Jeffery pine. Logged in the 1950s, community opinion and national management classification protect it from any further commercial harvesting. It is managed strictly as a wilderness area for limited, non-impact recreational use (photo: Poffenberger)

In the Cascade Mountains, rainfall on the western side is double that of the eastern. Douglas fir, western red cedar, and mountain hemlock respond well to the moist conditions, but in the dry eastern slope species composition shifts to ponderosa pine (Pinus ponderosa) and lodgepole pine (P. contorta). Farther south in the Sierra Nevada mountains, above the chaparral of the foothills, forests are dominated by ponderosa pine, lodgepole pine, and red and white fir (Abies magnifica and A. concolor), with forest cover more sparse in the eastern slope with its drier climate. Between the Rockies and the Sierra Nevada lie the Great Basin Mountains, sparsely forested. These and environments possess ponderosa, whitebark (Pinus albicaulis), and bristlecone pines (Pinus aristata), some of which grow as stunted trees up to 14,000 feet. The bristlecone pine is believed to live as long as 5,000 years.

Most forests in the mountain region are under either federal control in the United States or provincial authority in Canada. Issues on public lands that draw most community input involve the levels of timber sales or leases (frequently granted to large corporations), mining rights, grazing leases, and whether and how fire should be used in forest management. At the beginning of the twentieth century, the newly established Forest Service encouraged timber firms to establish communities at the edges of national forests. These “timber towns” faced an uncertain future as cut levels surged in the 1970s, threatening future harvests, but they have fallen in recent years as federal harvest sales were cut back under political pressure from conservation groups. In New Mexico, timber output jumped 74 percent in the 1980s, over 80 percent felled on public forestlands. Large companies targeted the last old-growth stands of high value ponderosa pine. A proposal in the early 1990s to log 25 million board feet of old-growth Englemann spruce and build 65 miles of new logging roads in Santa Fe National Forest was met with serious resistance from local communities.

Big corporations like Louisiana Pacific moved into neighboring Colorado in 1984. Citizens groups like the Western Colorado Congress and the Colorado Environmental Coalition, concerned over the impact of major commercial harvesting on the highland forests of the Rockies, were formed to oppose the expansion of industry into their region. The Forest Service was accused of overestimating the timber volume of the forests and consequently selling far more than could be considered a sustainable cut. Some federal forest managers acknowledge that, at that time, cutting was excessive in many areas due to archaic planning tools, as well as
pressure to meet the needs of big industry. According to Jim Webb, Rio Grande National Forest Supervisor in 1991, “We’re trying to manage for the year 2000 problems with a 1940s organization.” (Note 11)

Public lands policy in the western United States has long been an important point of political debate in Washington D.C. During the 1980s, state representatives, with big industry support, were often able to block efforts to reduce the high cut levels. Local communities have not always benefited economically by the expansion of corporate timber enterprises in the Rocky Mountain states. Despite an immense salvage sale of beetle-infested lodgepole pine, involving 80 million board feet each year for a decade, of the 46 small mills operating when the sales began, 70 percent went out of business. The owners complained that big operators had better connections with the Forest Service and they were forced out. (Note 12)

Many government forest managers realize that commercial cuts are often excessive. In the early 1990s, Grace Herndon interviewed Tom Kovalicky, supervisor of the 2.2 million hectare Nez Perce National Forest in Idaho. In his fifties and nearing retirement, Kovalicky spoke frankly regarding the conflict federal forest managers face in dealing with pressures to meet “targets identified for us by the political process.” He noted that the “political cut” on Nez Perce was 120 million board feet. "It should be at 75 million board feet." He concluded that, "if the Forest Service wants to survive as an agency, reform must come from within. Right now the system is in the hands of the politicians.” (Note 13) By the mid-1990s however, that situation had begun to change.

SOUTHEASTERN FORESTS

The Southeastern Forest covers the Atlantic and Gulf Coastal Plains stretching from Virginia, south into Florida, and across the Gulf Coast to eastern Texas. The land was once entirely covered by forest with pine species dominant, alternating with swamp ecosystems. In South Florida, subtropical forests and wetlands have replaced much of the pine forests. In eastern Texas, pine forests are gradually being replaced by oak scrub and then by prairie, indicating the beginning of the grasslands of the west.

The Southeast region contains a wide diversity of climates, landscapes, and forest types. Temperatures range from the subtropic on the coast to cool and humid in the Appalachian Mountains. Forests in the south are highly productive—trees regenerate and grow quickly where there is good soil and abundant rainfall. Despite the substantial quantities of rainfall each year, the porous soils of the southeastern U.S. drain quickly, favoring tree species that do well in drier soils. A number of pine species are found in the Southeastern Forest, the most prominent and commercially important being the shortleaf pine (*Pinus echinata*) and the loblolly pine (*P. taeda*) growing to a height of 100 feet or more. Longleaf pine (*P. palustris*) and slash pine (*P. elliottii*) are also common, preferring sandy soils and subtropical climates farther to the south. They are widely used for reforestation. Past agricultural and forest management practices have modified the natural forest cover in the Southeast. Much of the land that once grew longleaf pine has been changed over to loblolly pine, a species that grows faster and is easier to regenerate.

Pine species, like these slash pine, are common to many of the Southeastern Forests, like this one in Everglades National Park, Florida. Due to their resistance to fires that sweep through this region during the long, dry summer (photo: Ricciuti)

Oaks are the most common broad-leaved trees in the forests of the southeast. The stately crown of the live oak (*Quercus virginiana*) can be twice the height of the tree. Other common oaks include the scrub turkey oak (*Q. laevis*) and the myrtle oak (*Q. myrtifolia*) found on sandy soils. Dogwood (*Cornus florida*), hickories (*Carya*), and sweetgum (*Liquidambar styraciflua*) are some of the other broad-leaved trees in the southeastern forests.

Pines also do well in the southeastern forests due to their resistance to fires which are a common occurrence
attributable to both humans and nature. Even small pines have thick bark, while pine seedlings survive fires better than seedlings from broad-leaved trees. Fire has long been used in the south to manage forests. As early as the 1500s, a mosaic of fire-influenced forests stretched from the Atlantic coast to the plains of central Texas. Fires set by American Indians created open savannahs and maintained balds. Nonetheless, the composition of the Southeastern Forests varies widely, and while some areas are exclusively coniferous, others are heavily dominated by broad-leaved species. For example, deciduous woodlands cover the lower Mississippi floodplain with its alluvial soils. In swamp forests, such as the Dismal Swamp on the border of Virginia and North Carolina, the vegetation is a patchwork of evergreen shrub bogs, loblolly pine barrens, cypress swamps, and hardwood forests. Red maple (Acer rubrum) and bald cypress (Taxodium distichum) dominate the wettest areas and are especially adapted to grow in water with deep, mucky soil.

Over the past 70 years, the south has emerged as a major producer of wood products for the United States and the world. Idle croplands, abandoned by early settlers, have regenerated and supplied the forest base for the expansion of the wood products industry from the 1930s through the 1960s (Note 14). Today, about 40 percent of U.S. productive forestlands are in the south. The U.S. economy depends on the south for 67 percent of its pulpwood, 50 percent of its plywood, 40 percent of its hardwood lumber, and 33 percent of its softwood lumber. Many rural, southern communities depend on the forest for their environmental, economic, and social welfare (Note 15). Sawmills, furniture plants, pulp and paper mills, and other forest-based enterprises are the economic backbone of hundreds of communities. Without them, many communities would wither.

Nearly all the Southeast's forestland is privately owned, with only about 11 percent in public ownership—excluding the 7 percent that is in national forests. The Southeast has the smallest proportion of public land of any region in the United States. While timber is still being harvested on many national and state forests in the Southeast, only four percent of the region's 8.9 billion cubic feet of annual tree harvesting comes from national forests. While industrial forest plantings have accelerated, as in the Eastern Mixed Forest, farmers and non-industrial users own over 70 percent of the 80 million hectares of forests in the southern United States. Many owners are non-residents or are busy with urban jobs that do not allow them to manage their forests. In Arkansas, for example, farmers and other private landowners control two-thirds of the bottomland hardwood forests, with 73 percent of these lands virtually unmanaged. Many families will sell cutting rights to local loggers for a 50 to 60 percent share of the profits when they require money. This often leads to “high-grading” where the best, healthiest hardwood trees are felled, leaving the forest with less desirable species and impairing the forest in terms of ecology and future market returns (Note 16).

There is considerable diversity in tract size and forest ownership throughout the Southeast depending upon settlement history and social structures. Forest-based enterprises in Winston County, Alabama, for example, are characterized by many small-scale, locally owned manufacturing operations, whereas in neighboring Wilcox County, a Canadian-owned firm, MacMillan Bloedel, Inc., is the largest forest owner. In Alabama alone, MacMillan Bloedel, Inc. controls timber harvesting operations of over 400,000 acres in 21 counties. Their wood products mill in Wilcox County represents over a one billion-dollar capital investment and employs about 1,300 workers.

Changing demographic patterns in the Southeast are challenging traditional uses of forested land. In the last 25 years rapid population gains have occurred as people moved from the colder, industrial cities of the Northeast to the "Sunbelt" of the South and Southwest. An increasingly urban South has placed new demands on forested land. The expanding urban population has fragmented forest properties making management more complicated. Also, public perceptions about how forestland should be managed have changed markedly since 1970. Urban residents tend to express values that are more oriented towards recreation, environmental quality, and preservation for future generations, while rural residents are more likely to support traditional uses of forested land for production. These population shifts have led to increased tension and public conflict over forest issues throughout the Southeast.

Given this explosive tension over forest use in the Southeast, it was not surprising that the Ouachita National Forest in Arkansas was selected as a demonstration forest for ecosystem-based management by the Forest Service in 1992 (Note 17). Efforts to protect the habitat of the endangered red-cockaded woodpecker are being integrated with a number of alternative harvesting practices from clearcutting. Forest management decisions are being informed by a congressionally mandated advisory committee consisting of 13 diverse professionals representing different resource interests. This project is characteristic of efforts region-wide to provide multiple benefits from forests within the ecological capability of the land and where communities begin to play a more active role in forest management decisions that affect their livelihood.

THE CHANGING FOREST ENVIRONMENTS OF CANADA AND THE U.S.
In 1620, the area that now comprises the United States is believed to have possessed 422 million hectares (approximately 1 billion acres) of largely temperate, old-growth forest. The area under forest cover has decreased by one-third today and in the remaining forest the species composition and condition of the forest has experienced many changes. The forests of New England and the eastern Atlantic lost the majority of their forest cover by the mid-nineteenth century. In Vermont, Connecticut, and Massachusetts, less than 40 percent of the land was forested in the 1850s. As the U.S. economy changed, small farms on steep or less productive lands were abandoned, especially in the Northeast and Appalachia, reverting to secondary forest cover. The U.S. Forest Service and other government agencies played an active role in reforesters the eastern United States through-out the twentieth century. By 1980, 75 percent of Vermont's land possessed forest cover, with similar increases in some other eastern states.

Commercial timber industries are not the only important force shaping Canadian and U.S. forests. A serious consideration for long-term management involves the impact of acid rain produced by urban industrial centers. Acids carried in rain and snow particularly affect forests in New England, Quebec, and Ontario. Acid rain causes trees to become weak, experience diminished growth, and increase their vulnerability to disease and pests. There are signs of decline in 40 percent of the sugar maple of Quebec, while the red spruce of New England seems to be particularly affected. Acid rain enters the water-ways, changing the acidity of streams and lakes, affecting aquatic ecosystems. In eastern Canada, an estimated 14,000 lakes have been so acidified they have lost virtually all of their fish species. (Note 18)

Conservation groups and communities have put pressure on the governments of the United States and Canada to protect endan-species and their threatened habitats. Public of environmental concerns have driven government forest policies to a great extent over the past decade. Part IV describes how government agencies in Canada and the United States evolved to take control of much of their nation's forestlands. The section also describes how policies were formed and continue to be shaped in response to changing societal concerns.

NOTES


8. Barber, pp.34-35

9. Barber, p.25


12. Herndon, p. 68

13. Herndon, pp.73-79


The forests of Canada and the United States have progressed through a series of policy environments over the centuries, from the holistic, subsistence use practices of the indigenous peoples, through the privatization and exploitation of the colonial settlers, and finally into a period of government ownership, and scientific and commercial management beginning in the late nineteenth century. As we enter the twenty-first century, the stage is set for a new paradigm to emerge. The following section describes how forest policies and agencies evolved and the direction in which emerging policies are heading.

UNITED STATES

Before the late 1800s, there was little government involvement in forest management in the United States other than disposing of mostly western federal land, acquired through government action such as the Louisiana Purchase, to private citizens who would later harvest timber on this property. Nearly all the land in the original 13 colonies was privately owned. Only in the 1900s has significant amounts of land been retained under public ownership in the Northeast region of the United States. The map in Figure 6 shows federal - and state-controlled lands in the United States today. The federal government owns nearly one-third of all the lands in the United States. In the West, federal land accounts for up to 80 percent of land in states like Nevada and Alaska.

In the eastern United States, the percentage of federal land is frequently five to eight percent of the land base. This primacy of public land in the West and private land in the East has had a significant impact on how forest management issues, conflicts, and proposed solutions are defined. In addition, the pattern of land disposal to private citizens, states, and railroads created a patchwork of public and private lands that influences forest planning and conflicts even today. (Note 1) By the late nineteenth century, there was a coalescing of public concern over the migratory patterns of the timber industry in the United States and the boom and bust cycle of rural communities dependent on this industry. People watched as the "cut-out-get-out" mentality led to the clearcutting of forests, first in the Northeast and the South, then in the Great Lakes region, and the West appeared to be next. Cutover land left slash and bare soils prone to fire, flood, and widespread erosion and landslides.

This public concern caused turn-of-the century Progressive Era conservationists led by Gifford Pinchot (with strong support from President Theodore Roosevelt) to import German-style forestry to the United States. The
Organic Act of 1897 culminated efforts to create national forests reserves to furnish a continuous supply of timber (Note 2). By 1911, with the acquisition of eastern forest lands, the system of forest reserves became truly a national forest system with 59 million acres of forest designated as national forests.

In 1905, management of the national forests was consolidated under the Division of Forestry within the U.S. Department of Agriculture. The USDA Forest Service was created and became a model for other federal and state forestry agencies. A local, decentralized system of management was implemented that has grown into today's Forest Service organization. At the top is the national office of the Forest Service in Washington, D.C., where the Chief of the Forest Service and associated staff for budgeting, planning, and legislative affairs are located. In the next tier down are nine regional offices that serve as a link between the Washington office and individual national forests for policy, budget, and general administration. Each regional office has a regional forester who oversees dozens of forest supervisors. The forest supervisor is responsible for an individual national forest and has a staff that performs planning and budgeting for the forest itself. This staff provides assistance to ground-level managers, called district rangers, on each national forest (Note 3). Initially, in 1905, key resources to be managed included wood, water, and forage.

The creation of the National Forest System and the USDA Forest Service was implicitly designed to create stable logging communities adjacent to each national forest (Note 4). This objective was furthered in 1907 when the Agricultural Appropriations Act dedicated 25 percent of gross timber-harvesting receipts from each national forest to county schools and roads.

**Sustained-Yield Forestry and Community Stability**

During the first half of the twentieth century, public debate continued to rage over the impact of timber industry practices on community stability. Until the post-World War II boom, the timber industry was still largely itinerant, and so were timber and mill workers (Note 5). The economic, social, and political impact of the Great Depression on migrant workers and the lack of permanent forest communities became major public policy issues.

In the National Forest System, timber management continued to be guided by the loose definition of sustainable yield embodied in the Organic Act that allowed only as much timber to be harvested as could be replaced by re-growth in a given period of time (Note 6). Forest Service policy directed managers to consider present and future local demand first. Timber sale programs were designed to ensure the stability of local industries.

This loosely defined arrangement remained in place until the 1930s when the Great Depression thrust the timber industry into financial crisis. With strong support of the timber industry, the Sustained Yield Forest Management Act of 1944 (SYFMA) was passed, which designated sustained-yield units consisting of both national forest and industry land. This arrangement effectively gave selected companies monopoly control over federal timber in the area in return for an obligation to practice sustained-yield forestry on the combined land (Note 7). The objective was to stabilize both timber prices and, indirectly, local communities. The passage of the SYFMA represented the high water mark of federal forest management policies designed to explicitly foster community stability (Note 8).

As a result of labor disputes, cries of foul play by competing timber companies, and the general prosperity of post-World War II America, both the timber industry and federal government lost interest in promoting programs designed to ensure both industry and community stability. The postwar building boom created generally good times for the timber industry and forest-dependent communities. Demand for forest products remained strong and the timber supply remained generally plentiful and accessible.

**Forces of Change**

Beneath the post-World War II prosperity and relatively stable public forest management policies, powerful social and economic forces were at work that would exert tremendous pressure for change on public forest management agencies. One of the most far-reaching changes was the growing influence of urban/suburban people and values and the accompanying diminishment of the rural sectors. By 1990, 77 percent of United States residents lived in metropolitan areas of at least 100,000 people (Note 9). These urban residents were flocking to national forests for outdoor recreation in record numbers.

Along with the urbanization of American society came an accompanying shift in public concern about the effects of human activities on the environment. The modern environmental movement in the United States, born in the social turbulence of the late 1960s and early 1970s, grew from a grassroots social movement into an institutionalized, professional, and powerful part of the political landscape. Over the next 40 years, the
environmental movement spawned a series of federal and state environmental laws that significantly affected public forest management policies and forest-dependent communities.

Other external forces have also disrupted the stability of forest-dependent communities and government forest management policies. By 1980, stiff competition from other timber-producing regions of the world had caused a deep recession in the U.S. timber market. In 1978, there were 553 sawmills and 113 plywood plants operating in the Pacific Northwest. By 1980, 42 sawmills and 8 plywood plants had closed. (Note 10) Inter-woven with the impact of global competition on community stability were technological innovations that allowed mills to either decrease the cost of production (often through decreased wages) or by extracting more value from each log (i.e., the processing of smaller diameter, second-growth timber). The combined effect of global competition and technological improvements reduced the industry workforce, causing economic and social upheaval in traditional mill towns.

During this same era, the prevailing philosophy of how government should effect social change in the United States was also shifting. New Deal Era social welfare programs, including large-scale subsidies and public works programs, gave way to a more modest role for government. Citizen discontent over high taxes and perceived wasteful social programs led to a redefining of government as more of a catalyst of positive social change rather than as a direct service provider (Note 11).

Thus, contemporary government programs to support distressed forest-dependent communities tend to emphasize the providing of technical assistance, modest cost-share grants, or voluntary incentive programs rather than costly subsidies or public works programs. (Note 12)

**Recent Policy and Program Initiatives**

The Multiple Use, Sustained-Yield Act of 1960 broadened permitted uses of the National Forest System beyond timber and water to also include outdoor recreation, ranges, wildlife, and fish. The Wilderness Act of 1964 withdrew over 9 million acres of national forest land from timber harvesting to be managed in a way that would retain their primeval character (Note 13). The environmental movement of the 1960s led to a sweeping series of national laws including the National Environmental Protection Act (NEPA) of 1969 which required federal agencies like the Forest Service to formally evaluate the environmental and social impact of agency decisions. NEPA also greatly expanded the opportunities for public participation in agency decision making. Formal public comment periods, public meetings, and an appeals process gave potent new tools to citizen and interest groups to participate in public policy making or threaten lawsuits until agencies took seriously the environmental and social consequences of their actions. The National Forest Management Act of 1976 formally integrated NEPA requirements into national forest management, requiring each national forest to update a formal forest plan every 10 to 15 years (see Box 2).

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**BOX 2 KEY U.S. FOREST POLICY EVENTS**

<table>
<thead>
<tr>
<th>Policy Eras</th>
<th>Important Policy, Programs, Events</th>
<th>Federal Government Role</th>
<th>Community Role</th>
</tr>
</thead>
</table>
| Pre-1890 Forest Disposition | Louisiana Reserve Act of 1891  
Homestead Act of 1862 | Transfer land to private landowners, railroads  
Motivation to settle and "Open up the west"  
Minimal restrictions on timber harvesting | First permanent settlement of western-migrating citizens  
Boom and bust cycle of timber-dependent communities  
Itinerant workers | Marginal role in policy formation |
| 1890-1945 Scientific Forestry | Multiple Use, Sustained-Yield Act of 1960  
Wilderness Act of 1964 | Progressive-era reform  
Scientific management of land by professional foresters  
Furnish continuous supply of timber | Continued boom and bust cycle  
Beneficiary of progressive forest policy  
Limited voice in policy dialogue |
Over the last 20 years, a battle has been raging in the United States over the future direction of forest management. Public interest groups have exercised their legal right under NEPA to delay or halt the implementation of forest plans for many national forests. Forest Service control over the management of the National Forest System has been diminished as federal courts have handed down orders to halt or reduce timber harvesting in many areas. Perhaps the most dramatic of these court orders was the federal court decision in 1990 to protect the habitat of the spotted owl in the Pacific Northwest (Note 14). As harvests plummeted on national forests in the region, mills closed, causing widespread economic distress in forest-dependent communities. Between 1989 and 1996, a total of 273 western sawmill and veneer plants closed, eliminating 22,778 jobs. While industry officials blamed environmentalists, automation and other improvements in productivity also accounted for many of these job losses over this period.

Government, non-profit, and industrial sectors have advanced a number of alternative approaches as solutions to managing forest resources amidst this protracted conflict. Most are in the early stages of development, as demonstration or experimental initiatives, and have yet to be institutionalized in forest policy and management practice. Most of these initiatives emphasize a more collaborative or participatory approach to managing forest ecosystems where diverse forest stakeholders convene to work out differences and implement shared solutions to forest resource challenges. Recent Forest Service initiatives emphasizing ecosystem management, adaptive planning, and collaborative stewardship represent attempts by public forest management agencies to adopt a more holistic, integrative approach to forest management. A recent interview with Mike Dombeck, Chief of the U.S. Forest Service, highlighted some revolutionary changes occurring in his organization (see Box 3). Forest Service efforts to support forest-dependent communities through their Rural Community Assistance programs emphasize building partnerships with rural communities to support community-based, sustainable forestry initiatives. (Note 15)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Legislative Acts</th>
<th>Management Trends</th>
<th>Other Trends</th>
</tr>
</thead>
</table>

Over the last 20 years, a battle has been raging in the United States over the future direction of forest management. Public interest groups have exercised their legal right under NEPA to delay or halt the implementation of forest plans for many national forests. Forest Service control over the management of the National Forest System has been diminished as federal courts have handed down orders to halt or reduce timber harvesting in many areas. Perhaps the most dramatic of these court orders was the federal court decision in 1990 to protect the habitat of the spotted owl in the Pacific Northwest (Note 14). As harvests plummeted on national forests in the region, mills closed, causing widespread economic distress in forest-dependent communities. Between 1989 and 1996, a total of 273 western sawmill and veneer plants closed, eliminating 22,778 jobs. While industry officials blamed environmentalists, automation and other improvements in productivity also accounted for many of these job losses over this period.

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**BOX 3 INTERVIEW WITH MIKE DOMBECK, CHIEF OF THE U.S. FOREST SERVICE - MARCH 27, 1998**

**Q** How have management priorities shifted over the past fifty years?

**A** If you look at the trends in timber harvest, we were harvesting about 3.4 to 4 billion board feet of the national forests in 1950. By the 1960s, 70s, and 80s, that had increased to 8 or 10, and then a peak of 12 billion board feet each year. Now we are at about 3.6 or 3.8 billion board feet, just about where we were in 1950. We have 40 million acres in the inner mountain west that are at risk from fires, insects, and disease problems for a variety of reasons. The structure of the
agency and the timber management program is focused on harvest and more profitability and that you don't do anything unless you make a profit. We have to change our thinking on that. The fact is there is a lot of work that needs to be done in the forest.

The other significant trend is in the increase in recreation. We have about 1.7 million vehicles traveling National Forest Service roads today. That's ten times what we had in 1950. We get almost 900 million recreation visitor days on Forest Service land and in many places the recreational activity in the forest is very intense. Yet the budget associated with Forest Management is about the same as it was in 1950. The Forest Service is going to have to find significantly different ways to fund its programs. We can no longer put the cost of management on the back of timber.

Q You've said "Collaborative Stewardship" is at the top of your list of priorities? What do you mean by that term and why are you stressing it as a goal?

A People are the delivery system of what we do. Whether it's our own employees, the local public, or our constituencies. If we have a challenge in natural resource management in the United States, it's education, and I would put that at the top of the list. In 1993, we asked the American public what do you expect of the Forest Service? They said the Forest Service had to be the facilitators, the educators, and the catalysts for bringing people together. I think that last term, "catalysts for bringing people together in local communities" is the heart of what collaborative stewardship is about.

Q What major policy changes may be necessary to allow communities to play a greater role in public forestlands management?

A I don't think we need changes in policy. I think we need changes in attitudes and behaviors. I think we need people to work together more closely. Government is getting more and more open every decade from the time that I started working for the Forest Service in the 1970s to today. I think the climate where all these interests can work together is one of the keys. The thing that we still struggle with in all agencies is how we balance national and local interests.

Q What sort of changes does the Forest Service need to make to facilitate this process?

A I think we need to highlight the importance of working with our constituencies. And this is not a new idea. Gifford Pinchot, the first Chief of the Forest Service, stressed the importance of working with communities at the turn of the century. He said if the local ranger didn't have the support of the local communities he would have a difficult time implementing forest policy. In 1907, Pinchot said: "National forest today because the people want the. To make them accomplish the most good the people themselves must make clear how they want them run.

Community groups impatient with the pace of institutional change are championing other initiatives. Community-led initiatives like the Quincy Library Group (QLG) in northern California have drafted legislation that lays out a plan for managing 2.5 million acres on three national forests (Note 16). The QLG initiative has gained national attention and become a lightning rod for public debate surrounding community involvement in forest management. The community forestry movement, still in its infancy in the United States, is growing in numbers and in its ability to influence forest policy and management. Policy makers and public forest managers are increasingly drafting laws and management prescriptions that are sensitive to the needs of forest-based communities.

CANADA

For centuries, the forests of Canada have been an important foundation of the local economy for many Aboriginal peoples and later for European colonizers. The forests helped meet the subsistence needs of indigenous peoples who developed sophisticated use practices, and also provided a context for their naturalistic and animistic religious and belief systems. Forests were both a resource for and an impediment to early Europeans, providing materials for housing and fuel, but also needing large labor investments for clearing to open land for agriculture. Early trade in non-timber forest products centered on animal furs marketed through the Hudson Bay Company. The history of forest agencies, their policies and legislation in Canada reflects the evolution of public values and attitudes toward the forest. This evolution takes place through stages that could be summarized as forest exploitation, conservation, management, and sustainable forest management.

The history of Canadian forest policy, legislation and management begins with the Act for Better Preservation of His Majesty's Wood in America that was proclaimed by George II in 1728 (Note 17). Its purpose was to preserve timber, mostly white pine, for ship masts for the Royal Navy. It applied to all the British provinces and colonies from Nova Scotia to New Jersey, and forbade the cutting of any pine tree, except on private land. Trees reserved for the Crown were blazed (marked with a broad arrow symbol) while other trees were made available with a license from the Crown. As settlement increased, this became a major irritant to southern
colonists and local sawmill operators who found it constraining. The act, combined with other taxes, regulations, and perceived disadvantages, led to the American Revolution in 1776. This had a major impact on timber exploitation in Canada. The British no longer had an assured supply of timber from New England and loyalists who fled northward to eastern Canada began to satisfy that demand.

During the Napoleonic Wars, Baltic supplies were closed off to British trade and greater reliance was placed on Canadian timber resources. By 1825, the Canadian timber trade was well established and settlement was increasing and moving west. Up until this time, there was little concern for forest management or the future of the forests since people had barely begun to exploit a vast resource. There was always more timber up the road or up the river. Regulations only involved either the establishment of quality standards and sizes for export or the appointment of timber surveyors (Note 18). However, as the timber trade continued to expand, government officials began to recognize timber as not only a source of fuel and building materials, but also a dependable source of significant revenues.

By 1808, timber exports from Quebec began to become a significant trade commodity when logging and sawing operations were established in the Ottawa Valley region. From the Ottawa Valley the logging trade expanded westward into the Lake Superior region, with lumber barons emerging to dominate the Ontario timber trade and consolidate their control over the provincial legislature (Note 19). Between 1805 and 1812, New Brunswick timber exports increased almost twenty-fold. Lasting precedents for Canadian forest management were established in 1826 when in Upper and Lower Canada, the Crown reservation of timber was modified to allow the sale of timber deemed “not fit and proper” for the Royal Navy. Before this, only Royal Navy contractors or their licensees could harvest Crown timber. These new regulations contained three clauses that set lasting precedents, particularly in land tenure: lands to remain in Crown ownership; lease payments for harvesting rights to detailed timber specifications; and leases to be auctioned to the highest bidder and renewable if conditions were met (Note 20). The provinces of New Brunswick and Nova Scotia followed with similar legislation.

Forest Exploitation

By the 1850s, the lumber trade had grown rapidly, competition was fierce and profits high. The maritime United Provinces and both Canadas had passed legislation and regulations for the granting of tenure, harvesting licenses and payments, including stumpage and ground rents. These pieces of legislation, which provided a secure and generous revenue to the governments, had a strong influence in drafting the British North America Act of 1867. This act established the country of Canada; the jurisdictional sharing of powers between the federal and provincial governments; and the provision for provincial control and management over resources and retention of revenues from Crown lands (Note 21) (see Box 4).

**BOX 4**

**KEY CANADIAN FOREST POLICY EVENTS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1634</td>
<td>First recorded shipment of masts from New England to Britain</td>
<td>1930s</td>
<td>Provincials commission recommend sustained yield and amendments to tenure systems</td>
</tr>
<tr>
<td></td>
<td>British policy to preserve large timber for masts;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>implementation of size and quality standards;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>appointment of officials to find suitable timber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1721</td>
<td>Marking of white pine in Nova Scotia for masts for Britain</td>
<td>1937</td>
<td>New Brunswick amends Crown timberlands</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Act to impose management responsibilities on timber licensees.</td>
</tr>
<tr>
<td>1775</td>
<td>American Revolution, influx of loyalists</td>
<td>1949</td>
<td>Canadian Forestry Act</td>
</tr>
<tr>
<td></td>
<td>British reliance on Canada's timber</td>
<td></td>
<td>Federal-provincial cost-shared grant programs enabled</td>
</tr>
<tr>
<td>1806</td>
<td>French closing of Baltic ports to British trade</td>
<td>1971</td>
<td>Formation of Canadian Council of Resource and Environment Ministers</td>
</tr>
</tbody>
</table>
Illustrating the lack of authority of the federal government, in 1872 Prime Minister John A. Macdonald pleaded with the Ontario premier: "We are recklessly destroying the timber of Canada and there is scarcely a possibility of replacing it." (Note 22) His efforts to move the provincial governments of Québec and Ontario to impose conservation laws met with no success. The federal government's authority in Canada was limited to woodlands that fringed the prairies and remained under federal jurisdiction until 1930.

After a series of disastrous forest fires resulting in property damage and extensive timber loss, Ontario, Nova Scotia, and New Brunswick began passing fire legislation in 1878, though it was not until the 1890s that rangers were inspecting conditions in the woods to guard against waste in logging camps (Note 23). At the end of the nineteenth century, some timber industry leaders were also beginning to explore ways to make logging operations more sustainable. One large Ottawa timber company owner, who was also a senator, demanded longer lease tenure to strengthen industry commitment to better management. In an effort to protect some of the last major stands of pine the province of Ontario passed the first Forest Reserves Act in 1898, setting aside the 600,000 hectare Temagami Reserve, and several others. While some planners were optimistic at the time that a sustainable system of forest management had been established, they were later disappointed as settlers moved into the area and timber leaseholders began exploiting the reserves, with little regulation by government or industry. Neither government nor industry at the time had the capacity or commitment to enforce the Temagami Reserve policy.

**Forest Conservation**
As early as the end of the nineteenth century foresters, scientists, and planners were also observing that many logged-over forests were not regenerating well. Both wasteful practices, whether for timber harvesting or agricultural land clearing, and the rapidly diminishing forest resource caused by the increasing demand for pulp and paper products indicated a need for management and conservation of the forest. At its beginning, the Canadian conservation movement was influenced by American writers such as George Marsh and the American Forestry Association that held the seminal American Forestry Congress in Montreal in 1882. (Note 24) One of the outcomes was the agreed-on need for government action to ensure adequate regeneration of forests.

Realizing that sustainable management was not an easily achievable goal, the federal government appointed the environmentally committed Elihu Stewart to head the Forestry Branch of the Department of Interior in 1899. Stewart was an advocate of conservation and reforestation. He established the precursor of the Canadian Forest Service (CFS) (Note 25). His responsibilities included western forest reserves, and investigation and control of forest and prairie fires and timber regulations on Dominion lands. A report commissioned in 1883 to look into the production and protection of forests also made recommendations relating to the need for inventories of the extent and nature of forest resources for organization of a system of forest management; and for schools of forestry for training qualified staff (Note 26).

While federal and national public forestry organizations were emerging, provincial governments across the country began reserving large tracts of forest to protect them from conversion to agriculture. According to Canadian forest historian Donald Mackay: “Québec built up one of the biggest forest reserve systems in the world in an effort to form a base for a forest policy, rationalize land management, and keep bogus settlers from grabbing cheap timber without paying for it.” (Note 27) While forest management policies were being established, political commitment, funding, and professional staff were still limited to implement them.

In 1900, the Canadian Forestry Association was established to promote forest conservation and propagation. It organized the first National Forestry Convention in 1906 attended by government officials, the forest industry, and the general public who agreed on the importance of forests to the nation and the need for their care and protection. But forestry as a management science was still only beginning to be accepted by industry. As early as 1900, the president of the Canadian Forestry Association noted that: “There was a time when lumbermen, if they had heard of forestry, would turn away in disgust and consider it only a nuisance, but they have begun to find it quite the reverse.” (Note 28)

This period saw the creation of forest reserves to protect land from other uses, especially agriculture, by both provincial and federal governments with passage of Ontario's 1898 Forest Reserve Act and the Dominion Forest Reserve Acts of 1906 and 1911. The first provincial forest service was established in Québec in 1909. That same year, the Commission of Conservation was established which became a major inventory and research unit not only for forests but also for water-fowl, minerals, and fisheries (Note 29). By the First World War, provincial and federal forest services had all been established, the Forest Products Laboratories had begun research and several university forestry schools had been established. Forest protection measures were in place, forestry practices were being regulated, scientific forestry had begun and public interest in forest conservation was perhaps at its highest level (Note 30).

The establishment of a professional forestry system resulted in a more careful monitoring of forest practices but its findings continued to cause concern among experts, industry, labor, and the general public. Natural regeneration was not resulting in adequate replacement of logged-over forests. Throughout the first half of the twentieth century industry waste, inappropriate government allocation of lands and lack of investment in reforestation were all hotly debated. A number of high-level government commissions were appointed to examine the sustainability of industrial forestry, but the practices of most timber companies went unchanged. Provincial forestry agencies took formal responsibility for restoration, but with minimal budgets and staff through the depression years, they had limited impact.

**Forest Management**

By the 1930s, data collected by various forest inventories indicated that forest resources depleted under traditional systems of licensing threatened not only the viability of the forest industry, but also the stability of communities that were dependent on it. Numerous provincial royal commissions recommended that sustained-yield policies be adopted and that tenure systems be amended to provide incentives for the immediate adoption by industry (Note 31). The roles of federal, provincial and territorial governments underwent significant changes. In 1930, under the Natural Resources Transfer Agreements, control over all natural resources devolved to the three Prairie Provinces. Federal forest jurisdiction then extended to northern forests (recently devolving to the territories), Indian reserves, national parks and some military base lands.

In 1937, New Brunswick was the first province to impose management responsibilities on timber companies
Through its amendment to the Crown Timber Lands Act. After World War II, a succession of provinces began passing legislation requiring industry to take greater management responsibilities. Provincial forest management acts in Ontario, British Columbia and Alberta required all companies to submit cutting plans and take some responsibility for silvicultural operations on leased Crown lands. During World War II, the federal government assumed control over the production and pricing of forest products for the war effort. Afterwards, the Canada Forestry Act of 1949 enabled the federal government to influence forest management and industry expansion through funding by entering into cost-shared conditional grant programs with the provinces. (Note 32)

By the late 1950s, the federal and provincial governments had also increased their combined investment in the forests to 2.5 percent of their total revenues. While sustained-yield management became a policy that has been followed up to the present, defining and achieving that goal has been an ongoing struggle. One Canadian forest historian notes that while the attempt to make industry more accountable regarding forest use was an improvement over the past "what was really happening... was that the myth that Canada was actually practicing an adequate level of forestry was merely replacing the myth that the country enjoyed an unlimited wealth of timber." (Note 33)

By the mid-1960s, the emphasis had shifted to cost-shared rural regional development programs which focused on construction of roads to resources and mill modernization. In 1971, with an increasing interest in the environment, the new joint Canadian Council of Resource and Environment (CCREM) ministers renewed their focus and efforts on forest management and regeneration through several new joint agreements.

Until the mid-1980s, most forestry work and much of the research effort had focused on the harvesting of mature stands. The public sense of resource stewardship had mostly waned. This changed with a series of congresses, conferences, scientific fora and discussion papers that occurred during this decade. They highlighted the extensive backlog of non-regenerating cutover areas, the need for new silvicultural techniques in forest management and, most importantly, the need to broaden the scope of forest management and consider multiple forest values, uses, and functions. Many of these issues were included in the 1987 National Forest Sector Strategy adopted by the Canadian Council of Forest Ministers (CCFM).

Between 1980 and 1995, 5.6 million acres were artificially reforested, representing 41 percent of all harvested areas. The problems of fire and pests, however, continued to plague forest managers with over 12 million hectares burned and another 6.7 infected by insects and disease. Over the 15-year period, 34.4 million hectares of Canadian forests were affected by natural and human disturbances (Note 34). While governments and industry claim that the commercial forest accounts are balanced by artificial and natural regeneration, many ecologists, foresters, and other specialists fear the nation is liquidating its forests and replacing them with short rotation plantations and unhealthy secondary growth.

Sustainable Forest Management

The publication of the United Nations Brundtland Commission Report in 1987 high-lighted many problems, including environmental degradation, forest depletion and deforestation, and proposed the concept of sustainable development. By the beginning of the 1990s, Canada was still relying on clearcutting in 90 percent of the harvested area. Capital-intensive pulp mills were expanding, backed by $10 billion of investment funds. Most of the forestland in some provinces had been signed over to multinational corporations through Forest Management Agreements (FMAs) between the corporations, provincial, and federal governments. Sustainable development resulted in forest policy shifts to ecosystem stability.

Budget cuts within provincial forestry agencies are a concern both to Canadian administrators of Crown lands and to environmental organizations who depend on them to protect those public resources. Ontario’s Ministry of Forestry, like the forest ministries of other provinces, has experienced approximately 50 percent budget and staff reductions in recent years. To deal with these shortfalls they have required private timber companies to take responsibility for monitoring forest use. Since the companies are primarily concerned with the value of timber, they focus data collection based on financial considerations, rather than the impact on ecosystem health. While the public should be part of management planning, with data collection now the responsibility of private firms, outside interest groups have difficulty gaining access to information.

In 1997, the provinces (see Figure 7) held 71 percent of Canada’s total forest area and 88 percent of its commercial forests. Provincial governments establish forest policy in Canada and their authority is extensive and includes formulating policy, determining leases and sales, and levying taxes on natural resource revenues. The federal government is limited to influencing forest management policies indirectly, though it retains related authority over commerce, trade, and lands reserved for First Nations. Nonetheless, the federal government has taken an active role in guiding a dialogue among the provinces and in encouraging greater public participation in policy making.
In 1992, the CCFM, together with organizations representing environmentalists, foresters, labor, private landowners, corporate executives, and academics, developed the National Forest Strategy to manage and protect Canada’s forests in a sustainable manner. Provincial governments in 1994 approved subsequent forest legislation, and in 1995 the CCFM issued a framework of criteria and indicators to measure sustainability. The National Forest Strategy recognized the need to manage and sustain entire forest ecosystems, not only the timber resource. It also addressed the need for more public input in decision making; developing new skills by training and employment programs; increasing the participation of Aboriginal peoples in forestland management; and improving forest stewardship for private lands. The National Forest Strategy coalition evaluated its progress in 1997 and concluded that:

There is reasonable evidence that Canada is moving toward sustainable forest management ... Canada is not there yet and progress is uneven across the country but, the Strategy bas Pro-vided a framework for action. (Note 35)

Provincial governments have been changing their forest policies to recognize ecological and social considerations. As reflected in a June 22nd 1998 interview with British Columbia’s Chief Forester, Larry Pedersen, forest policy is a growing topic of public discussion.

Public involvement in forest management planning is one of the key features of British Columbia’s Forest Practices Code. The code distinguishes between public input into “higher level planning” the determination of broad land use zones and public advice on local conditions and interests with respect to forest management plans. The code invites public input at both levels.

A number of provinces have changed their departmental focus and names from Forests, Forestry, Lands and Forests, to the more integrative Department of Natural Resources. Several have had extensive, in-depth public information workshops and consultations for the development of long-term integrated resource management plans, or ecosystem-based forest management strategies. Five provinces have now established legislation based on the principles of sustainability or amended legislation to reflect them: British Columbia’s 1994 Forest Practices Code Act, Ontario’s 1994 Crown Forest Sustainability Act, Saskatchewan’s 1996 Forest Resources Management Act, Manitoba’s 1997 Sustainable Resources Development Act, and QuBbec’s 1996 amendment to its Forest Act.

Many jurisdictions have now passed regulations that require public and local community input to forest operations through structured committees that provide advice during the planning stages and/or co-management during the implementation and operational stages. Some community forests in Canada have developed in areas such as the North Cowichan Municipal Forest, Vancouver Island, and Girardville COOP in QuBbec. (Note 36)

The Canadian Constitution’s distribution of authority between the federal and provincial governments presents a number of challenges for ensuring effective community involvement in forest management, especially for
First Nations. The federal government is responsible for protecting the rights of First Nations while the provincial governments are responsible for managing natural resources, including forests. The Resource Development Impact Program demonstrated the need to ensure that both levels of government are involved from the beginning in discussions with First Nations in the development and implementation of forest management arrangements. In addition, the relevant ministries within each government must also be involved in the process. Little is gained when the Ministry of Indian Affairs negotiates an agreement for forest management if the Ministry of Natural Resources, who will have to oversee its implementation, is not on board as well.

Like the United States, Canada is gradually developing policies that provide a framework for small forest-dependent communities and the civil society at large to participate in public forestland management decision making. Canadian public concerns about industrial forest practices have grown in recent years. Ideas held by many members of the civil society about how forests should be managed were not always reflected in management priorities of the past. That is beginning to change. As recently as June 1998, the provincial government of British Columbia passed legislation that enables new community forest agreements. According to B.C. Forests Minister David Zirnhelt:

The legislation is the first step towards giving communities the flexibility to manage local forests for local benefits. Community forest tenure will contribute to the long-term economic stability of communities that rely on B.C.'s forests. (Note 37)

The federal Department of Forestry has also been restructured into Natural Resources Canada, though significantly reduced in size. It is now focusing on science and technology within the national policy framework as well as leading several major international initiatives such as the development of criteria and indicators for sustainable forest management and the development of an international convention on forestry. Yvan Hardy, Assistant Deputy Minister for the Canadian Forest Service, discusses these changes in a recent interview presented in Box 5.

**BOX 5  INTERVIEW WITH DR. YVAN DARDY, ASSISTANT DEPUTY MINISTER, CANADIAN FOREST SERVICE, NATURAL RESOURCES CANADA, JULY 2, 1998**

**Q** How have Canadian forest management priorities shifted over the past fifty years?

**A** Forest management in Canada has been quite dynamic over this time period. The major difference between now and then is that forests used to be managed by governments and foresters. They focused on sustained yield for a secure wood supply. As time passed, people gained more access to the forests. Their concerns about conservation and protection have included not only timber but also many other values such as wildlife and birds. They have demanded more influence on decision making and have pushed for ecosystem management. This includes the majority of Canada's Aboriginal communities whose progression to self-reliance depends upon their gaining a larger role in the management of lands and natural resources and in related businesses.

Another trend is more and more devolution to government organizations as well as communities closer to the resource. At the same time, there has been development of a global consciousness toward the environment and trends such as climate change. The challenge is to find an equilibrium point between global demands for sustainable forestry and local concerns for stable, viable communities. Downsizing of governments in the 1990s has provided opportunities and constraints. It has forced institutions, government, industry, even environmental NGOs (non-governmental organizations) to look at themselves. What were appropriate missions, goals, objectives in the past may not be the best for the country today. Modern communication linkages, knowledge initiatives, and more public involvement will provide the opportunities to meet new challenges.

**Q** What is at the top of your list of priorities?

**A** The new Canadian Forest Service Strategic Plan provides the guiding principles for the future. Some areas are particularly pertinent to the changes in forest management and the reorganization of how we manage. Our economic research program has expanded from the traditional analyses of wood supply to including a sociological component in a socio-economic approach to forest management. In the past, we used forests to create capital for infrastructure development; now, we need to know people's new expectations and how to conciliate those with many different forces whether communities, non-governmental organizations, the global community or even those of the status quo.

**Q** What major policy changes may be necessary to allow communities to play a greater role in public forest land management?

**A** The Canadian Forest Service is not a major forest land manager so we are well positioned to...
In 1990, recognizing the challenge of shifting to sustainable forestry, the Canadian Forest Service began the development of Model Forests across Canada and internationally. There are now twelve Model Forests in each province, except Prince Edward Island, including an Aboriginal Model Forest in Quebec. There are five international Model Forests and several proposed. They represent a community forest initiative by building partnerships locally, nationally, and internationally to generate new ideas, discussion, and operational solutions to sustainable forest management issues. Technology transfer and public education are very important parts of their incorporating principles. In 1997-98, the latest strategy in the series of national forest strategies was undertaken. Extensive public meetings updated the previous strategy in terms of principles, values, objectives, directions, and commitments. Areas that will receive greater emphasis during the next five years include private land forestry, Aboriginal issues, and public empowerment.

**SUMMARY**

While co-management and community forestry are new concepts in Canada and the United States, they offer opportunities for new forms of stakeholder collaboration and local involvement in forest custodianship. They provide a framework to incorporate interest groups' values and needs into a functional management system. Since the establishment of public forest lands over a century ago, much of the decision-making authority, supported by policies, has been vested in the hands of a small group of government administrators. Forest agencies in turn often transferred federal and Crown timberlands over to private industry. Communities and the larger civil society have been left on the sidelines.

Community forest management and co-management of public lands create a place between private forestry and government forestry for more meaningful engagement of this larger segment of society. How these concepts will be implemented remains a question. Critics are concerned that if local communities are empowered with public forest decision-making responsibilities, they may not reflect the values of more distant stakeholders. Other policymakers are uncertain how financial and non-economic benefit streams would be equitably divided. Finally, how stakeholders should be identified also remains a question.

Forest administrators and elected officials will be able to develop more effective policies if they have a substantial experiential base to draw from. The new forest management paradigm will likely evolve through trial and error. The diverse and extensive forest stakeholder dialogue ongoing in Canada and the United States at present reflects this search for new approaches to forest management. Preliminary trials with co-management and community forest management should lead to more mature experiments. These may in turn evolve into something quite different, but at present collaborative approaches to public forest management provide opportunities to bring transparency and gain accountability from industry and government, while increasing input from the civil society for managing the vast forest resources of the continent. (Note 38)

**NOTES**


3. Dana and Fairfax, p.82


7. Clary


13. Loomis, p.34


15. McWilliams and Patten, p.4

16. Little, p.12

17. George II, Regis, *An Act for Better Preservation of His Majesty's Woods in America, and for the Encouragement of the Importation of Naval Stores from Thence; and to Encourage the Importation of Masts, Yards and Bowsprights from that part of Great Britain called Scotland*. (London: Assigns of His Majesty’s Printer, and of Henry Hills, deceased, 1729)

18. Notes are from Peter Murphy, "Forest History Time-Line for the Development of the Canadian Forest Service" (Edmonton: Unpublished manuscript, 1994) pp.3-5


20. Murphy


23. Mackay, p.27

25. Mackay, p.48

26. Murphy

27. Mackay, p.49

28. Mackay, p.48

29. Gillis and Roach


32. Johnstone, pp.125-137

33. Mackay, p.113


35. Canadian Forest Service, p.41


38. Thomas M. Beckley, "Democracy in the Woods: A Comparison of Two Alternative and Two Traditional Models of Forest Management" (Unpublished manuscript)
This section presents a collection of case studies of community involvement in forest management in the United States and Canada. Given the extensive diversity existing in these two large countries, it is difficult to represent the full range of experiences. These cases were selected because they illustrate some of the relevant issues within the three broad contexts of community and forest management: indigenous peoples, small forest-dependent communities, and the civil society. These distinctions allow the discussion to focus on specific legal, socio-political, and economic issues relevant to each major context. While the categories are not mutually exclusive, they each have unique aspects that are highlighted in the following pages (see Figure 8).
INDIGENOUS PEOPLES AND FOREST MANAGEMENT

This section discusses the forest management experiences of indigenous peoples in Canada and the United States. Indigenous peoples include descendents of the populations that inhabited the region prior to conquest or colonization. Often referred to as First Nations, Aboriginal peoples, tribes, and Native Americans, indigenous peoples distinguish themselves from other parts of the national community by their own customs, traditions, systems of governance, special laws, and regulations. As pre-European contact inhabitants, they entered into
treaties with colonial, and later, federal governments that reflected agreements between sovereign entities, while at the same time viewing indigenous communities as trustees of the state. These treaties and agreements are communities classed by the federal governments as "Indian Bands" living on lands set aside as "reserves" which are under the jurisdiction of the federal government. The total population of Aboriginal peoples, counting those outside reserves, is over 1 million, (Note 1) which includes approximately 30,000 Inuit from the Arctic. Each community has its own historical culture, territory and system of governance. Most Aboriginal communities in Canada are located in boreal or temperate forests.

According to the Canadian Constitution, the federal government holds jurisdiction for Indians and lands reserved for Indians. However, since 1867, provincial governments have been responsible for the management of most Crown (public) lands, including forests. Treaties signed between Aboriginal peoples and the Canadian government from the eighteenth century to the early twentieth century continue to be recognized by the Supreme Court. Where such treaties were not signed, particularly in western Canada, the courts have affirmed Aboriginal title to the land, and that the rights to fish, hunt, trap, and gather take precedence over use by others. A number of provincial governments have also moved to merge Aboriginal rights with operational forest policy, as in the case of British Columbia, while others have implemented consultation processes that do not allow forestry operations to impinge on the rights of Aboriginal peoples. With over 80 percent of Canada's Aboriginal peoples living in productive forest areas, both traditional and commercial uses make important contributions to community livelihoods.

In British Columbia, the treaty negotiation process that has emerged is based on a land selection model that allows First Nations to choose five percent of the traditional territory and relinquish the rest. On this selected area, they are encouraged to embark on joint ventures with corporate industrial partners. But the policy towards First Nations is mostly limited to a land-use planning process that results in many Aboriginal groups opting not to participate. Joint arrangements are encouraged primarily due to the current volume-based corporate tenure system. Timber companies are providing technical training in industrial silviculture through internship programs for Aboriginal youths. Community forestry specialists in British Columbia, however, are concerned that none of the corporate tenures or other management vehicles used on traditional lands has provided Aboriginal peoples in the province with the flexible tenures required to manage for many different forest values and uses. (Note 2)

The Canadian Forest Service considers 1.4 million hectares, less than 1 percent of Canada's total forest area, as "Indian lands", or reserves. Approximately 40 percent of the 600 tribes control forests of over 1,000 hectares. While the value of timber produced on Aboriginal lands is uncertain, estimates indicate that it may range between $400 and $600 million annually. (Note 3) Beginning in 1984, First Nations started developing forest management plans for their reserve lands. An overemphasis on timber production and poor implementation of plans led to overcutting and poor regeneration. A federal government report in 1992 concluded that the federal Department of Indian Affairs and Northern Development (DIAND) was "not discharging its statutory responsibility for Indian forest management with professional and due care" (Note 4). However, this overcutting is also found on corporate land holdings and is partly due to the volume-based requirements of current tenure systems. Both the National Aboriginal Forestry Association and the Royal Commission on Aboriginal Peoples recommend that the provinces amend their forestry legislation to establish a special forest tenure category for holistic resource management by Aboriginal communities in their traditional areas. (Note 5)

Canadian federal and provincial government approaches to reaching viable resource management agreements with First Nations are changing rapidly in response to judicial decisions and new legislation. The 1997 Supreme Court of Canada decision in the Delgamuukw case, based on a complaint lodged by the Eagle Clan of the Gitxsan of British Columbia, acknowledges the sovereign rights of First Nations over land they can document as traditional territory. This decision applies to all First Nations across Canada.
The Millar Western pulp mill in northern Saskatchewan draws its wood supplies from the NorSask Forest Management Lese Area, which is jointly managed with the Meadow Lake Tribal Council. This zero water effluent mill has created new capacity to utilize aspen and other hardwood species in the province. (photo: Beckley)

The Meadow Lake Tribal Council of Saskatchewan

Mistik Management Ltd., a joint venture involving the Meadow Lake Tribal Council and non-Aboriginal forest industry partners, holds a long term Forest Management License Agreement (FMLA) in northern Saskatchewan (see Figure 9). Since its inception in 1990, Mistik Management Ltd. has structured its public and community involvement activities in relation to the unique socio-demographic composition of its area of operations. Over half the population of the NorSask FMLA area is of Aboriginal descent, the remainder being made up of rural residents, many of whom are involved in agriculture. The NorSask FMLA has been an experiment in local ownership and stewardship of forest resources.

While forestry has been part of the regional economy since the 1930s, the level and scale of forestry operations increased dramatically in the early 1990s. The sawmill in Meadow Lake had been a Crown (public) corporation, or state enterprise, for decades under Saskatchewan’s long tenure of socialist governments. In the early 1980s, a newly elected conservative government sold the mill to a NorSask consortium of sawmill employees and a local tribal council made up of Aboriginal peoples. The government also granted a 20-year forest management license and access to timber on 3.3 million hectares of land, provided NorSask could recruit a hardwood user. Aspen was becoming a commercially viable resource and the province wanted to see
it utilized. NorSask recruited Millar Western, an Alberta company, to build a zero water effluent mill in Meadow Lake and together the two companies formed Mistik Management to manage the timber resource on the FMLA.

Mistik began by creating mechanisms that allowed a diverse range of public interests to provide input into the company and their operations. This broad-based approach to management was unprecedented in the province. Mistik officials were well aware that the traditional company-sponsored, open house information meetings were unlikely to attract Cree or Dene elders, who possessed poor English language skills. Yet, these individuals were very active in the bush economy and extremely knowledgeable regarding the local environment.

Today, the cornerstone of Mistik’s public involvement program is co-management and public advisory boards that exist or are in development for each community within the FMLA area. Mistik is responsible for providing start-up funds to the boards but the operating funds come from a self-imposed tax (by Mistik) on timber harvested in each community. The structure, governance and operations are all matters left to the boards themselves. The boards serve several functions: information exchange, mediation, and distribution of funds.

Because the key to a good relationship between the community and private forestry firms is information exchange, the primary mandate of the co-management boards is to provide detailed information to Mistik on matters related to the Annual Operating Plans (AOPs) and the five-year forest management plans. In order for the communities to comment meaningfully on forestry operations in the region, they need good, accurate, up-to-date information about Mistik’s proposed operating plans. In order for Mistik to respond to community concerns it needs information on bush use, trap lines, sacred sites, cabin locations, recreational use of the land base, and local preferences for cut block size, road location, and harvesting methods. The co-management and advisory boards are the mechanism through which this information exchange occurs.

The second role for the boards is to serve as an intermediary between the company and forestry contractors in the communities. Part of Mistik’s philosophy involves the wide distribution of benefits of commercial forestry to the people who live within the FMLA area. When harvesting, silvicultural treatments, or other forestry work is required in a given community, Mistik communicates through the co-management boards to identify local contractors who could handle the job, ensuring that employment opportunities are distributed equitably within a given community.

A third role performed by the co-management and advisory boards is to distribute funds generated from forestry. Mistik-pays communities a certain percentage for every cubic metre harvested from a given community’s area. This is done of their own initiative, not as a requirement of their license. Ostensibly, the fund created by this self-imposed tax is to be used for the operational requirements of the co-management boards. However, in communities where there is active harvesting, the revenue adds up to significant sums. The co-management boards are responsible for distributing these funds in the community at their discretion. Often these funds are spent to help those in need, to initiate community development programs, or to serve as loans for persons interested in getting into various forest-related businesses.

Mistik’s philosophy of public involvement supports the idea that there are varying interests in civil society, but that all have a right to participate, actively soliciting traditionally marginalized people in the community. For example, Mistik has held a number of “elder gatherings” (some as long as three days) with First Nations members. Two of these were three-day meetings. Mistik also meets individually and in groups with other resource users: outfitters, trappers, wild rice growers, and others. They load detailed information gathered from these individuals and groups into their Geographic Information Systems (GIS) database on non-timber resources such as trap lines, grave sites, cabin locations, salt licks, and berry patches. Additionally, in collaboration with the Meadow Lake Tribal Council, Mistik has sponsored research designed to measure and monitor use, abundance, and opportunities to trap.

Lessons

To date, most interaction and dialogue regarding forest management planning has taken place with the local public. Mistik recognizes, however, the legitimate concerns of non-local interests in forest management on the NorSask FMLA. Provincial environmental and conservation groups, such as the Saskatchewan Forest Conservation Network, the Saskatchewan Environmental Society, and the Saskatchewan Wildlife Federation, are vocal and well organized and are making their views known without explicit solicitation by Mistik. These groups constitute an important component of civil society, and represent provincial residents who wish to see responsible stewardship on Crown forestland. They largely represent urban residents, and, as such, have different concerns and interests than local Aboriginal resource users, or the local farm population in the southern half of the FMLA. By incorporating the perspectives of a variety of resource users with both local and non-local residents and Aboriginal and non-Aboriginal citizens, Mistik is attempting to create a forest
management regime that both meets the needs of shareholders, and that reflects the desires of the province's citizens.

Increasingly, Aboriginal peoples in Canada are seeking greater control over traditional lands outside their reserves. As in the case of Saskatchewan and the NorSask FMLA, a number of provinces, including Quebec and Alberta, are negotiating co-management agreements with First Nations over provincial Crown lands. Co-management agreements reflect different definitions and tenurial arrangements. In some situations there is a recognition of shared or co-jurisdiction, while others are simply cooperative management with the province maintaining jurisdiction over natural resources.

The Cree of Waswanipi, Northern Quebec

The story of the Cree of Waswanipi, northern Quebec (see Figure 10) illustrates two aspects of First Nations involvement in forest management. The case presents some of the challenges traditional Aboriginal institutions face in relating their indigenous land use practices to the policies of the nation, province, and private sector. And the case study also documents a process of collective decision making on forest management within a community that is practicing commercial forest harvesting and sawmilling. The Cree of Waswanipi have developed a community consultation process to ensure that their forest management decisions respect the needs of community members who practice traditional, subsistence land use for hunting, trapping, and fishing. The Waswanipi Cree community recently joined the Canadian Model Forest Network to facilitate research and experimentation of community participation in reconciling commercial forest activities and indigenous land use practices.

Figure 10  WASWANIPI CREE — NORTHERN QUEBEC

Land Use History and Cree-Government Relations in Northern Quebec:

Quebec is Canada's largest province, spanning 154 million hectares. Nearly 55 percent of the total area is forested, representing 23 percent of Canada's forests, or about 2 percent of the world's forests. Quebec's forest product industry is the second largest in Canada, with exports of over C$10 billion in 1996, primarily to the United States. Nearly 90 percent of the region's forests are Crown land under the jurisdiction of the provincial governments Quebec's boreal forest extends from James Bay and the Ontario border in the west to the Gulf of St. Lawrence and the Labrador border in the east. Exploitation of the forest by European settlers began in the 1700s, concentrating along the population centers of the Great Lakes-Saint Lawrence Valley. In the 1800s, the primary use was lumber production. This shifted to paper and pulp production in the early 1990s and continues to dominate the province's forest industry today.

After exploiting 90 percent of the original forest of Quebec's southern region, commercial enterprises have moved northwards. Over the past 20 years, Cree leaders have watched with growing concern as large tracts of their traditional territory have been leased and felled by outside corporations. In 1975, when the James Bay Northern Quebec Agreement was signed, the total amount of land allocated to timber companies in Cree territory (known as "Eeyou Istchee") was 24,000 square kilometers. By 1994, this figure had more than doubled
to 52,000 square kilometers, 95 percent leased to 7 non-native forest companies under 25-year, renewable contracts (Note 8). In the rest of Quebec, the average lease is 1600 square kilometers, but in Cree Territory the leases average over 3400 square kilometers, with one lease of 17,000 square kilometers, an area larger than the state of Connecticut. Clearcutting on Cree land, currently defined as the complete felling of patches of 150 hectares or more, has increased dramatically from 125 square kilometers cut annually in the mid-1970s, to a peak of 400 square kilometers in the late 1980s. The Cree estimate that since 1975, a total of 5,000 square kilometers of forest within their traditional territory have been clearcut, an area the size of the state of Delaware. (Note 9) Of the estimated 14,000 jobs that are dependent on their traditional lands, only a handful of Cree are employed in the forest sector (Note 10). Local Cree who are involved in timber harvesting and processes are largely employed in small-scale Aboriginal companies.

The hunting lands of the Waswanipi community have been the most impacted from commercial logging. On average, 38 percent of the trees on each family hunting territory has been cut in the last 25 years. In the most extreme cases, 80 percent of the trees in a single territory has been harvested. Under the provincial government's forest management plan, 100 percent of the Waswanipi territory is slated for commercial logging. The other Cree communities of Oujj-D-Bougoumou, Waskaganish, Nemaska, and Mistissini, located farther north, have also had significant portions of their territories allocated for commercial cutting. All five of these communities are already experiencing logging. (Note 11)

Relations between the Cree and the government of Quôbec take place within the framework of the 1975 James Bay Northern Quôbec Agreement, a treaty between the Cree, the Inuit, the government of Canada and the province of Quebec. The agreement is based on two overarching principles: on the one hand, the need of Quôbec to utilize all of the natural resources in the province for the benefit of all the province's population; and on the other hand, the recognition of the needs of indigenous peoples, whose culture and lifestyles are different from those of other Quôbecois. The agreement was designed to ensure that resource utilization takes place in a manner that does not significantly infringe upon the ability of the Cree to hunt, fish, trap, and gather. The agreement arose out of a protracted dispute between the province's policy of hydroelectric development and the Cree insistence on their ability to continue to derive a subsistence living from the land. The agreement establishes three categories of land with different levels of Cree and provincial government authority in each category, ranging from a small area under exclusive Cree control to regions where the Cree hold preferential rights to hunt, trap, and fish. (Note 12)

In 1975, forest management was not a major issue on the Cree negotiating agenda. In fact, the James Bay Northern Quôbec Agreement explicitly states that forest exploitation is compatible with hunting, fishing and trapping activities. (Note 13) In addition, the Agreement specified that government-approved forest management plans were to be exempted from the agreement's environmental impact assessment process as long as they impacted an area less than 65 square kilometers. The scope of forest management plans changed with the 1986 Forest Law, which now provided for long-term leases, as well as road building and forestry camps over areas larger than 65 square kilometers. (Note 14)

The traditional land use management system of the Cree divides wildlife harvesting lands into family territories. Several families may share a single territory, but each territory is under the stewardship of a single tallyman and his family who are responsible for managing the wildlife resources. This is accomplished through a process of cyclical harvesting which ensures that no area is harvested to exhaustion. Since there are over 1,200 families that regularly use the 300 wildlife harvesting areas (trap lines) in Eeyou Istchee, the tallyman's communication and administrative roles are essential for good management. (Note 15) Trap line size varies from 700 square kilometers in Waswanipi territory to over 2,000 square kilometers in northern Mistissini territory.

In the mid-1980s, the federal government developed a project to attempt to integrate traditional Cree forest knowledge into decisions by provincial resource managers. Under the Resource Development Impact Program (RDIP), the tallymen were supposed to provide information on wildlife habitats and breeding areas. The Cree felt the federal program did not involve provincial authorities early enough in the process, nor did it require Cree input to be acted upon. The Cree are concerned over what they perceive as the provincial government's failure to respect Cree rights on their traditional lands as embodied in the James Bay Northern Quôbec Agreement. No land use management plan has been approved in Cree territory, despite the fact that 95 percent of the commercial forestland has been leased out to private companies. (Note 16)

The Cree desire to remedy the situation through "government-to-government" negotiations with the provincial government in order to develop a land-use plan for the Cree territory that respects traditional Cree land-use. For its part, the Quôbec Ministry of Natural Resources has recently begun a process of revising the forestry regime to foster greater public consultation in order to improve several aspects of forest management. The Quôbec government also recently concluded an understanding with the Cree Grand Chief which it hopes will lead to further discussions on ways to ensure that industrial activites are compatible with traditional Cree land
Cree Forestry at Waswanipi

The Waswanipi community has been involved in small-scale, commercial forest activities for about 35 years, starting with manual cutting and horse-drawn logging in the 1960s. They began to look more seriously at commercial-scale management options in the 1980s and undertook a lengthy process of community consultations, resulting in the establishment of the Mishtuk Corporation, a forest management company which employs about 30 people. Mishtuk practices “mosaic cutting,” a forest management technique whereby no more than one third of the mature trees is harvested in a single felling; harvested blocks are no bigger than 40 hectares; and they are distributed as evenly as possible. This is the only model of its kind in the region.

The challenge for Mishtuk was how to balance commercial forestry with the needs of the roughly one third of the Cree who practice trapping and hunting. After a series of consultations to explore forest and habitat conservation needs, community members agreed that Mishtuk should reduce the volume of timber it was cutting. The company complied, still managing to earn a profit, while developing a system to respect trap lines. The company also has a fund to compensate trappers who are negatively impacted by timber harvesting. The Waswanipi have also developed a revenue-sharing mechanism whereby money from timber rights comes back to the community and are subject to collective decisions on how to spend it.

In March 1995, the Mishtuk Corporation signed a deal with Domtar Inc., one of the province’s largest forest products companies, to build and operate a C$5.8 million sawmill. Mishtuk undertook the deal after 80 percent of the community voted for the mill in a community referendum. This project is the first joint venture between an Aboriginal community and the forest products industry in northern Quèbec. The mill is owned and operated by Nabakatuk Forest Products Inc., which is 55 percent owned by Mishtuk and 45 percent by Domtar. (Note 18) Currently, lumber from the mill is exported through Domtar, though the Waswanipi are exploring the possibility of negotiating a treaty with the Mohawk for direct access to markets in Ontario and possibly the United States.

The sawmill opened in June 1997. It employs about 90 people from the Waswanipi community and provides a 16-week training program for new employees. Chief John Kitchen said of the mill’s opening: “This project of a wood transformation center was created with the full and active participation of the community and of the local trappers who will be part of the planning process that will affect their lands and their traditional activities…. We are confident that the plan is a step in the right direction in offering real employment opportunities to our people.” (Note 19) Since the sawmill opened, Chief Kitchen has observed that regular employment and income gains seem to have ameliorated social problems in the community. The Waswanipi Cree took another groundbreaking step in September 1997 by becoming the first Aborigine-led Model Forest in Canada. The Waswanipi Cree Model Forest (WCMF), encompassing 209,000 hectares, was selected from among six proposals submitted by First Nations from across Canada. The WCMF represents a partnership between the Cree of Waswanipi, the federal and provincial governments, private sector entities and NGOs.

Lessons

Community involvement in forest management in Quèbec has been improving in recent years, facilitated by a recent law which allows local municipalities to sign forest management agreements with the provincial government, in effect allowing the creation of community forests. (Note 20) These processes, however, are not designed for the specific needs of First Nations. Nevertheless, some have argued that Aboriginal peoples should participate in such processes since they can provide a forum for creating awareness, building alliances, influencing resource decisions, and mitigating potentially adverse environmental impact. (Note 21)

The Cree, however, take the position that public participation through “multi-stakeholder processes” is not an effective mechanism to resolve long-standing rights issues. Multi-stakeholder processes, they argue, assume the predominance of non-Aboriginal control of the forest. The Cree contend they have a prior legal right to hunting resources by virtue of original occupation and treaty, and by the fact that community members are dependent on these resources for subsistence. The Cree object to having the same standing in such processes as non-native sports hunters. Rather than rely on multi-stakeholder processes, they argue that resolution of forest management conflicts on traditional lands must be approached through “government-to-government” negotiations and that outstanding treaty and rights claims must be resolved before development activities proceed. (Note 22)

The Cree also have to reconcile the interests of those who wish to develop and utilize the corporate structures of forest management companies, mills, and joint ventures, with the interests of those community members who live by traditional subsistence practices. The Waswanipi have managed to resolve their internal conflicts by utilizing consensus-oriented fora for open dialogue. These consultations require time-consuming discussions on forest management practices, but they help ensure community cohesion and wide acceptance.
of decisions arrived at collectively. This process has also extended to decisions of revenue sharing where funds from forest harvesting are subject to collective decision making regarding how they should be spent, which is usually for local infrastructure development projects. The Cree of Waswanipi offer a model of community forest management that seeks to balance traditional land-use practices with commercial-scale forest harvesting and wood processing. It is too early to tell if this current formula will prove environmentally sustainable, but the prospects are encouraging, at least for those forests on traditional Cree land that are under their control.

UNITED STATES

There are 300 Native American reservations in the United States occupying 2 percent of the national land area, or 56 million acres. Eighty percent of Native American lands are held collectively by each tribe and are maintained in trust for Native American use by the U.S. government's Bureau of Indian Affairs (BIA). Approximately 1.9 million Americans are considered Native Americans through blood relationships, although only 50 percent actually live on or adjacent to reservations. (Note 23)

Native American tribes control 17.1 million acres of forestland of which 5.7 million acres are managed as commercial forests, with the remainder designated "woodlands" that have less than 5 percent forest cover. In the mid-1990s, 103 Native American reservations had commercial operations covering 23 states, including Alaska. (Note 24) Of these, 41 possess over 10,000 acres of timberland or have allowable cuts of over 1 million board feet each year (see Figure 11). In 1991, Native American forests were producing nearly 1 billion board feet of lumber each year worth $645 million and generating 49,000 jobs. (Note 25)

Most of the original treaties were established between the federal government and Native American tribes during the nineteenth century as political agreements between sovereigns. Native American tribes ceded vast areas of land, receiving guarantees of homelands and the protection of their rights and welfare in return. Subsequent Supreme Court decisions also characterized Native Americans as wards of the United States government, creating a complex relationship, with Native Americans holding considerable jurisdictional...
autonomy, yet still under the trusteeship of federal agencies. Since 1909, Native American forestlands have largely fallen under the custodianship of the BIA. The inefficiency of the BIA has long been a subject of great frustration to Indian tribes, with frequent complaints regarding paternalism and excessive bureaucracy. The BIA in turn has often had to contend with inadequate staff and financial resources to carry out its mandate. While the BIA held broad, pervasive authority as trustee to manage Native Americans, it was often ignorant of or ignored tribal values and desires. This mismatch in perceptions was documented in a recent attitudinal survey of forest management priorities conducted by the Indian Forest Management Assessment Team (IFMAT). The study found that over 75 percent of tribal members sampled said protection and beauty were their primary objectives in forest management, while less than 25 percent of non-Indian BIA employees ranked forest protection at the top. (Note 26)

Government attempts to privatize Native American lands under the 1887 Dawes Act undermined communal systems of resource management when tribal lands were distributed to individuals. (Note 27) Many of these allotments were subsequently lost to non-Indians through tax-induced sales, ignorance of the law, and outright fraud, sometimes with the complicity of the BIA. Native American lands have also been subject to environmental laws targeted toward federal lands, but Native Americans often lack the funds or authority to implement them. By the 1970s, as a result of forest management concerns expressed both by Indian communities as well as by the BIA, the tribes began taking a greater involvement in resource management.

Since the passage of the 1975 Indian Self-Determination and Education Assistance Act (PL 93-638), allowing tribes to contract all or part of forestry operations that had been done by the BIA in the past, a growing number of tribes have regained administrative control over their forestlands. By 1992, 49 tribes had assumed management of their lands. Tribal communities started administering BIA forestry funds that had traditionally been allocated for staff salaries and administrative funds to carry out inventories and development projects and manage timber felling and marketing. A Harvard University study that compared the results of this devolution with former practices found that: "When Indian principals replace BIA agents in these tasks, both the quantity of timber harvested (relative to potential) and the price obtained increase" (Note 28). The study concluded that "the superior performance of tribal workers" was associated with "superior incentives such as the importance of timber stocks in tribal wealth." (Note 29) While the BIA and tribal forestry staff have sometimes disagreed during this transition period, the work of the Inter-Tribal Timber Council (ITC) was important in facilitating a dialogue between the two sides and helped establish a relationship based on willing accommodation and mutual respect (see Box 6). (Note 30) In 1996 alone, Indian tribes invested $35 million in forest management to complement $45 million allocated by the federal government.

**BOX 6 INTER-TRIBAL TIMBER COUNCIL (ITC)**

The Inter-Tribal Timber Council (ITC) was established in 1979 to promote cooperation among the tribes in the field of forest management and education. The ITC represents 65 tribes across the continental United States and Alaska. The organization holds an annual National Indian Timber Symposium to share information on management and marketing practices, and to promote Indian forestry concerns. The council was influential in shaping a number of important laws including the National Indian Forest Resources Management Act (NIFRMA) PL 101-630. This public law requires consultation with affected Indian tribes to assess forest resources and management systems, including all management plans. The Inter-Tribal Timber Council was contracted to organize an Indian Forest Management Assessment Team (IFMAT) comprised of senior scientists and managers. The team concluded that: management of Indian forests can be substantially improved by reconfiguring the relationship between the U.S. government and the tribes, supported by increased funding and other measures. These actions place Indians firmly in control of their forest and provide the technical and financial means for them to reach their visions for these lands. We believe that considerable management flexibility still exists on Indian forestlands, where many innovative approaches are already being tried. Further, we believe that others have much to learn from Indian forestry and the holistic view of forests and people. But, it is urgent that more attention and resources be directed soon to Indian forests by Congress. Otherwise, options will be irretrievably lost, and with them, a major opportunity to bring Indian forests up to management standards of federal lands such as the National Forests and to provide widely useful examples of integrated forest management*. The ITC has sent trade missions to China and Micronesia. The ITC has also worked with the BIA to generate fellowship funds for undergraduate and graduate level training of Indian foresters.

* Excepted from "An Assessment of Indian Forests and Forest Management in the United States" (Portland, Oregon: Intertribal Timber)

According to a World Bank Environment Department study, the passage of PL 93-638 has stimulated the creation of numerous new tribal forestry organizations on reservations. The approval of the National Indian Forest Resource Management Act (PL 101-630) in November 1990 further strengthened the role of tribal
governments in the sustainable management and development of Native American forests. In this act there is an emphasis on integrating resource management goals with larger community values, departing from a past emphasis on timber production.

While Native American communities continue developing employment opportunities and increasing tribal income, many groups are placing greater importance on sustaining traditional conservation values and maintaining their forestlands for recreational, wilderness, aesthetic and religious purposes. In a number of cases, tribal forestry professionals use modern forest management practices to achieve community goals that reflect their traditional holistic view of the environment and humankind's relationship with it. For example, the GIS is being employed to better inform tribal planners about how community versus commercial use is affecting their forestlands. (Note 31)

The Native Americans of the Western United States

For Native Americans in the western United States, forests on reservation lands offer opportunities to generate substantial income and employment. Over the past 30 years, however, unlike private forestland holders and public forest managers, most tribal nations have not considered maximizing profits as a priority in shaping their resource management strategies. Native American groups like the Yakama, Navajo, and Apache have approached forest use and conservation with traditional cultural and religious values in mind, while still attempting to meet their economic needs. It is this holistic, multipurpose approach to forestry that makes their experiences valuable as the larger society, and, indeed, other nations, seek ways to make forest management sustainable and responsive to diverse needs.

Yakama Holistic Forest Management

The Yakama Indian Nation manages about 600,000 acres of timber on its reservation land in South central Washington (see Figure 11). In 1996, the reservation generated over $45 million in timber revenues, about one third of the logging revenues from Native American lands in the United States. The Yakama are one of a number of Pacific Northwest tribes that are attempting to balance an active timber industry with their indigenous cultural and religious values.

The Yakama Treaty of 1855 established a 1.3 million-acre reservation, which includes a mix of wet fir and mountain hemlock forests as well as dry ponderosa pine. In the 1950s, a commercial forestry program began as a joint venture of the BIA and the Yakama Nation. An uneven timber stand management system was adopted allowing timber removals on a 12-to-15-year rotation. Harvests emphasize individual tree or group felling rather than the stand-level, clearcutting commonly practiced in other parts of the Pacific Northwest. (Note 32)

For thousands of years, forest foods like these blueberries, raspberries, and salmon berries from the Pacific Coastal Forest have made summer a time of abundance for indigenous peoples. These foods retain importance for the subsistence livelihoods of forest communities and have considerable commercial value as well. (Photo: Poffenberger)

A tribal Land and Natural Resources Policy Plan was framed in 1987 stressing sustained-yield silviculture that can stimulate productivity and generate a steady income, while reducing disease and insect damage. The plan also mandates adherence to tribal values and management goals, including maintaining viable populations of all native wildlife and fish species and their supporting habitat, protecting cultural and religious sites and environments, meeting subsistence needs, and ensuring water quality. To meet these goals, Yakama forest resource managers have created 11 land-use management areas (LUMA), including three reserve categories excluded from timber harvesting, and five other zones where logging is only permitted to enhance values other than commercial timber. Areas designated for non-commercial timber are managed for watershed protection, wildlife winter habitats, gathering areas for medicinal plants and foods, and as historical, religious, and cultural
While much of the old growth on neighboring private and state lands was felled in the 1980s, the forest management strategies of the Yakama have been successful in protecting streams, important wildlife habitats, and old growth across a range of forest ecosystems. The care the Yakama take to protect the environment is reflected in their management requirement that riparian buffers extend at least 500 feet from stream banks, versus the 30 to 150 feet mandated by the Washington Forest Practice Board codes. Unlike federal conservation programs that require substantial outside subsidies, the Yakama conservation strategy is self-sustaining, largely funded by timber revenues from tribal lands. While Yakama timber production practices are designed to minimize negative environmental impact, in recent years the tribe has been able to harvest 100 million board feet of timber annually. Despite their productivity, it is the effectiveness of the tribe's holistic approach to management that makes their experience so unusual. According to one report: "Optimization of economic return has been purposefully compromised to protect the wide array of nontimber values that form the foundation of Indian culture." (Note 33)

Navajo

The Navajo Forestry Department (NFD), with ties to the University of Northern Arizona, is one of a new generation of tribal resource management organizations (see Figure 11). The NFD administers timber and firewood collection, livestock grazing, medicinal plant gathering, and summer camp use. The foresters have mapped sacred sites, inventoried wildlife, and conducted attitudinal surveys of local residents regarding their management priorities. This data is currently being analyzed for use in a long-term management strategy.

The Navajo Forest Products Industry (NFPI) was established in 1959 with an investment of $7.5 million to serve the 200,000 member Navajo Nation. According to one assessment: "The value of NFPI to the Navajo is the aggregate of payments to the tribe and wages paid Navajos and all the 'value added' contributions of the operation to the gross Navajo product." (Note 34) As with other tribes, the Navajo vest the forest with religious value. The Navajo believe that careful maintenance of the forest is part of a spiritual heritage that should be passed on from one generation to the next. Preserving these "legacy forests," rather than optimizing the annual cut, has become a major element in tribal forest management decision making. (Note 35)

White Mountain Apache

Sorting out management goals has been a challenge for the White Mountain Apache of Arizona (see Figure 11). From the 1920s until 1964, Southwest Industries, a private company, had severely over cut the tribe's 685,000 acres of commercial timber, taking over 100 million board feet each year. "They led us to believe that we could cut 'till kingdom come" said Chief Alvino Hawkins. (Note 36) Since the tribal forest committee took reverse control of logging operations, the cut has been reduced to 68 million board feet annually. While revenues have declined, there is greater security that the forests are being sustainably managed. Commercial timber operations currently generate $30 to $40 million per year and provide 500 full-time jobs. The tribe has also diversified and now runs a ski resort that earns $15 million each year, as well as a large recreational program offering 25 lakes and 428 miles of trout streams. Each year the White Mountain Apache hold a scoping session where the tribal timber company presents its management plan to the tribal council and conflicts in resource management goals are settled. When disputes arise, a five-member, inter-disciplinary team that includes a tribal council member, the forestry committee chairman, a tribal forester, the forest manager, and a wildlife biologist, reviews the problem and, after consultation, presents their recommendations to the Tribal Council.

Intertribal Sinkyone Wilderness Council

In October 1997, eleven tribes from the northern coastal California region gathered to dedicate the first tribal-owned wilderness park in the United States, the 3,800-acre Inter-tribal Sinkyone Wilderness Park (see Figure 17). The dense redwood forests that cover this coastal area are the homeland of the Sinkyone who were massacred or forced off their lands by U.S. Army troops in the mid-1800s, after which the steep slopes were commercially felled, leaving the watershed scarred with logging roads and land slips.

A series of demonstrations in 1986 against the clearcut logging practices of the Georgia Pacific Corporation resulted in the purchase of the 7,100 acres by the Trust for Public Land, the Save the Redwoods League, and the California State Coastal Conservancy. Through this acquisition, a 3,300 parcel was added to the existing Sinkyone Wilderness State Park. The remaining 3,800 acres was purchased by the Intertribal Wilderness Council to establish the first Native American wilderness park with a grant from a private foundation. This organization of northern California Indian tribes plans to return the land to the stewardship of its original inhabitants, both to promote cultural revival and to restore the degraded watersheds that possess the burial grounds and archeological sites of their ancestors. Indian volunteers work with park officials from the
neighboring state park to replant trees and grass along old logging roads, introduce native plants that have disappeared and construct salmon jumps and spawning pools for Coho salmon and steelhead trout that were once abundant in the area. According to Hawk Rosales, executive director of the Intertribal Sinkyone Wilderness Council: “We’re healing the land. A tremendous amount of damage requires a tremendous amount of mitigation, but we have the patience to do it and our elders have the knowledge of what the land was like before it was damaged.” (Note 37)

Eventually the intertribal council would like to acquire an additional 40,000 acres from Georgia Pacific where logging operations continue, and possibly additional land from the Bureau of Land Management and even the state wilderness park. While such goals are ambitious, according to one analyst for the State Coastal Conservancy: “They were able to pull this off, and that is no small feat. They held on to their dream and worked very hard to overcome a lot of obstacles. They showed a lot of gumption that a lot of nonprofit groups frankly don’t have, so I think they are going to make it” (Note 38)

Lessons

The Native Americans of the western United States are seeking to demonstrate that forest management can be tied to the conservation values of their own cultural traditions, rather than being driven solely by economic motives that have dominated the commercial forest industry. The Yakama and other tribes are developing innovative approaches to resource planning, like the LUMA system, that allow multiple management values and goals to be represented. The need to achieve multiple objectives through their forest stewardship practices, including sustaining some old growth, enhancing hydrological function, maintaining biodiversity, conserving cultural and religious sites, as well as income and employment generation, has led tribal foresters to avoid clearcutting and to the development of innovative, lower impact timber harvesting systems characterized by shorter rotation, selective felling cycles, with wider riparian zones and more frequent set asides.

Through their holistic approach to forestry they are helping redefine sustainable ecosystem management, often in advance of the larger society. Despite possessing forest management budgets far below those of federal agencies and the private sector, Native American strategies for forest custodianship are often organizationally and technically innovative. While maintaining strong ties to tradition, tribal foresters are showing a commitment to adopt modern technologies where feasible. Native American foresters have also demonstrated that professional groups like the Inter-Tribal Timber Council can create a greater solidarity among members and play a number of important roles in providing opportunities for exchanges, lobbying government and political representatives for policy change, organizing sector reviews, and in informing and educating the public.

The Menominee of Wisconsin (Note 39)

The Menominee of Wisconsin have been influential in defining sustainable forest management since they began milling timber from their communal forestlands in 1856 (see Figure 12). For nearly 150 years the tribe has extracted over two billion board feet of lumber, and yet the standing volume of timber on the reservation is greater than when the logging operations began. Today, the boundaries of the Menominee reservation are visible in satellite images, with the dark old-growth forest standing out against the agricultural land and the young regenerating forests in neighboring counties. Over 94 percent of the tribal land is covered by rich forests of white pine, hemlock, sugar maple, red maple, red oak, and yellow birch, and, despite its appearance of old growth, it is one of the most intensively managed forests in the Midwestern United States.
Treaties between the U.S. government and the Menominee made in the early nineteenth century recognized their tribal claim at 9.5 million acres, but further treaty negotiations that established the Menominee Reservation in 1854 reduced their tribal lands to 234,000 acres. Toward the end of treaty discussions, the U.S. government attempted to move the tribe west of the Mississippi, but Chief Oshkosh succeeded in retaining the rich forestlands of eastern Wisconsin for his people. In 1887 the U.S. Congress passed the General Allotment Act urging the Menominee and other tribes to divide communal lands among Indian members, which in turn would allow those individuals to sell their land. The Menominee rejected the program and continue to hold tribal lands collectively.

The Menominee credit their successful practices of sustainable forest management to the advice of their tribal chiefs who, in the mid-nineteenth century, told them that if the tribe was to survive on the small reservation they must manage their resources with care. According to oral histories, the tribal elders said:

*Start with the rising sun, and work toward the setting sun, but take only the mature trees, the sick trees, and the trees that have fallen. When you reach the end of the Reservation, turn and cut from the setting sun to the rising sun and the trees will last forever.* (Note 40)

Although the Menominee have owned their reservation lands since the treaty agreement, the United States government has retained varying degrees of management authority over those resources. When the reservation was formed, tribal members were only allowed rights to dead and downed timber for local use. A sawmill was established to meet domestic needs in 1856. In 1871 the government allowed the tribe to sell their timber off the reservation, and in 1890 the tribe was granted rights to cut green timber at an annual rate of 20 million board feet. This was the first time the U.S. government had attempted to establish sustainable harvest guidelines. Over the next 17 years, 290 million board feet of timber were cut and sold. Over $10 million dollars had accrued to the Menominee Trust Fund by 1954, while other timber income was used to construct a hospital and run a police force.

**Threat to Tribal Land Tenure Security**

Unfortunately, the tribe’s success was used to justify its removal from federal trust protection when the Menominee Termination Act was passed in 1959. The loss of tribal status was a disaster for the Menominee. The reservation became the 72nd county of Wisconsin and the tribe’s identity was subsumed by tribal business, Menominee Enterprises, Inc. (MEI). According to one report: “With the trust account dissolved and taxation of their lands specified by law, the Menominee began a downward economic spiral. The hospital and
the Bureau of Indian Affairs (BIA) schools were forced to close. MEI, trying to support the tribe and pay state and federal taxes, operated at a loss. One of the nation's most successful Indian tribes had become impoverished. (Note 41)

In 1973, after rallying to regain their tribal status, the federal government revoked its earlier Termination Act by passing the Menominee Pistoriation Act, thereby recognizing the tribe as a sovereign nation. The MEI transferred assets back to the tribe under the reconstituted Menominee Tribal Legislature. With the forestlands once again in trust status, they could not be sold or traded without congressional approval. A 1975 agreement between the tribe and the Secretary of the Interior extended full rights of timber management, under federal oversight. Currently, the Menominee Indian Tribe is a self-governing, sovereign nation, recognized by the U.S. government, with its own constitution and by-laws, approved by the tribal council, its members, and the Secretary of the Interior.

Forest Use Practices

Traditionally, the Menominee were forest-dwelling people, dependent on their woodland ecosystems for food, shelter, and clothing. Dwellings were constructed from small trees and thatched with cedar and birch bark. Clothing was made from animal hides. Hunting, fishing, and the gathering of berries, tubers, and wild rice provided food for the tribe. Trapping animals for their fur gained importance as Europeans began trading with the Menominee. Under current tribal law Menominee members maintain the rights to hunt, fish, trap, and gather food for subsistence use, though commercial activities are reserved for the tribe as a collective group.

Tribal hunters currently take around 1,000 white-tailed deer and 100 bears each year for their personal use. Hunting on the reservation is controlled through the Menominee Tribal Hunting Code. Tribal members are also given an annual permit for cutting fuelwood and posts on the reservation. The yearly allocation includes 25 cords of firewood, 100 cedar posts, and unlimited cedar boughs. Each year 350 people apply for permits with an estimated 3,000 cords of firewood and 1.5 million board feet of timber actually harvested.

Collecting blackberries and raspberries is a major activity for tribal members during the summer. Some tribal members still collect wild medicinal plants, wild rice, and maple syrup. Other forest-related activities that generate income for tribal members include the collection of moss and cedar boughs to sell to flower marketing companies. Ginseng (shang) is also gathered for sale on a limited scale for export to China. Ginseng gatherers are very protective of their sites and careful in their collection methods in order to ensure a sustainable supply. They always bury the seeds to maintain tribal reserves.

Although the tribal council formulates resource use codes to guide community use of the one-quarter million acres of forestlands in the reservation, the Menominee are bound by their own conservation-oriented traditions as well. As one tribal elder states: “Everything we have comes from Mother Earth—from the air we breathe to the food we eat—and we need to honor her for that. In treating the forest well, we honor Mother Earth.” (Note 42) Another report by tribal forest managers noted that: “Financial gain is not the driving force behind the Menominee and their forest. They have always been conservative in their dealings with the natural resources.” (Note 43)

Commercial Timber Management

While the Menominee retain their traditional values and beliefs regarding sustainable forest management, they also run a modern commercial timber operation based on a computerized monitoring system. Two inventory systems were established in 1963, one overseeing timber volume and the other acreage. More recently, the GIS was implemented to provide a spatial data base for the monitoring systems, and the tribe is currently designing a system to track habitat changes and monitor the forest ecosystem.

Since the monitoring system was implemented 35 years ago, the forest sawlog volume has increased 13 percent to a total of 1.7 billion board feet, indicating that past extraction levels have been well within sustainable limits. As noted earlier, the tribe has always followed a system of selective felling, taking dead and diseased trees as well as mature ones. This has generally led to enhancing the health of the stand through thinning and culling. The tribe attempts to minimize the use of heavy equipment and new road building. But, the tribe notes, this management regime has narrowed the species diversity, favoring high vigor trees. Future management plans will modify silvicultural prescriptions to lead to greater species diversity.

Under the guidance of the tribal council, Menominee Timber Enterprise, Inc. (MTE) manages logging and milling operations. The MTE is mandated to log, manage, and forest tribal forestland, and to manufacture, market, and sell timber and other forest products. In 1975, the mill was completely renovated to improve processing technologies and currently the MTE has more technically advanced equipment than most non-tribal sawmills in the region. The mill at Neopit operates throughout the year, producing 10 million board feet of
rough and finished lumber. The mill reuses all log waste and bark, either marketing it or as fuel for the dry kiln boiler. Training workshops are held for all MTE staff. The expansion of value-added processing is expected to increase Menominee revenues in the future.

While the MTE has had trouble generating a profit during the years following the reestablishment of the trust, in 1993-94 the company made $1.7 million, with prospects for a major increase in revenues through more progressive management and new market penetration. Even when the MTE fails to generate a profit, hundreds of thousands of dollars in income flow into the tribe, creating steady employment for hundreds of workers. For example, in 1993 the MTE paid over $3.5 million dollars in salaries to 170 persons, 70 percent of whom were tribal members. Although the opening of a gambling casino in 1987 has brought millions of dollars into the community and raised wages and incomes substantially, the community continues to view the tribal timber operations as their economic foundation.

There is an ongoing discussion in the tribe regarding the use of mill profits. While most tribal members are content if the mill is operating effectively and the forest well managed, some would like a greater share in the profits. At present, mill profits are reinvested for equipment maintenance and improvements. According to Wendel Irving, Chair-person of the MTE's board of directors: "Some members just don't understand that if they took lump sum payments, they wouldn't get much. Three million dollars sounds like a lot of money, but if it is divided among 6,000 members, each would only get 500 dollars." (Note 44)

Lessons

Since the reservation was established in 1854, the Menominee have been united culturally and economically by their commitment to their forestlands. The tribe has consistently rejected opportunities to become wealthy by clearcutting its rich timber stands. It has also resisted government efforts to privatize the forests and has succeeded in maintaining some of the healthiest, hardwood forests in northern Wisconsin. Despite continuous commercial harvesting for 140 years, the forests appear park-like to visitors. The Menominee attribute their success to the strong sense of consensus within the community that respects traditional values and stresses the conservation of resources.

One outcome of the Menominee forest management philosophy is that "the forest drives the mill, the mill does not drive the forest." This is a different approach than that of many other commercial timber producers who adapt their harvesting plans to meet market demands. The Menominee management strategy has had a very beneficial impact on the forest ecosystem, as it allows sustainable timber harvesting plans to be designed and implemented, without being manipulated by market forces. A key to achieving their goals has been the integration of forest management with milling and marketing capacities. Drawing on the latest wood processing technologies and marketing strategies has also been essential in allowing operations to be profitable.

Marketing presents a continuing challenge since the species harvested are not always the ones in demand. The marketing department has gradually built a loyal clientele by educating them about Menominee harvesting practices. In turn, the buyers recognize the high quality of Menominee timber and other products. The MTE has a steady customer base and order file for Menominee lumber that commands a premium price on the market, which the tribal company ensures through an excellent record of filling orders with quality products. Menominee management also allows a diversity of forest products to be marketed, including 15 high-quality, finished wood products. The MTE owns three semi-trucks for hauling products throughout the Midwest, and also possesses a railroad spur to the mill.

In future, the MTE seeks to better position itself by diversifying its product line and by gaining greater production line flexibility. The tribal timber company is also improving its market positioning by seeking Green Cross and Smart Wood certification to better ensure premium prices for its products. While certification is not yet a major consideration among consumers in the United States, wood products that are certified to have been produced in sustainably managed forests will contribute additional value to the community. The Menominee experience teaches other indigenous forest-dwelling communities that managing forest resources based on community institutions can provide a sustaining basis for the local economy and maintain traditional values. The history of the Menominee also indicates that there are distinct advantages for indigenous peoples if they can maintain special governance, tax, and tenure status that reflects their communal identities.

SUMMARY

In both Canada and the U.S., many First Nations and Native Americans have regained greater control over their natural resources through legislation, new treaties, and other agreements with governments and the private sector over the past few decades. A growing number of groups have worked to balance traditional
cultural values with the development of modern forest management systems for meeting commercial, social, and religious goals. Tribal councils meet with tribal resource planners to develop strategies to respond to diverse needs. Although there have been cases of commercial failure, many outstanding successes can be identified.

First Nations and Native Americans are challenged by the varied goals and values held by their members. Many tribal members retain strong ties to traditional values and subsistence life styles. Conservation of the resource base and minimal intervention holds a religious value in many communities. At the same time, poverty remains a problem, especially given the remote locations of the tribal territories. Job creation is a pressing need and natural resource utilization is often one of the most expedient ways to achieve that goal. Conflict between conservation values and the need to draw income into the community frequently generates disagreements among tribal members, while the private sector and even government can further complicate such disputes by exploiting them for their own benefit. Government support to tribal forest management is often at levels well below investments made on other forestlands, whether under federal, provincial, state, or private control.

In 1993, the most comprehensive study to date of Native American forestlands in the United States was carried out by the Indian Forest Management Assessment Team (IFMAT) for the Inter-Tribal Timber Council. Their primary recommendation: "Redefine the U.S. government's role in discharging its trust responsibilities so that tribal governments have primary responsibility for directing Indian forestry." (Note 45) The study went on to make seven supporting recommendations:

- Articulate the tribal vision of forests and their management
- Increase investments for Indian forest management to match the national forests
- Protect forest health and productivity through ecosystem management
- Bring staffing levels to parity with those of the national forests
- Increase tree value through improved forest management
- Strengthen coordinated forest resource planning and inventorying
- Address issues requiring special planning and management

In Canada, the federal government has made a clear commitment to recognize and expand the role of Aboriginal peoples in forest management and to benefit from their unique knowledge. Over the past two decades, local involvement in management has expanded both on reserve lands as well as on neighboring Crown lands. At the same time, the traditional territories of First Nations are under mounting pressure from industrial activities that are moving northwards. Commercial development has impacted traditional economies and often undermined Aboriginal life styles, eroding customary organizations, leadership patterns, and local knowledge. While provinces like British Columbia and Ontario have changed their forest management laws to mandate consultation with Aboriginal peoples, and Saskatchewan and Manitoba have introduced legislative changes to facilitate dialogue, co-management agreements often emerge out of conflict, and are agreed to for reasons of political expediency. While legal recognition of the Aboriginal right to participate in resource management on traditional lands outside reserve areas is only slowly emerging, there is a growing sensitivity to the special status of Aboriginal peoples. According to Peggy Smith of the National Aboriginal Forestry Association (NAFA):

> The broad framework which has been evolving over the past five years for sustainable forest management is recognizing that Aboriginal peoples are not just another "stakeholder" and that this approach can serve to benefit improved stewardship of our forestlands. That's where the proof of the benefits of co-existence based on respect for Aboriginal rights and aspirations will lie: in our forests. (Note 46)

Declining federal and provincial budgets for implementing new laws often undermine positive changes in legislation. Some industry innovators are well ahead of provincial governments in incorporating Aboriginal interests in forest management. Yet, a study by the NAFA in Canada (see Box 7) concludes: "Industry as a whole shows even less interest [than government] in moving forward on its own to accommodate Aboriginal interests and knowledge, especially if it threatens to increase production Costs." (Note 47) NAFA concludes that: "The use of Aboriginal forest-based ecological knowledge will contribute to the conservation of biodiversity and sustainable forest management. The integration of Aboriginal ecological knowledge in forest
management planning will also contribute to the spiritual, social and economic survival of Aboriginal peoples.” While much learning has occurred in recent years regarding the important roles indigenous people are playing in forest management, a stronger political and financial commitment is needed, both in Canada and the United States, to build traditional values and knowledge into sustainable resource management, both within and outside reserves.

**BOX 7 THE NATIONAL ABORIGINAL FORESTRY ASSOCIATION**

The National Aboriginal Forestry Association (NAFA) was incorporated in November of 1991 as a non-profit, non-political organization NAFA has a 12-member board of directors and has maintained an office in Ottawa since its incorporations The overall goal of NAFA is to promote and support increased Aboriginal involvement in forest management and related commercial opportunities. NAFA is committed to holistic or multiple-use forestry, which is the rebuilding and sustainable development of the forest to serve a multitude of community needs. Among those are: the protection of wildlife, traditional food stuff habitat, fur bearers, clean and adequate supplies of water; the establishment of forested areas for recreation, tourism attractions, traditional cultural and spiritual use; as well as the production of fibre for timber, pulp and paper and other wood by-products. Key to the concept of holistic forestry is the idea of community-based strategies for transforming this resource ethic into reality.

Since commencing operations, NAFA's primary focus has been on building a policy framework to enhance the capacity of Aboriginal communities and groups to participate in forest management, consistent with self-government and self-reliance aspirations as expressed by our national organizations. To this end, NAFA has cooperated with Aboriginal communities and organizations, governments educational institutions, unions, industry and industry associations. To address the range of issues that must be dealt with to facilitate greater Aboriginal involvement in forest management decision-making, NAFA has established the following specific objectives:

- Assist Aboriginal communities in their quest to achieve a standard of land care which is balanced, sustainable and reflective of the traditional knowledge and forest values of Aboriginal peoples.

- Facilitate capacity-building through the development of models for increased participation in natural resource management decision-making and the implementation of human resource development strategies.

- Address the need for Indian forest land rehabilitation and increased Aboriginal control over forest resources through the development of appropriate policy and programming.

- Ensure that Aboriginal communities are made aware of ways and means by which they can extract the highest value possible from the forest resources they possess on reserve and from tenures they may hold in traditional territories.

- Support Aboriginal Peoples’ aspirations regarding self-government and the exercise of Aboriginal and Treaty rights as they pertain to natural resource management.

- Provide a network for information sharing and to act in an advocacy role that seeks out opportunity to promote forestry amongst and on behalf of Aboriginal Peoples in Canada with governments and industry at all levels.

See [http://www@fnc.ca/nafa/wdspeak.html](http://www@fnc.ca/nafa/wdspeak.html)

**NOTES**


2. Cheri Burda, D. Curran, E Gale, and M. M'Gonigle, "Forests in Trust: Reforming British Columbia's Tenure System for Ecosystem and Community Health" (Faculty of Law and Environmental Policy, University of Victoria, British Columbia, Report Series R97-2, July 1997) p. 84

4. Bombay, p.13

5. Burda et al., p. 84


8. Under the 1986 Québec Forest Act, all the commercial forestland in the province was consolidated into a series of 25-year contract agreements, with five-year renewal clauses. The agreements are known as “CAAFs”: contrats d'approvisionnement et d'aménagement forestier, or Timber Supply and Forest Management Agreements. (Cited in May) p.119


11. Quaile, 1996

12. Quaile, 1996

13. La Convention de la Baie James et du Nord québécois, Chapter 5: Régime des terres, section 5.2.5.c; in La Convention de la Baie James et du Nord québécois. 2nd edition, Québec, Éditeur officiel de Québec, 1980.)


15. Quaile and Blacksmith, 1996, pp. 46-47

16. Quaile, 1996

17. Personal correspondence from Mr. Gilles Gaboury, Director, Directorate of Forest Environment; Ministry of Natural Resources, Government of Québec, 27 July 1998


19. Quoted in "Waswanipi First Nation Taking the Lead." NAFA Newsletter, Fall 1997


22. Quaile, 1997

23. Harold Hodgkinson, *The Demographics of American Indians* (Center for Demographic Policy, undated report)


27. Morishima, p.6


29. Krepps and Caves, p.2

30. Morishima, p. 9


33. McCorquodale et al., p.18


36. Davis, pp.1-2


38. Claiborne, p. A3

39. This case study is based on a paper by Paula Rogers Huff, Director of the Sustained Development Institute, College of Menominee Nation, and by Marshall Pecore, Chief Forest Manager for the Menominee Tribal Enterprise. The paper is entitled "Menominee Tribal Enterprises: A Case Study," presented at the Symposium

40. Huff, p.2

41. Huff, p.4

42. Huff, p.7

43. Huff, p.7

44. Huff, p.15

45. Indian Forest Management Team, Assessment, p.ES-15
46. Smith, 1995, p.11

47. Bombay, p.19
SMALL FOREST-DEPENDENT COMMUNITIES

Rural, forest-based communities are on the frontline of a societal struggle over Canadian and U.S. forests between powerful, global economic forces and public concerns over environmental degradation. In the late 1980s, these conflicts led to a gridlock. Industry restructuring, market shifts, and technological changes resulted in a growing number of sawmill closures. Rising unemployment in the timber industry was further worsened by court orders and timber sale appeals that caused harvests to plummet on public forests throughout North America. The end result was a widespread disintegration of communities dependent on the wood products industry.

Over the past ten years, considerable debate within all sectors of society has focused on how Canadian and U.S. forests can be sustainably managed while still contributing to the economic well-being of rural communities. Proposals and experimental initiatives have been championed by industry, government, the nonprofit sector, and forest-based rural communities. Forest communities have slowly found their voice as they band together and fight for their survival.

Emerging from this ongoing dialogue has been a growing community forestry movement. Community forestry initiatives in Canada and the United States seek to ensure that local residents have access to a portion of the benefits flowing from nearby forests, sometimes drawing on the experience of developing countries in Europe, Asia, Latin America, and Africa. Further, community forestry is founded on the belief that local residents should play a meaningful role in decisions affecting surrounding forests. Community forestry advocates assume that local people often act with greater accountability than other actors, such as industries with distant headquarters, since the effects of forest management decisions have more direct impact on them. As a consequence, communities may have stronger incentives to practice more sustainable management.

The following cases illustrate how forest communities across Canada and the United States are adapting to the dramatic changes thrust upon them by global economic forces and shifting public opinion. These cases also demonstrate how government, industry, and the nonprofit sectors have responded to the needs of forest communities. Community-based projects vary widely in purpose and impact depending upon local capabilities and resources, forest resource types and opportunities, and the nature and effectiveness of government and nonprofit intervention efforts.

Common themes running through community-based forestry initiatives include the following: ecological restoration; adding value to primary forest products; market incentives to encourage sustainable management of forests; and stewardship education for private landowners. In some cases, frustrated with top-down, bureaucratic planning, community projects emerge, employing collaborative planning processes where diverse interests from industry, private landowners, environmental organizations, government, and recreation user groups come together to resolve conflict and build agreement towards solutions that contribute to ecological, economic, and community sustainability. In other situations in Canada and the United States, collaborative forest management initiatives emerge from the outset as partnerships with federal or provincial governments.

In this section, five cases are presented which illustrate both the diversity and commonality of issues, constraints, and opportunities faced by rural, forest-based communities throughout Canada and the United States. The study of Community Resource Planning in the Mountainair Ranger District of New Mexico shows how communities can cooperate to pool their knowledge and guide the development of management plans for national forest lands. The case from eastern Kentucky demonstrates how the Mountain Association of Community Economic Development (MACED), a community-based nonprofit organization, supports sustainable forestry initiatives that directly benefit local citizens managing private woodlots. MACED's strength is in its ability to nurture new business ventures by providing venture capital and technical assistance. The Hayfork case in northern California describes how a small, mountain community, dependent on logging activity for generations, has mobilized to create and implement an integrated program of job retraining, research, and education in order to establish a more sustainable forest-based economy while reducing social conflict.

The study of local forest management in Vernon, British Columbia describes how the provincial Ministry of Forestry worked with local loggers and wood processors to develop environmentally sound and economically successful alternatives to conventional clearcutting. The program redesigned the system of timber sales to facilitate the involvement of local community enterprises. Finally, the case from eastern Quebec involving the Lower St. Lawrence Model Forest illustrates how both small and large private forest owners can work together to promote the integrated management of a regional forest ecosystem. In addition, the forest tenant program described here represents a progressive attempt to add value to forest products while supporting local entrepreneurs. The following stories indicate how community forestry can work at the local level. The lessons
learned can serve as a signpost for future community forestry endeavors.

UNITED STATES

After over a century of exploitation, the larger society in the United States increasingly endorses policies that support natural resource conservation. But the society is diverse and reflects many perspectives. The Native Americans described in the preceding section legitimately desire greater control over their remaining lands and resources. Under existing treaties and agreements with the United States government, they already possess considerable autonomy to manage forest resources according to their distinctive values and needs. There are also diverse communities of people whose economies are dependent on the forest, such as logging, milling, collecting of non-timber forest products, recreation, or real estate investments of retirees and professional urban migrants. In this section the management roles of these highly localized, small forest-dependent communities are discussed.

Small forest-dependent communities in the United States fall broadly into two categories: those characterized by possession of their own private woodlots, a dominant group in the eastern part of the country, and those located in the midst of the expansive public forests of the western United States. Private forest owners have considerable control in resource management decision making. Holding legal authority over their resources, they need information and access to technologies and capital. In some cases they may feel threatened by large-scale timber industries that make decisions and exercise control from corporate board rooms thousands of miles from their homes, or by urban-based conservation groups with large budgets and constituencies that influence political decision making. As illustrated in the case of MACED, small landowners in eastern Kentucky require information and support services that will allow them to add value to their forest produce through better processing technologies and market access.

The situation is much different for small forest-dependent communities on public forestlands. Growing public concern over forest clearcutting has led to sharp declines in industrial cutting, especially in the Pacific Northwest. In the case of the Hayfork community, located near the center of the Shasta-Trinity National Forest in northern California, the passage of legislation to protect endangered species like the spotted owl resulted in the virtual closure of public forests to industrial logging. Since 1990, over 40 percent of all jobs in the area was lost. A community-based, non-profit organization has helped individuals from the area develop new survival strategies based on ecorestoration and sustainable resource use, using the immediate economic threat as a force to pull the community together.

In the past, small forest-dependent communities such as Hayfork have had very little formal authority to provide input into management decision making, even when their livelihood was directly dependent on forest resources. This has changed in recent years as community-based collaborative groups have begun to have a say in the public forest planning process, as shown in the Mountainair Ranger District case study that follows. Given the diversity of forest dependencies and values in rural communities, collaborative dialogue groups were found to be necessary mechanisms. (Note 48)

The role of collaborative groups is still widely debated. The right of local communities to participate in decision making regarding the management of nearby public forest lands upon which they are economically dependent, versus the rights of the larger society and the role of government custodial agencies, is still being determined in the United States. Most stakeholders in this discussion feel that existing policies of federal control are adequate, but dialogue and consensus building need to be developed to ensure that all voices have a chance to be heard and acted upon. The Forest Trust, a Santa Fe-based NGO, facilitates the National Network of Forest Practitioners to advocate for the rights of small, forest-dependent communities (see Box 8).

BOX 8 FOREST TRUST & NATIONAL NETWORK OF PRACTITIONERS

The Forest Trust, based in Santa Fe, New Mexico, provides a range of services including: technical assistance, publications, continuing education, forest-based business creation and support and advocacy for policy reform to grassroots environmental organizations, rural communities, and public agencies. It builds effective networks and advocates for policy reform at state and federal levels. It is dedicated to "protecting the integrity of the forest ecosystem and improving the lives of people in rural communities." In addition, the Trust also offers land stewardship services to owners of private lands of significant conservation value.

This box highlights the accomplishments of one Forest Trust coordinated program: the National
Network of Forest Practitioners (NNFP). Formed in 1991 with the help of the Forest Trust, the NNFP was created to strengthen the efforts of individual practitioner groups. By voicing a stronger and more cohesive viewpoint, the NNFP hopes to be a more effective advocate for the reform of national policies and programs affecting the viability of rural communities. Formally, the mission of the NNFP is to promote the well-being of rural communities and forests by supporting individuals and organizations engaged in nurturing sustainable, reciprocal relationships between forests and people. This mission is pursued through an integrated set of strategic regional networks, membership development, fund-raising, and strengthening the network’s annual meeting.

NNFP members are typically community-based nonprofit organizations. Some of these non-profit organizations are associated with for-profit ventures and many operate their own small businesses. Many try to combine economic development projects with social service programs, environmental advocacy, and education (2) NNFP activities over the past several years have included publication of a quarterly newsletter, compilation of a directory of network members, annual meetings, focused working sessions, and research and policy development. The NNFP has grown rapidly over the past several years and has expanded from a regional grassroots network to a national organization.

Future plans include formally establishing itself as a nonprofit organization, independent of the Forest Trust, hiring an Executive Director, and developing a comprehensive fund-raising and business plan. The challenge, as expressed by Frand Adams, a facilitator at a 1997 Steering Committee meeting, will be for the NNFP to evolve as a national organization while staying true to its grassroots origins. (3)

1 For further discussion see Thomas Brendler, Richard Schrader, and Ryan Temple, eds., National Network of Forest Practitioners (Santa Fe, NM: Forest Trust, 1996), p.2


3 See Newsletter of National Network of Forest Practitioners, March 1998, No. 5, p.2

Community Resource Planning in the Mountainair Ranger District, New Mexico

The Mountainair Ranger District is situated in the Manzano Mountains north of the town of Mountainair in central New Mexico, southeast of Albuquerque, the largest city in the state (see Figure 13). The district consists of about 45,300 hectares. The Mountainair Ranger District is part of Cibola National Forest. The six communities participating in this project consist of four traditional Hispanic land grant communities and two ranching towns.
Descendants of Spanish explorers first settled the area in the seventeenth century. The village of Manzano and its vicinity were for several generations a center for Spanish Catholic missionary efforts to convert the Indians of Quarai and Abo. In the nineteenth century, when New Mexico became a territory of the United States, Anglo homesteaders and ranchers established the town of Mountainair. Most of the land now managed by the Forest Service was land once owned by the land grant heirs of the original Spanish settlers. Land grants were large tracks of land given to families and communities by the king of Spain when this part of the country was part of the Spanish Empire. Everyone of the village managed the land and all its resources as "common lands," but when ownership was transferred to the U.S. Forest Service, at the close of the Spanish-American War, so did the management, resulting in restricted use and access to local people. The land grants have posed significant problems for the Forest Service due to boundary disputes, illegal use of the forest and access by former grantees who still maintain that Forest Service land belongs to the Spanish land grant heirs.

Access to forest resources by these communities did not change; local people continued to use the forest for hunting, fuelwood, lumber, cattle grazing and other traditional uses, but subject to permission and supervision by the local district ranger. What did change was that other people also began to use the mountain for non-traditional purposes. Logging companies built several mills to supply the railroad and outside construction demands, mining companies moved in to remove valuable minerals, and cattle companies grazed large herds of cattle.

Most recently, as the population of the area and neighboring cities like Albuquerque and Santa Fe have grown, the demand and use of the mountains has changed. The mines and lumber mills are now gone, replaced by recreational facilities for newcomers and people from the larger cities. Hikers, campers, cross-country skiers and sightseers dominate the mountains. While many of the traditional forest uses remain, like fuelwood and herb gathering, hunting, and piñon nut and berry picking, many old practices like cattle grazing, logging and mining are increasingly being contested. Legislation to protect threatened and endangered species as well as environmental concerns about overgrazing and protection of ecosystems is further affecting the needs and uses by local people.

Today, the forest is in poor condition. Much of the old growth is gone and the generations of trees that are in need of thinning to reduce fire danger. Wildlife is disappearing and erosion and pollution threaten the watersheds. Many people from the local communities continue to rely on the forest as their principle source for medicinal herbs and for other traditional spiritual or inspirational purposes. The local district ranger and the regional forester recognized that management of these resources requires that they provide for the needs of local people and also meet the demands and interests of the broader public. Their desire is to improve and protect forest conditions while at the same time allowing people to use the forest.
In 1995, the Western Network, a non-government organization based in Santa Fe, selected the Mountainair Ranger District as an area to develop community forest planning strategies. Community resource mapping, a method developed by the Western Network, was used to gather local input into the ten-year forest district management plan. Local U.S. Forest Service staff saw the project as an opportunity for exploring mechanisms to include local communities in their planning process. The project surveyed and documented, on maps and in surveys, the traditional and current uses of the forest by people living in six communities in close proximity to the mountains. Starting at the northern-most village and moving south, these six communities are Tajique, Torreon, Manzano, Punta de Aqua, Mountainair, and Abo.

The principal objective of the project was to assist community stakeholders in identifying how and when people use the forest and then emphasize the important contribution that local citizens can have in the decision-making process about forest management. The information gathered was analyzed in discussions between local communities and U.S. Forest Service staff to better understand how people utilized the mountains. The findings from this dialogue were used to revise the agency's ten-year forest management plan. The communities developed maps that were effective in demonstrating to the Forest Service the significant value of the mountains to them. They hoped that the information would enable them to enter into constructive dialogue with each other, as well as with the Forest Service, to design and develop joint projects that would improve forest conditions while providing for their needs and those of future generations. Twenty-five different uses of the forest were identified during the community-mapping process.

The Western Network recognized that sincere participation and commitment by all concerned citizens and stakeholders was required for this process to have any measurable chance for success. The first step in organizing this project was to present this idea, with its goals and objectives, to the regional forester of the Southwestern Region and other agency administrators of the U.S. Forest Service. During meetings with the Forest Service, it was discovered that there was great interest within the agency in improving their methods of communicating with local communities. This interest resulted in the agency providing the Western Network with a list identifying district rangers within the state who would be most sympathetic to a project of this type and would possibly be interested in participating.

The Mountainair strategy required a neutral third party, like the Western Network, to act as facilitator and to work with community members in an open and safe forum. The Mountainair Ranger District decided after several community meetings to organize a citizens group called the East Manzano Mountain Communities Development Committee. The committee's mission was to establish a community organization that consisted of elected representatives from each village and town involved in the project, and to work with the Forest Service as well as with other relevant state, county and federal agencies.

After several meetings with Forest Service officials, the committee and the agency began negotiating current uses to be included in the agency's ten-year management plan. In late 1997, the committee signed an agreement with the Forest Service to work on the Forest Health Stewardship Project together. The Forest Health project is a 16-acre thinning project focusing on ponderosa pine. Instead of prescribed burning, the thinning project would allow the community to remove timber, which could be used by the community.

Lessons

The community-based, collaborative planning process described above reflects the type of dialogue occurring between many local stakeholding groups concerned about public forestland management. In the case of the Mountainair Ranger District, the community-mapping project succeeded in enabling participants to discuss their diverse concerns, interests, and needs with respect and sincerity. An important reason for the successful outcome of this process was the sincere commitment and hard work of the committee members and the district ranger and his staff. The participation of U.S. Forest Service personnel in community discussions allowed joint input into strategic discussions and a unified sense of purpose. The Mountainair case demonstrates the success of bringing all participants to the table and working collaboratively to address the needs of each group.
Community members from Mountainair attend a night meeting to identify forest management priorities. Community discussion identified a diversity of use patterns and needs that provided guidance to the U.S. Forest Service staff preparing the forest district ten-year plan. (photo: Romero)

The process in Mountainair is not yet complete and much work remains to be done to establish operational systems of joint forest management. However, the organizational and conceptual groundwork for successful collaboration is now in place and all interested parties are ready to work on projects that are realistic and achievable. Several general points to consider for this process based on the experiences of the Western Network are:

- Identify the total domain considered part of the area of resource use without any reference to political or physical boundaries
- Ensure that all interested stakeholders and participating community leaders are invited to attend the meeting and recruited to educate their local groups regarding the benefit of becoming involved in the forest management planning process
- Offer to conduct personal interviews for those people who cannot attend the meetings or choose to remain anonymous
- Hold discussions with community representatives regarding their use of the forestlands, both legal and illegal
- Highlight issues by superimposing community sketch maps onto the existing political and land management boundaries to identify the ways in which existing management policies hinder or facilitate the community's pattern of resource use and environmental needs
- Use NGO facilitators to create a dialogue between the Forest Service and the communities to ensure that traditional resource users needs are taken into account in the implementation of specific policies and other federal projects

Private Forests and Community Economic Development in Eastern Kentucky

Eastern Kentucky is the center of the Central Appalachian coalfields. Rural communities face economic and environmental threats as the number of coal mining jobs has declined by 50 percent over the past ten years. The population under 18 years of age is leaving, the overall population is aging, and unemployment rates are as high as 63 percent in some counties (Note 49). Several generations of exploitative strip mining, timbering, pollution, and deep mining have left deep scars upon the landscape. However, this region is also the heart of the mixed mesophytic hard wood forest in the United States, one of the most diverse temperate forests on earth. Wood is second only to coal in economic importance in Kentucky. Kentucky has almost 12 million acres
of commercial forestland owned by more than 400,000 landowners.

A small woodlot owner uses a horse to extract timber from his land in eastern Kentucky. Careful selective felling, low-impact extraction, and better log sorting are allowing small operators to increase their forest-based income in sustainable ways. (photo: MACED)

Kentucky's hardwood industry has been inefficient in a number of ways. In 1989, although 72 percent of the region's land was forested, the region was foregoing premium prices that grade lumber could bring and allowing other states and countries to realize the profits from value-added wood manufacturing. Clearly, the value of these vast and underutilized forests to create jobs and improve the well-being of the community, while protecting the integrity of forest ecosystems, was not being realized. (Note 50)

In 1976, ten community development organizations in Central Appalachia created the Mountain Association for Community Economic Development (MACED) to provide technical and financial assistance to community-based groups in the region (see Figure 14). Since its inception, MACED's primary purpose has been to improve economic conditions and the quality of life in Eastern Kentucky's rural communities through a diverse set of programs and services. Over the past 20 years, MACED's programs have addressed problems of housing, education, the environment, and local governance by facilitating communication between business, government, and local citizen groups. MACED is supported in part by foundation grants and low-interest government loans. (Note 51) This review highlights MACED's involvement in environmental and sustainable forest management issues in the Central Appalachia region over the past two decades.

Figure 14  MACED SUPPORT AREA — EASTERN KENTUCKY
MACED began as a one-person office providing assistance to small, local groups starting community-owned businesses, primarily cooperatives. Early on, MACED discovered that making a significant contribution to economic development in the region required both technical and financial assistance. By 1983, MACED had created a $2.5 million venture capital fund to assist in financing new business ventures. To channel their technical and financial resources, MACED targeted specific industries, the first of which was the hardwoods products industry. In 1979, MACED hired a wood-products specialist and started the Forest Products Center to begin providing technical assistance to small operators of sawmills and wood-products manufacturing firms. For the first two years, these outreach programs focused primarily on proper use of equipment, improved cutting techniques, financial management, cash-flow analysis, inventory control, and marketing skills. (Note 52)

Over the past 20 years, the center has also invested in a number of sawmill startups and expansions by providing financial and technical assistance to entrepreneurs with innovative ideas and a long-term vision. Through these efforts, MACED has also educated local sawyers and loggers supplying these mills -- many of whom are farmers and laid-off miners -- about proper grading and pricing, advanced management techniques, and the benefits of value-added processing.

By 1980, MACED was looking for an opportunity to start up a lumber concentration yard, which would buy lumber from local sawmills and then grade, repackage, and resell it -- thus, effectively, creating a market for lumber from Appalachian Kentucky's many small sawmills. In 1981, MACED formed a partnership with a financially struggling sawmill in Rockcastle County. (Note 53) MACED purchased a controlling interest in the company and formed the Rockcastle Lumber Company by creating a for-profit subsidiary, Ridgecrest Enterprises. By making the transition from information provider to manager, MACED enhanced its credibility in the industry and learned a great deal about the many constraints faced by small sawmill operators.

Since then, MACED has provided financial support and technical assistance to a host of other wood-products firms. More recently, based on engineering, marketing, and financial analysis, MACED created a $3.4 million investment package for a company to make wood parts for the cabinet and furniture industries. MACED has a controlling share in this business which employs approximately 80 workers.

In 1994, MACED sharpened its focus on sustainable development and extended its forestry programs beyond the business development sector. Through the Central Appalachian Sustainable Forestry Initiative and the Sustainable Communities Initiative, MACED works with communities to ensure that development is based on all three E's of sustainability: economy, ecology, and equity (Note 54). The primary purpose of the Sustainable Forestry Initiative is to work with the people of Central Appalachia to manage forest resources so that the environment, the economy, and the community are enhanced and protected over the long term. This objective is pursued through four different programs: developing an Appalachian Forest Resource Model to guide forest industry investments facilitating the formation of certification standards for Central Appalachian forests; stakeholder education; and land trusts. In 1997, MACED was selected by the Forest Stewardship Council to coordinate the formation of certification standards for Central Appalachian forests to promote sustainable forest management. MACED recently convened a working group representing government, environmental, industrial, and educational concerns to develop these certification standards. (Note 55)

In addition to its forest management initiatives, MACED has acted as a catalyst for many other community development projects over the past 20 years. MACED now manages a $2 million venture capital fund to support sustainable business development, which provides economic benefits to low-income populations in Appalachian Kentucky. Other projects have included issuing a $43 million mortgage revenue bond issue to research the coal companies' commitment to communities. Current projects include the North Fork Clean Water Project, solutions to wastewater problems in eastern Kentucky, and the Sustainable Communities Initiative, which works through local citizen-based action teams to develop a long-term vision for rural communities. Other current MACED initiatives include their business development program, the Democracy Resource Center, Women's Initiative Networking Groups, the Entrepreneurship Initiative, and Forward in the Fifth -- an initiative to improve education in eastern and southern Kentucky.

Lessons

In an era when it has become politically popular to align oneself with the community forestry movement, MACED has been quietly practicing community forest management for 22 years. The work of MACED dispels the myth that community forestry is only a phenomenon of the western U.S. and has no relevance to the private lands-dominated eastern regions. Throughout its history, MACED-supported enterprises have employed as many as 300 persons in industries ranging from concrete contracting to technically advanced tool and die manufacturing. In total, MACED has lent and leveraged more than $23.5 million, creating more than 1,600 jobs. In the words of Sandra Miller, author of a recent report on MACED: "Few nonprofit organizations make as much difference in the for lives of the people they serve as the Mountain Association
for Community Economic Development. *(Note 56)*

**Watershed Research and Training in Hayfork, California**

Hayfork, California lies in the geographic center of the Shasta-Trinity National Forest. Almost 80 percent of the land base in Trinity County is in public ownership. In 1990, the Dwyer Decision on the Recovery of the Northern Spotted Owl placed all land in the range of the spotted owl habitat in Washington, Oregon, and northern California under an injunction. In 1994, the injunction was lifted when Judge Dwyer accepted the Decision for the Recovery of the Spotted Owl as the management plan for the area.

This new plan replaced a timber-driven management plan with a new ecosystem management that aimed at preserving and increasing old-growth habitat. It also shut down the timber-based economy of Trinity County. Hayfork suffered a "forest closure" in 1990 which affected over 30 logging families and a mill closure in 1996 which affected over 150 families. In short, over 40 percent of the payroll of this town of 2,000 people has disappeared and businesses continue to close.

The economic status of the communities has changed because the timber supply has decreased by around 80 percent. This has affected not only the logger and the sawmiller, but also the tree planters and other reforestation crews. At the same time, the Forest Service "downsized" and 30 government jobs were lost. The town, which even in 1990 had a median family income of about half that for California as a whole, is losing ground every day with economic opportunities almost non-existent. One of the most telling statistics is the percentage of children in the local schools who must rely upon the government subsidized "Free and Reduced Lunch Program" which has increased from 54 percent in 1990 to 84 percent in 1998.

The Watershed Research and Training Center (WRTC), a community-based, non-profit started in 1993, has designed and implemented management activities in the forest, which are focused on restoration forestry. Small diameter thinnings have been identified as a means to reduce fire risk, improve forest health, and move the forest towards old-growth form and function. Small diameter thinnings are, at the present, not economical. They are, however, the biggest opportunity for economic activity in the communities of Trinity County. They are also the most promising approach to restoration forestry and protection of spotted owl habitat.

In Trinity County and throughout much of the Pacific Northwest the collection of nontimber forest products (NTFP) is gaining economic importance. Mushrooms, moss, yew bark, aromatic plants, and other materials are gathered both by local communities and expanding numbers of migrant collectors who follow seasonal forests harvests through the region (see Box 10). Managing NTFPs sustainably and ensuring equitable access to different stakeholder groups is becoming an issue of growing urgency for the U.S. Forest Service and concerned communities.

**BOX 10 ACCESS TO OUR FORESTS? WHO HAS THE RIGHTS?**

**ISSUES AND CONCERNS FACING THE SOUTHEAST ASOAM COMMUNITY IN OREGON**

The Deschutes and Winema National Forests host approximately 400-500 mushroom hunters every collection season. They come from all over the United States through an elaborate network of word-of-mouth communication, to Collect a prize Matsutake, a wild mushroom for export to Japanese markets. Although the demand for these mushrooms continues to rise, the Forest Service is not increasing the number of permits issued but is charging a higher fee. The price paid by the middlemen continues to fall. The question for the harvester is, what can they do about it?

Gathering and selling forest products provide an economic opportunity for many groups including Euro-Americans, Hispanic-Americans, African-Americans and Asians. Purchasing a permit from the Forest Service allows them to collect a variety of special products such as mushrooms, beargrass, moss, yew tree bark, and pine cones and sell them to a middleman. Permittees may spend weeks and even months tracking several different forest products. It is a harsh way to make a living, but many people are willing to take the risk.

The Jefferson Center in Oregon, led by its director Beverly has been making efforts to network among various groups who make a living gathering our national forests. They are facilitating discussions on better ways to communicate, cooperate and share ideas among the various groups rather than competing amongst themselves. The Jefferson Center is attempting to help
harvesters establish a cooperative for their products. This would provide an alternative to the middlemen and hopefully yield greater returns to the workers themselves. We need to continue to work for greater cooperation between the Forest Service, the middlemen, and those who derive their living from the forest.

Excerpted from an article by Ronnie Yimsut

In Hayfork, the community is attempting to change its traditional economic dependence on harvesting big trees to an interdependence with the forest. This interdependence has been described as "community based stewardship." The change has been from "timber" to "ecosystem management."

The programs and activities that the WRTC have developed and implemented since its formation in 1993 are as follows:

- **Ecosystem Technician Certification Program**: Displaced wood workers were trained in a variety of ecosystem management activities including re-vegetation of natural slide areas, revegetation and stabilization of forest roads, fuel break construction, wildlife habitat improvement, fuels reduction, wildlife population monitoring, small diameter tree processing, trail bridge construction, stream channel stabilization, and forest road inventories using Global Positioning Systems (GPS). Classroom topics included Introduction to Ecosystem Ecology, Geographic Information Systems (GIS) and Computers, Basic Fire and Forest Practices for Ecosystem Management.

- **Small Diameter Utilization and Marketing**: Fuel thinning on local Forest Service land, milling, ecological monitoring of the projects, and an economic analysis of the thinnings. Through a partnership with a Hayfork start-up furniture cooperative, material has been sold as flooring and used in other products. An assessment of the costs and benefits of thinning and small diameter log processing and marketing is being conducted for profitability.

- **Trinity Community Geographical Information System (GIS)**: This program is designed to "ensure that the most up-to-date information about our area is easily accessible to all, and that local knowledge and expertise are readily available to public land managers." The WRTC assisted the Hayfork Volunteer Fire Department to improve existing maps and build an emergency response GIS database mapping system. They also worked with Southern Trinity Area Rescue (STAR) to enhance its helicopter emergency response by mapping landing pads.

- **Non-Timber Forest Products (NTFP)**: This project emphasizes increased communication and cooperation between wildcrafters and public land managers in the Trinity bio-region. Projects and activities include: mullein and yarrow harvest operations, future bulk production and value-added processing, the Third Annual NTFP Workshop focusing on sustainable harvest methods and wildcrafter training, fieldtrips, a user-friendly photo guide on local non-timber forest products (NTFPs) with suggested harvest methods to Hayfork AMA ranger districts, studies of harvest impact on Prince's Pine (Chimaphila umbellator) and GIS-based modeling of NTFP distribution, planning for silvicultural research trials focused on enhancing species with NTFP value while retaining the structure and function of the forest ecosystem, called analog forestry.

- **Socio-economic Monitoring**: Ongoing monitoring tracks the continued effects of the May 1996 mill closure, timber harvests, and which types and numbers of Forest Service contracts were awarded to locals. A report on "Socio-economic Monitoring of Ecosystem Management Activities in the Trinity National Forest" will be produced in December 1998.

**Lessons**

The economic impact on the community from the closure of public forestlands to industrial logging has brought the people of Hayfork together. The political climate, which up until 1993 was incredibly divisive and violent, has been transformed. The environmental community is helping local loggers get access to the little work remaining on the forest and is encouraging small diameter thinnings. People are very interested in the implementation of specific educational and employment projects that are responsive to their needs. The citizens in Hayfork and neighboring forest communities are not so concerned about making decisions and national policy as they are with actually making things happen on the ground. Responding to such local concerns and needs has made the WRTC very popular with community members, while also attracting
considerable attention from outsiders who seek to adopt this strategy in other forest-dependent environments. The combined approach of retraining loggers displaced by an industry in transition, and community education to assist local forest-dependent peoples better understand ecosystem approaches to management, appears to have relevance in many contexts.

CANADA

As in the United States, in Canada the issues and needs of Aboriginal peoples and small, rural forest-dependent peoples are distinctive, even while they may overlap. Canada, too, has a substantial group of small, independent woodlot owners, especially in the southeastern part of the country. Like their counterparts in the United States, they face challenges in efficiently managing their woodlots to maximize productivity on a sustainable basis. Adding value to their produce through better processing and marketing is an ongoing challenge for small businesses.

In 1998, the Canadian government identified 425,000 private owners controlling 6 percent of the nation's forests. Recognizing the importance of private woodlots, both the federal and provincial governments have begun developing supportive programs. The Québec Summit on Private Forests was held in 1995. In June 1996, the province amended its Forest Act and established 17 private forest development agencies organized by region with a budget of C$40 million per year. In 1997, the province of Ontario changed its property tax system, providing incentives to more than 100,000 woodlot owners to develop detailed plans outlining their forest management goals. The new system lowers forest taxes and minimum size limits to encourage owners to maintain their land as productive forests. The case of the Lower St. Lawrence illustrates how private woodlot owners are forming associations and working with larger industries to increase the profitability and sustainability of their small forest management operations. Supportive organizations like the New Brunswick Federation of Woodlot Owners have also emerged to help small forest holders compete with large corporations (see Box 11).

BOX 11 THE NEW BRUNSWICK FEDERATION OF WOODLOT OWNERS

The original mandate of the federation has expanded considerably since the group's inception. Where it was once narrowly focused on obtaining better prices for small woodlot owners, the group now is more broadly involved in promoting stewardship of the province's private forestland base. It has created a code of practice that emphasizes both environmental and financial sustainability. In addition, the federation works in partnership with the provincial government to create educational materials for private woodlot owners.

In Canada, forest-dependent communities are defined as those communities "in which a large percentage of the basic labor force is involved in a dominant industrial activity." (Note 57) According to a recent study, approximately 1294 communities in rural Canada were somewhat dependent on the forest sector (10 to 50 percent of total family income forest-derived) and 37 were heavily dependent on forestry for their livelihoods (over 50 percent of family income). (Note 58) For over a century, such timber towns have faced job insecurity as forests were felled and mills moved to new areas. In the early part of the 20th century, government planners began trying to shift industry from simple exploitation of forest resources towards more sustainable management, but the process has been slow. Mechanization is allowing harvesting to proceed even more quickly while absorbing less labor, compounding the difficulties of sustaining rural employment opportunities.

Due to their heavy dependence on a single industry, small forest-dependent communities remain vulnerable to short-term changes in product prices and long-term shifts in the structure of the timber industry. When a large firm fails or moves away, it often takes with it most of the available local jobs, threatening the community's economic base. The growth of transnational corporations in the timber sector is often perceived as particularly threatening to small forest-dependent communities because they are mobile and have the ability to draw raw materials from alternative sources in other provinces and countries. Because of their size and power, remote urban centers make the decisions and seemingly lack accountability to local employees.

Communities, governments, industry, and non-governmental organizations in Canada are well aware of the problems of creating greater security for forest-dependent communities. A number of strategies are being developed, including organizing and financing a diversification of income-generating activities. In the case of Vernon, British Columbia, the provincial Ministry of Forestry has taken a revolutionary approach in collaborating with local forest workers to design more sustainable timber felling systems that can provide a steady stream of jobs and incomes, without damaging the environment and undermining its potential for tourism. New ways of leasing timber felling rights on
Crown (public) lands that allow small operators to directly manage operations and gain greater income through more labor-intensive log sorting have also been an important element in the Vernon program. In general, major government programs to increase security for forest-dependent communities are still heavily subsidized through large companies in order to keep the volume-based mills in operation.

This is the key objective behind the recent "Jobs and Timber Accord" in British Columbia. The strategy in B.C. has been to increase fiber for companies, while retaining and creating jobs through smaller scale mill operations. From the ministry’s viewpoint, these subsidies ease the transition in the labor market as the province moves to lower timber harvest volumes by creating employment in an expanded processing sector. The Vernon program shows that it can be done without heavy subsidies, a key consideration for government agencies watching their budgets. Such strategies hold considerable relevance across Canada and the United States in providing small forest-dependent communities opportunities to find distinct market niches, and to better compete with large corporations.

Small-Scale Forest Management in Vernon, British Columbia

By 1993, public concern in British Columbia over the visual impact of clearcutting and the loss of jobs as large industries began squeezing out small operators resulted in the establishment of the Small Business Forest Enterprise Program (SBFEP) by the provincial government. The project targeted the Vernon Forest District and aspired to develop alternatives to clearcutting and methods to enhance community income from wood-based enterprises (see Figure 15). The project's broader goal was to develop sustainable forest management systems that combined the old values of forest productivity with new objectives of protecting the natural environment and ensuring community economic and social stability that could serve as a provincial and national model. Green-peace, an international environmental organization, was elected as an independent, third-party evaluator to conduct Canada's first forest certification process. The evaluation sought to determine "whether alternative silviculture practices that did not use clear-cutting techniques could protect the integrity of the forest at the landscape level and among stands of trees." (Note 59)

Under the Vernon program, 65 small cutting contracts were made with local operators resulting in 161,000 cubic meters of wood harvested between 1993 and 1996. Special arrangements allowed small timber
processors to purchase needed timber, often a problem in typically larger volume sales. A variety of alternative cutting methods were used including selective felling, clear-cuts with reserves, small clear-cuts, shelterwood systems, and seed tree systems. From an environmental perspective, the alternative tree felling practices generated clear benefits. Visual quality of the forest was enhanced through more thoughtful, selective logging. The ecosystem was better protected in terms of soil and water conservation, management of diseased species, and in creating habitat for wildlife.

From a social standpoint, the results of the program were also successful. Foresters from the Ministry of Forestry (MOF) involved in the project were very sensitive to the community's input in decision making regarding the laying out of timber sales and determining the felling methods. Although the alternative felling techniques were more costly, generally 18 to 42 percent higher than conventional clearfelling, the Vernon approach protected forest integrity for other economic enterprises like recreation, while enhancing the future availability and quality of timber. Furthermore, the use of more sustainable logging techniques allowed the project to access 10 to 20 percent more land, without citizen protest, than would have been possible if clearfelling had been used. Alternative logging also employed more individuals than clearfelling methods. Finally, the alternative methods allowed the logs to be certified, adding to their market value. (Note 60)

An important aspect of the project was the experience with alternative methods for selling timber from the project sites. Unlike typical sales where the timber is sold on the stump, in the Vernon project the MOF sold the timber after it had reached the log yard. This allowed smaller wood-products manufacturers easier access to the materials and increased financial returns on wood sales. By holding the timber in the log yard, the MOF and its local contract employees were able to develop a much more elaborate and profitable system of sorting the logs. When the project began in 1993, only 11 categories, or sorts, were planned. But by 1997, 47 categories had been established, in part responding to a growing diversity of market demands, including woods for acoustic guitars and other musical instruments, logs for log home construction, and pine for shake roofing materials. Due to a combination of constraints on the number of Greenpeace's staff able to certify sites and the market demand for certified wood, only 3 percent of the total volume felled in Vernon was certified, and only half of this has sold. And no company has yet to pay a premium for the certified timber.

Overall, the Vernon project has been a financial success. The MOF originally estimated a $1 million profit, but in May 1995 Price Waterhouse reported a net profit of $2 million after the payment of stumpage fees, approximately twice the income the MOF would have realised if it had relied on conventional clearfelling, with fewer associated costs from environmental damage. Sorting was the key to the increased profits. The value added through more intensive sorting of timber is estimated to range between 11 and 42 percent. In many cases lower-quality logs that would have been used for chips in the past were reclassified for use as shakes and log house materials.

Lessons

The Vernon experience is important in illustrating how environmental concerns can be met through more sustainable logging practices without sacrificing economic performance. The case shows how sustainable methods of forestry production can be developed that allow workers in small forest-dependent communities a greater degree of job security. While the use of alternative felling systems did raise the cost of harvesting compared with conventional clearfelling, it substantially reduced negative environmental impact. Further, alternative logging actually expanded the harvestable timber base by allowing felling in more sensitive areas through its "light on the land" methods. Alternative logging methods were also found to employ more labor than conventional clearfelling. The use of more elaborate systems of log sorting added value to the timber industry that more than compensated for higher felling costs. This means that the Vernon model has been able to get more value by cutting less forest. Finally, the creation of alternative logging methods allowed environmentalists and local forestry workers to find new grounds for collaboration.

Restoration forestry, through careful thinning and selective felling, can improve the health of the forest and be profitable at the same time. Careful sorting and hand scaling or debarking is also labor intensive. The ecoforestry practices in Vernon, B.C. are estimated to generate 3 to 4 jobs per 1,000 cubic meters of timber produced versus only one half-time job under conventional clear-cut logging methods. According to Jim Smith, a key member of the Vernon District staff: "I think it's shown that there's more employment both in the lay-out and logging phases, which constitutes higher costs. And I make no apologies for that. Better forestry costs more money." But it can generate more profits as well. Jim has seen three cubic meter fir logs sell for up to $450. "Sure, you're going to have to pay $150 to get that $450 log here. But at the end of the day you've got $300 in your pocket." (Note 61)
Private Woodlots in Eastern Québec

The Lower St. Lawrence Model Forest (LSLMF) is an experiment in community development and involvement in forest management. It is one of eleven model forests spread across Canada's five major forest eco-regions. The LSMF is located in the Lower St. Lawrence region of eastern Québec (see Figure 16). It is over 113,000 hectares in area and encompasses three separate territories: two large tracts owned by a large corporation, Abitibi-Consolidated, and the entire area served by the Groupement Forestier de l'Est du Lac Témiscouata, a group venture. The LSMF is the smallest model forest in the national network, and the land base is composed exclusively of private woodlots, hence the name, *An Inhabited Forest*. This title reflects the local communities' desire to base their development on the forest resource and the strong sense of belonging they feel towards the forest environment.

![Figure 16 LOWER ST. LAWRENCE MODEL FOREST — QUÉBEC](image)

The challenges faced by the model forest's managers are complex. The goal is to ensure grassroots participation in integrated management of the resources by both small and large private forest owners in the territory. The managers believe in the capacity of the local people to become well-informed stewards of all resources within their territory and most of the work of the model forest is designed to build and nurture that capacity. Four promoters representing researchers and academics, industry, and private landowners crafted the project headed by the LSMF.

The Lower St. Lawrence experiment is also aimed at attempting to solve the problem of a declining rural economy. How can private forests contribute more fully to the economic development of rural communities while ensuring sustainable development and integrated resource management? For the promoters, the answer lies largely in the anticipated results of testing two private forest management models in their territories. An innovative model of forest tenant farms is being tested on large private holdings and a well-established existing model of forestry groups is being assessed involving small private forests.

**Forest Tenant Farms**

The creation of forest tenant farms is based on an agricultural model prevalent in the Middle Ages in Europe whereby tenants were allocated a portion of land that they farmed in return for sharing the harvest with the landowner. Since 1994, two large properties owned by Abitibi-Consolidated, the Nicolas Riou and Lac Mitis seigneuries (13,687 and 33,933 hectares, respectively), have become test sites for forest tenant farming. These properties were subdivided into land units approximately 1,000 hectares in size to create over 20 tenant farms that are leased to silviculture workers, referred to as tenant farmers.
While timber remains the primary cash product from the private woodlots of the Bas St. Laurent Model Forest, small maple syrup processing units like these add to family incomes. Eleven thousand producers in Québec supply roughly 70 percent of the world's consumption. (photo: Beckley)

The forest tenants sign contracts with the model forest corporation. Each agrees to certain terms, including a commitment to develop a small, profitable operation based on timber harvesting and integrated resource management. One term of the contracts includes adherence to the sustainable development principles set forth in the multi-resource management plan, which stipulates, among other things, preparation of an annual management plan, compliance with allowable cuts, zero use of chemical herbicides, and maximum clearcuts of four hectares.

The experience acquired since 1994 has already enabled managers to identify and understand factors influencing the profitability of this model. Each tenant farmer derives the bulk of his or her annual income from funding for forestry and wildlife-related activities and timber sales. Tenant farmers also form groups to test collective management approaches, similar to outfitting operations, with a view to increasing their profits by developing and enhancing non-timber forest resources such as hunting, fishing, and vacationing.

When the final results of the model forest experiment are in, they will be used to determine the conditions for successfully implementing a tenant forestry system. Transplanting this model to other regions of Québec where conditions are similar is a viable option for managers who can foresee a new type of forest entrepreneurship. From the outset, this model sparked widespread interest. Over 350 applications were received in response to the call for forest tenant farmers.

**Forestry Groups: Small Private Forests**

The Est du Lac Témiscouata area covers 65,000 hectares of mainly agroforestry land and includes 6 municipalities and 1,500 woodlots owned by some 700 individuals. The fact that it is inhabited, small, and characterised by fragmented forests makes it highly representative of Québec's private forestland. In the early 1970s, woodlot owners in the Lower St. Lawrence region created a series of group ventures. Among the goals of these group ventures was community revitalisation through active forest management. Since their inception, the group ventures have provided financial and technical support to woodlot owners in an attempt to intensify local management efforts and help maintain many jobs in rural communities. In the past, the Groupement Forestier de l'Est du Lac Témiscouata focused on the production, harvesting and processing of wood supplies.

Recently, the group has expanded its purview to include the management and use of all natural resources within its territory. By providing the necessary technical support, Groupement managers encourage woodlot owners to develop innovative projects enabling them to derive additional income from sources other than logging. This translates to sweeping changes in the services traditionally provided by the Groupement and, especially, in forestry practices that enhance wildlife habitat.

**Lessons**

The partnership base of the LSLMF extends well beyond the four institutions that comprise the primary promoters. Developing partnerships at the local level was identified from the outset as one of the program's primary objectives. As of 1997, over 40 organisations representing the various spheres of activity related to forest resources and forest-based activities signed the partnership protocol for An Inhabited Forest: Model of Sustainable Development project. The partners agreed to join forces to achieve project objectives by participating in working committees, providing financial support, and taking part in activities.

The experiment in creating forest tenant farms is also of interest, as the strategy provides incentives for individuals to develop long-term economic relationships with production forests under a corporate umbrella.
While it may be too early to assess the effectiveness of this strategy, the project should be monitored closely to see how it fairs in terms of equity, productivity and environmental values in contrast to small private ownership and conventional corporate employee management.

SUMMARY

The challenge facing community forestry in Canada and the United States will be to balance local and national interests. Critics of community-based collaboration are concerned that hard-won national environmental laws may be compromised through the collaborative process. There is also well-founded concern that industry or small local minorities have the potential to veto actions that may be in the national interest. As the community forestry movement gains strength, it will be important for individuals representing national interests to participate in local collaborative ventures and to strengthen the participation of community groups in national level policy discussions. For all its promise, community-based forestry is still in its infancy in Canada and the United States. Defining community forestry and the appropriate roles and responsibilities for local forest users will likely continue through dialogues between the emerging coalitions of shared interest groups.

NOTES

48. From personal communication with Lynn Jungwirth and Rosemary Romero April 1998
50. S. Miller, A Flexible Results-Oriented Approach to Rural Development (Morritton, Arkansas: Winrock International Institute for Agricultural Development, 1991)
52. Miller, p. 9
53. Miller, p.12
54. MACED, Communities by Choice (Berea, Kentucky: MACED, 1997)
55. Jenkins, MACED Overview
56. Miller, p.1
57. Robert Robson, Forest Dependent Communities in Canada (Manitoba: Canadian Forest Service, 1995), p.4
60. Herb Hammond, Clearcut-Free? Just Did It (Vancouver, B.C: Greenpeace Canada, 1996)
61 Hammond, p.7
CIVIL SOCIETY AND THE PUBLIC FOREST DOMAIN

In both Canada and the United States diverse civil society groups and coalitions are becoming significant players in national dialogues concerning forest resource management on private and public lands. The term civil society as used in this report refers to small forest-dependent communities, large urban-based populations supportive of conservation efforts and represented by national environmental organizations, Native American and First Nations peoples, scientists, forestry agency staff, and the forest industry, but not including the military and religious institutions. After the drawn-out legal battles over forest use of the 1970s and 1980s that polarized the stakeholders, there has been a growing interest on the part of many stakeholders to avoid costly court conflicts and reach some compromise on management priorities and strategies.

While citizens have demanded greater decision-making roles in forest planning and timber sales on public lands, the land management agencies themselves have become increasingly aware of the need for citizen input. Since an ecosystem approach to public forest management was adopted in the United States in 1992, the U.S. Forest Service has had to respond to a much broader set of goals than simple timber production. Likewise, the provincial reforms in Canada during 1990s, in response to public concerns, demonstrate a growing emphasis on non-timber values in forest use planning.

The rapid disappearance of old-growth forests and the extinction of species, combined with an increase in ecological understanding of the complex structure and function of old growth, have informed both the public and planners regarding the need to move quickly in changing many conventional timber management strategies. At the same time, many in the timber industry also recognize the problems related to past logging practices.

Differences in patterns of forest resource ownership and leasing are partly responsible for the contrast in the current forest policy between Canada and the United States. This is seen most clearly in the Pacific Northwest where the highest percentages of remaining old growth are found. In the U.S., logging on private forestlands began much earlier than in Canada, and it was only as the industry turned to public forests that public outcry mounted. British Columbia's vast provincial Crown lands were leased with less public scrutiny than in the United States. For instance, in the early 1990s public pressure in the Pacific Northwest, as a result of the spotted owl controversy, spurred the U.S. government to protect substantially more of the federal lands than in the Canadian Pacific Northwest. Currently, some 78 percent of the Pacific Northwest public forests is protected on the U.S. side whereas only 10-12 percent of the forests of British Columbia is protected. However, the total area of remaining old growth in British Columbia amounts to some 60 percent of the province, an area the size of a good part of Western Europe, while in the U.S. considerably less old-growth public forest remains. While the degree of public pressure has been very different in the two countries, since the 1990s citizens on both sides of the border have begun to play new and instrumental roles in the design, planning and implementation of forest management.

Civil society engagement in forest management takes a variety of forms in Canada and the United States. In some areas, communities influence forest use through zoning codes and local government regulations. Land trusts are increasingly being used to purchase private forests and protect them from conversion and development. A variety of dialogue processes and stakeholder coalitions has emerged to make input into the management of federal, state, and Crown lands. Sometimes these dialogues and coalitions appear at the local level, as illustrated in cases of small forest-dependent communities, while others operate on a larger regional or even national scale.

REGIONAL COALITIONS AND PROCESSES

In recent decades, regional citizens coalitions have begun to emerge across Canada and the United States. A growing number of these groups are attempting to make public forest management better reflect the needs and interests of local communities. In the past, the concentration of public land use controls in the hands of government agencies and the timber industry has frustrated local communities and national conservation and recreational organizations. For decades, industry, political representatives, and forest agency staff ran a "business as usual" operation that resulted in rising levels of commercial felling that rapidly reduced old-growth forests during the post-World War II era. Environmental legislation in the 1970s provided a basis for conservation groups to change this equation in the U.S. as court cases were found in their favor. In the past ten years, both forestry agencies and the private sector have become increasingly aware of and responsive to the rapid growth of public interest in ecologically sound management. Politicians are recognizing that approximately two-thirds of the electorate are supportive of policies that are pro-environment, even if they
come with a cost to industry or taxpayers.

Throughout the 1980s, regional dialogues were initiated to ameliorate conflicts between the values of those in favor of forest management and those of established stakeholders. In some cases, dialogues among stakeholders were highly localized, as in the case of the Mountainair Panger District discussed in the preceding chapter. In others, they were diverse and carried high-level political endorsements, as in the case of the North Atlantic Forest Treaty or the Pacific Northwest Adaptive Management Areas. In Canada, the National Forest Strategy (see Box 12) is an ongoing collaborative dialogue to chart the future of the nation's forest management goals and strategies. These dialogues usually share a common goal in attempting to address the concerns of local communities about the long-term sustainability of forest environments and rural livelihoods and lifestyles.

**BOX 12 THE CANADIAN NATIONAL FOREST CONGRESS**

Canada’s first National Forest Congress was held in 1906 under the auspices of the Canadian Forestry Association. The Congress recommended the establishment of a national forest policy and extensive re-planting programs for harvested forests. Further congresses have been held in 1966, 1977, 1980, 1981, 1986, 1992 and 1998. Until the 1992 congress, these meetings were generally attended by governments, the forest products industry and labor, and to a lesser extent the academic and financial communities. The 1998 congress departed from previous experience and conducted a series of consultations which led to the development of the 1987 National Forest Sector Strategy for Canada.

Since 1986, the congresses have been jointly sponsored by the Canadian Forestry Association and the Canadian Council Forest Ministers (CCFM). The CCFM is a consultative body composed of the provincial, territorial and federal ministers responsible for forests. It meets annually at the ministerial level, with interim meetings at the deputy ministerial level, to discuss forest sector issues of national concern. Under the Canadian Constitution, the provinces have responsibility for managing publicly owned forests. Thus, any effective, national-level policy or strategy on Canada’s forests could only be developed through consultations among all of the responsible jurisdictions.

Influenced by the 1987 Brundtland Commission Report, *Our Common Future*, and the lead up to the 1992 Rio Earth Summit, the 1992 National Forest Congress marked a significant advance both in involving a broader range of stakeholders to develop a new national strategy and in addressing the full range of forest values. The 1992 Congress adopted a new National Forest Strategy, *Sustainable Forests: A Canadian Commitment*, twenty-nine government agencies, industry associations and NGOs also signed the first Canada Forest Accord, pledging to implement the strategy. The signatories then constituted themselves as the National Forest Strategy Coalition that was responsible for overseeing planning, implementation, annual reporting, evaluations, and communications. The coalition is sponsored by the CCFM and together they led the process of developing the successor strategy adopted at the 1998 National Forest Congress.

The 1998 strategy contains nine strategic directions, which in turn contain a total of 31 principles and 121 commitments. The strategic directions are:

- Forest Ecosystems: Multiple Values
- Forest Management: Practicing Stewardship
- Public Participation: Many Voices
- The Forest Industry: A Global Competitor
- Forest Science and Technology Management: A Team Approach
- Communities and the Workforce: Living with Change
- Aboriginal People: Issues of Relationship
- Private Woodlots: A Growing Opportunity
Negotiations within the civil society can be difficult and depend on the local social, economic and environmental considerations. The scale and complexity of the dialogue process is usually determined by the size of the area affected and the nature of the conflict. In some cases, such as the Forest Summit convened in the Pacific Northwest in 1993, a diverse group of stakeholders from California, Oregon and Washington met briefly to break a policy impasse. During the Seventh American Forest Congress (see Box 13) and Canada's National Forest Strategy sessions, thousands of participants, representing scores of community groups, NGOs, small business associations, corporations, and government agencies met to discuss national issues. It is the goal of such forums to provide occasional vehicles for civil society dialogues that give policy guidance to the management of public forests. In other situations, the collaborative forum may become more formal and permanent, such as citizens advisory committees institutionalized within the U.S. Bureau of Land Management's administrative structure.

**BOX 13 SEVENTH AMERICAN FOREST CONGRESS COMMUNITIES COMMITTEE**

The Seventh American Forest Congress was held in Washington, D.C., in February 1996. The first congress, held in 1882 was unique in that it was a people's congress, rather than the typical convention of the current powers in forestry. The Forest Congress, for example, laid the foundation for the conservation movement and the Sixth examined the need for long-range planning as the basis for forest management. The Seventh Congress, comprising over 1400 citizens, established new collaborative-based approaches to forest management at the national, regional, and local levels. Five national committees in the areas of education, research, management; policy, and communities were created to ensure that the work and vision of the congress was continued.

The Communities Committee is a diverse group who believe that local participation in stewardship of natural resources is critical to both forest ecosystem health and community well-being. It is comprised of urban foresters, environmental activists, private forest landowners civil servants, timber workers, professional foresters, forest industry representatives, academics, and researchers. Members are represented by a 25-member steering committee that produces articles and policy briefs on community forestry, striving to elevate the national dialogue. A larger committee of about 200 individuals makes up the extended Communities Committee. The steering committee introduces community-based perspectives into national processes and provides opportunities for community members to talk with national level decision-makers, agencies, and interest groups.

**MISSION STATEMENT**

The purpose of the Communities Committee is to focus attention on the interdependence of America's forests and the vitality of rural and urban communities and to promote:

- Improvements in political and economic structures to insure local community well-being and the long-term sustainability of forested ecosystems.
- Increasing the stewardship role of local communities in maintaining and restoring ecosystem integrity and bio-diversity.
- Participation by ethnically and socially diverse members of urban and rural communities in decision making and sharing benefits of forests
- Innovation and use of collaborative processes, tools, and technologies
- Recognition of rights and responsibilities of diverse forest landowners

Excerpted from a report by Lynn Jungwirth, Chair of the Communities Committee of the Seventh American Forest Congress

A number of different forces have converged to promote stakeholder exchanges. In some cases, pre-existing government programs provide an incentive or opportunity to collaborate, in other instances the courts demand
a mediated negotiation, and in still others interested parties seek to avoid conflict through a search for common ground. The Canadian Model Forest Program funded by the Canadian government was formed to support local collaborative initiatives for sustainable forest management with a strong emphasis on community participation. The U.S. Forest Service Adaptive Management Area program provided resources for the growth of innovative strategies in the Pacific Northwest.

Public pressure has also convinced resource management agencies to adopt more participatory approaches to decision making, as documented in the case of Clayoquot Sound in British Columbia and the Tongass National Forest in Alaska. Extensive lobbying by environmental groups led to landmark laws in the United States like the National Environmental Policy Act and the National Forest Management Act which mandate formal public participation in agency decision making which affects the environment. Inter-national campaigns across the border and beyond have also increased the sensitivity of politicians to public pressure and to the market demands of timber consumers. Boycotts by urban consumers (sometimes thousands of miles away from the area in question) and civil disobedience continue to play a role in heightening environmental awareness, but in most cases it has been the actions of strong grassroots coalitions and networks that have been instrumental in changing local management practices.

National and local environmental NGOs in Canada and the United States have been important actors in pushing for policy reform in public forestlands management. National groups like the Wilderness Society, the Ancient Forest Campaign, the Sierra Club Legal Defense, the Defenders of Wildlife, and the Natural Resources Defense Council have played a key role in bringing attention to the legal and ethical questions of ecological degradation. While these groups have argued for stronger legislation to protect forest habitats, they have also been important advocates for greater public input into public lands decision-making processes, including public disclosure of forest plans. These mostly urban-based environmentalist groups represent the interests of a huge sector of the society in the U.S. through their memberships.

Canadian environmental NGOs do not have the large budgets or an extensive membership as their counterparts in the U.S., nor are they as numerous. Because NGOs in the U.S. can sue government agencies for failure to enforce federal environmental laws, they fulfill a powerful watchdog role. In recent years, leading U.S. groups, most notably the Natural Resources Defense Council, but also the Portland-based Eco-trust, and the Washington-based Northwest Ecosystem Alliance, took on an advocacy role in the province of British Columbia. (Note 62) The latter helped form the Cascades International Alliance -- a coalition of U.S. and Canadian groups promoting the creation of an international park in the Cascade Mountains. (Note 63) Transnational groups such as Greenpeace and the World Wildlife Fund (WWF) also played influential roles, expanding campaigns across Europe through international and national offices against logging practices in British Columbia well as enlisting the powerful San Francisco-based Rainforest Action Network. U.S. foundations have also played a significant role in providing operational funds for Canadian NGO coalitions like the province-wide British Columbia Wild, the Western Canada Wilderness Committee, and the Sierra Legal Defense Fund. (Note 64) This last group has made significant contributions to policy-making by providing detailed legal critique of recent forest legislation in B.C. and establishing an independent Forest Policy Watch group. (Note 65)

Thousands of small local conservation groups throughout Canada and the United States play important, but different, roles in focusing attention on resource management decision making and facilitating citizen engagement in dialogues. In the 1970s and 80s, national conservation organizations focused their efforts on pushing environmental legislation through the courts. Increasingly, environmental groups in the 1990s are attempting to resolve conflicts outside the courts through direct negotiation with government agencies and industry or through community organizing at the grassroots level. While community control over watershed management and planning is still warily regarded by some environmental organizations, national groups and grassroots conservationists are increasingly playing roles, often as initiators, in collaborative groups.

UNITED STATES

The following cases present a selection of civil society dialogue exchanges guiding forest policy formulation in the United States and Canada in recent years. The examples include New England's Northern Forest Land Council (NFLC), the Pacific Northwest Forest Plan, the Clayoquot Sound Central Region Board in British Columbia, and the Canadian-led International Model Forest Network.

The past few decades have witnessed major changes in national public forest management priorities in the United States. In the West, growing public concern over the rapid loss of old-growth forests since the end of World War II have led to a proliferation of legal actions against federal forest management agencies. The
rapid development of wildlands by large, distant corporate financiers was causing concern among rural communities in many parts of the country. By the 1980s, the Forest Service and other institutions found their authority to manage resources being taken over by the courts, often in response to litigation by citizens groups, industry, and NGOs. Private developers and logging companies were also facing significant financial losses after being constrained by court actions. Hundreds of community groups were emerging to block large timber enterprises from logging in their areas and to halt clearcutting, especially in the West with its vast regions of public forestlands. In some cases, communities and industry developed their own strategies, as in the case of the Quincy Library Group (see Box 14). This section highlights two large civil society initiatives reflecting the types of broad-based forest stakeholder dialogues that have emerged during the 1990s.

BOX 14 THE QUINCY LIBRARY GROUP, NORTHERN CALIFORNIA

The Quincy Library Group (QLG) is a consensus-based coalition of local elected officials, environmentalists, the timber industry, labor union representatives, and civic leaders in the Northern Sierra Nevada region of California. Formed in 1993, during its initial meeting in the neutral space of the Quincy library, the group has joined forces to advocate for an alternative forest management plan that improves the health of the forest and the industries and communities that depend on it. The area to be affected by the plan encompasses 2.5 million acres, including the Plumas and Lassen National forests, and a section of the Tahoe National Forest, as well as dozens of communities spread across six counties. The Northern Sierra region is considered one of the most “forest-dependent” in California, both in terms of the dominant land type and the orientation of the economy to the timber industry and forest-based tourism.

Initiated by a Plumas County supervisor, a prominent local environmentalist, and a high-ranking forester with the largest timber firm in the state, the QLG soon expanded to a core group of roughly 30 individuals. Their plan, called the Quincy Library Grout Community Stability Proposal, would benefit the timber industry by reducing low value stands of over-stocked and fire-prone small-diameter trees while providing a more stable flow of logs to the mills. It would benefit environmentalists by moving the forest back to a desired late old-growth stage and protecting it and its wildlife from the risk of catastrophic wildfires. The core of the proposal calls for reducing the fuel load on 40,000-60,000 acres per year, through a system of shaded fuel breaks with an additional 10,000 acres per year of small group selection silviculture.

In 1993, the group put forth their Community Stability Proposal for consideration by the Forest Service. After three years of advocating for the full implementation of their proposal, the group initiated federal legislation to require the Forest Service to consider the proposal as one option for the revision of management guidelines for the three forests. Conflict with the Forest Service has been a defining characteristic of the QLG from its inception a dynamic which some credit as providing a common ground for the organization’s environmentalist and industry representatives.

While the Quincy Library bill has attracted extensive bipartisan support and in 1996 passed the House of Representatives with a 429-1 vote, the QLG proposal has also attracted extensive opposition from regional and national environmental organizations. Environmental groups have numerous concerns about the plan including the validity of its science, the potential for industry domination of such consensus organizations, and the precedent of “local organizations” having such a prominent role in the management of national forests. As of this writing, this opposition has stalled the bill in the U.S. Senate and its final passage into law is unclear.

This case highlights the growing division between some national environmental organizations which seek to end or further reduce timber harvesting on national forest lands and community-based organizations which are attempting to find a balance between economic benefit and ecological health. The QLG experience also demonstrates the owner of consensus in joining former adversaries in pursuit of common interests, and the concern among many environmentalists that consensus can mask a sell-out of environmental protection and co-optation by resource industries.

Excerpted from a report by Jonathan London

Adaptive Management in Pacific: Northwest Forests

In the past decade, the Pacific Northwest has been the setting for heated and sometimes violent controversy over the use and allocation of both private and public forestlands. The controversy culminated in the Forest Summit in 1993 initiated by the President of the United States, Bill Clinton. From this summit, the Northwest Forest Plan was developed to protect watersheds and wildlife habitats by drastically reducing the amount of
timber harvested from public lands. This case reflects a new federal government emphasis on watershed restoration through collaborative stewardship.

One outcome of the plan was a commitment from the U.S. Forest Service and the Bureau of Land Management to collaborate with communities to bring the forests back to pre-settlement conditions through carefully planned adaptive management. Ten Adaptive Management Areas were established in a variety of forest types and tenurial arrangements in Washington, Oregon, and California (see Figure 17). These areas were selected for an experiment that devolved greater decision-making authority to local communities while facilitating a shift in the focus of the land agencies from timber production to sustainable use through conservation and creation of economic alternatives for local communities.
While logging took place in the region from the turn of the century onward, demand for timber skyrocketed following World War II, changing both the role of the Forest Service and the future of landscape. Prior to the war, the Forest Service's main role was to preserve the National Forest System and authorize the setting aside of forestlands for watershed protection, forest restoration, wilderness and wildlife habitat protection, and fire suppression. Demand for timber was largely met from private lands. In the next 50 years, however, industrial logging expanded rapidly in the Pacific Northwest. Whereas the timber industry harvested some 1.5
billion board feet (BBF) from national forestlands in 1941, the cut rose to some 11.5 BBF by 1971. (Note 66) Further, logging was concentrated in old-growth forest areas using clearcutting practices.

Pacific Northwest forests were being rapidly converted from late successional habitats to young stands of fast-growing varieties that could supply wood and fiber demands. Before long, the heavy emphasis on timber production came into conflict with other emerging uses and values that Americans desired from national forestlands, such as recreation and wildlife viewing. The Multiple Use Sustained Yield Act (1960) sought a balance in national forest management, but had little impact on timber industry logging methods. (Note 67)

During the 1960s and 1970s, people from urban centers began moving into the rural environments of the Pacific Northwest, often bringing their own version of conservation values with them, as well as experience with political activism. These urban migrants often objected to the negative impact forest clearcutting had on the environment as a source of aesthetic pleasure and pointed out the problems it created for wildlife and watershed hydrology. Meanwhile, urban-based environmentalists throughout the region intensified their public information and legal campaigns to protect the wilderness. National and local environmental groups began filing lawsuits against the U.S. Forest Service and the timber industry in the late 1960s and early 1970s over clearcutting and perceived mismanagement.

In the 1970s, in response to the changing environmental values of the civil society, the U.S. Congress passed a series of laws affecting the national forests. Targeting a range of environmental threats, significant laws included the Clean Water Act (1977) and the Endangered Species Act (ESA) of 1973. (Note 68) These became important tools for the environmental movement in controlling some of the more destructive activities of industry. The 1970s also saw enactment of laws mandating systematic planning on public lands, especially the Forest and Range Renewable Resources Planning Act of 1974, and the National Forest Management Act (NFMA) of 1976. Of all these statutes, the ESA spawned the most controversial litigation and has probably had the greatest influence. The best-known example of the use of the ESA to change public lands management involves the northern spotted owl of the Pacific North-west, which resulted in the closure of millions of acres of old-growth timber to logging. This set of laws provided the grounds for legal battles with the U.S. Forest Service and the BLM for the next decade, and ultimately set the stage for a shift toward "ecosystem management" approaches and away from timber production.

The controversy over ESA litigation for protection of old-growth habitat for the northern spotted owl was fueled by anger from logging communities that urbanites and smooth-talking environmentalists were more concerned about the endangered bird than they were about the thousands of timber-dependent communities. While the northern spotted owl controversy was widely viewed as a conflict over jobs versus the environment, the timber industry itself was undergoing transformation. By the time the courts had begun ordering the closure of some old-growth forests to protect the spotted owl, some 30,000 jobs in the timber sector had been lost due to increasing mechanization of the timber harvesting process, rather than to the implementation of ESA rules. Meanwhile, across the region, thousands of non-extraction jobs were gained as the economy diversified and grew. By the mid-1990s, logging national forests provided 76,000 jobs and $3.5 billion to the GDP (gross domestic product), while recreational use of those forests generated nearly 2.6 million jobs and added $97.8 billion to the GDP. (Note 69)

The U.S. government began to take an increasing interest in the forests of the Pacific Northwest. In 1992, Forest Service Chief Dale Robertson announced that ecosystem management would serve as the guiding approach of all agency actions. These changes occurred as Democratic candidate Bill Clinton was running for the office of President of the United States. Clinton visited the region during his campaign and promised a resolution to the controversy over public lands in the Pacific Northwest. A key part of the controversy was a court injunction on timber sales pending the development of a plan that protected both the spotted owl and the broader forest ecosystem species.

Soon after his election, President Clinton convened a forest summit in Oregon to meet with the conflicting parties. At that time, he commissioned a comprehensive Forest Plan "for a sustainable economy and a sustainable environment." The plan rejected both total preservation and full-scale commercial utilization, instead endorsing the establishment of "late-successional reserves" in which limited thinning or salvage logging is permitted, provided that these activities do not harm or are beneficial to the production and maintenance of old-growth forests and endangered species habitats. Environmentalists were disappointed that the plan did not increase the number of reserves where all logging is prohibited, but it did call for dramatically reduced levels of harvesting and a significant expansion of riparian reserves for the protection of fish habitat.

Part of the basis for the plan came from the visit of the new Secretary of the Interior Bruce Babbitt to a community in the Applegate watershed which had come together and begun managing the public and private...
forests on a watershed basis for ecosystem restoration. Residents, environmentalists, and timber industry representatives formed the Applegate Partnership in 1992. The Applegate River watershed contains approximately 200,000 hectares. (Note 70) Because of its high percentage of public land and economic dependence on the forest, the area was devastated by the loss of old growth from over-harvesting, the decrease in jobs from mechanization of the timber industry, and, following court order, reduction of logging to protect the spotted owl. (Note 71) The Applegate group later expanded to include the participation of personnel from the U.S. Forest Service and the citizens coalition within the BLM.

Community leaders from the Applegate Partnership in southwestern Oregon display a three-dimensional resource planning map of their watershed management area. The development of such visual discussion tools has helped bring the diverse stakeholder groups together to reach a consensus regarding resource-use strategies. (photo: D’Andrea)

The Applegate Partnership has been able to get beyond the initial polarization among different groups by meeting regularly and informally, fostering a comfortable dialogue to break down misconceptions and set common goals. Through the Applegate Partnership, the U.S. Forest Service has been able to use the results of community watershed assessment to better design participatory watershed restoration strategies. Applegate became a model adopted by the Clinton administration for the development of ten adaptive management areas (AMAs) where citizens groups could work with land agencies toward improved management practices.

In different ways, AMAs are helping local citizens adapt to changing values in public land management. One focus of the program is to restore the natural habitat after logging. This requires the reestablishment of original oak woodlands in some places, and, in others, the removal of small diameter Douglas Fir trees to make room for the growth of ponderosa pines and other later successional species. Fuel load reduction is also an important element in many restoration strategies. Fuel buildup from slash and previous fire prevention efforts and a lack of thinning of secondary growth creates dangerous forest fire conditions, as well as leaving many forest ecosystems more vulnerable to pests and disease.

Lessons

AMAs also attempt to support the social and organizational transitions the U.S. Forest Service faces as its priorities shift from timber to ecosystems management. AMAs are intended to provide a place for the Forest Service to intensively study new approaches to management in partnership with local communities. In these areas, some commercial timber is still harvested, but wildlife habitat, coarse woody debris, fisheries, water quality, and soil stability are protected, while old-growth forests are created and maintained. (Note 72) In contrast to former U.S. Forest Service practices, the plan directs AMAs to move away from even-age monoculture and toward the “restoration of structural complexity and biological diversity in forests and streams that have been degraded by past management activities.” (Note 73)

The most revolutionary aspect of the AMAs’ strategy is their emphasis on a joint definition of local management goals and opportunities and developing site-specific strategies for each area. The boundaries of some AMAs, like the Applegate Partnership, are based on multi-ownership considerations instead of government agency fiat. Some of the land is privately owned, some includes Native American reservations, and some of it is public land. The different communities in the AMAs attempt to respond to the unique features of their lands and the needs of their constituencies. The joint management orientation of the AMA approach now requires the U.S. Forest Service to manage its domain in conjunction with other agencies and community stakeholders. Decisions are no longer made exclusively by a custodial government agency, without consulting local communities before initiating and implementing any projects. Different approaches are encouraged
whereby management relies on the experience and ingenuity of local resources managers and communities rather than on the Forest Service. According to the original concept, the AMAs were designed to give priority to local, value-added processing of wood and other forest products. (Note 74) Critics of AMAS, however, note a number of flaws, including underfunding, overlitigation, inadequate U.S. Forest Service staff retraining components, failure to build community capacity to play new collaborative roles, and faulty administrative structures. In part, in response to the failure of the AMA program in Hayfork, the Watershed Training and Research Center was established. (Note 75)

Despite the flaws in the AMAs' approach, U.S. Forest Service policies have at least been challenged by the program. For example, the frequent transfer of Forest Service officers disrupts the personal continuity required in local, interactive partnerships. In addition, Forest Service planning procedures are often an impediment to local initiation of activities. As a consequence, the AMAs present opportunities to test the Forest Service's ability to adapt to new management contexts and goals.

The Northern Forest Land Council of New England

A 26 million-acre forest stretches from eastern Maine through New Hampshire and Vermont across northern New York almost to Lake Ontario. It is home to one million residents, a location for forest-related jobs, a landscape rich in biological diversity, and an attraction to outdoor enthusiasts. The forest is within a day's drive of 70 million people living along the eastern seaboard of the United States and urban and rural centers of southeastern Canada. For many decades, the northern forest has been nearly 85 percent privately owned by timber companies or families. Of the remaining 15 percent, four million acres are state-owned and the federal government manages only 300,000 acres. (Note 76)

Due to the economic boom and increase in land values in the 1980s, millions of acres of forest were transferred from regional companies to multinational corporations. Local governments, communities, and environmental organizations are concerned that the conglomerates and transnational corporations buying large land blocks have little allegiance to the region. Land ownership is now concentrated in relatively few hands. Commercial forest companies own 60 percent, with 45 firms owning more than 13 million acres of the Northern Forest. (Note 77)

Public concern over the possibility that commercial firms would begin converting forested lands to developed property led to the initiation of the Northern Forest Land Study, funded by Congress in 1988 (see Figure 18). Facilitated by the U.S. Forest Service, the study's purpose was to examine changes occurring in the region, assess their effect on the forest-based economy, and suggest possible alternatives to maintain the forest, its traditional uses, and the quality of life dependent upon it. (Note 78)
A four-state governors' task force coordinated the study, working with the U.S. Forest Service, to write a report recommending specific actions. In 1990, based upon the recommendations of the study, Congress funded the formation of the Northern Forest Land Council (NFLC) for four years. The council was composed of four governor-appointees from each of the four states and one from the Forest Service. Each state representative spoke for a different constituency: forest landowners, environmental interests, state conservation agencies, and local communities. From the beginning, the NFLC saw its role as consulting with the broadest possible range of citizens about their relationship to the Northern Forest and their hopes and fears about its future.

The formal mission of the NFLC was to reinforce the traditional patterns of ownership in the northern forests of Maine, New Hampshire, Vermont, and New York. This would be done by enhancing the quality of life of local residents by promoting economic stability, encouraging the production of sustainable yield of forest products, and protecting recreational, wildlife, scenic and wildland resources. (Note 79) In developing their recommendations, the NFLC worked with citizens advisory committees from each state and held hundreds of public meetings and forums throughout the region. In addition, working groups were established that served in an advisory capacity for the issues being studied. Some primary research and information gathering was contracted out such as the creation of the Northern Forest Resource Inventory (a state-based Geographic Information System inventory of the natural and economic resources of the Northern Forest). This inventory was published as a technical appendix to the main NFLC report.

In their final report, the NFLC makes 37 specific public policy recommendations. These recommendations fall into four major categories: foster stewardship of private land, protect exceptional resources, strengthen the economies of rural communities, and promote more informed decisions. (Note 80) Some recommendations offer new strategies for sustainably managing the Northern Forest while others suggest changes in current forest programs and policies or fully funding demonstration or experimental programs.

To foster the stewardship of privately owned forestlands, a number of market and non-market incentives are suggested, including: federal and state conservation easement programs, green certification programs, federal and state tax reform, and education programs for sustainable forest management. To protect forestlands with exceptional public value, the NFLC report supports a number of strategies for the acquisition and management of public forestland such as: a national excise tax on outdoor recreation equipment, fully funding the Land and Water Conservation Program, state programs to conserve and enhance biodiversity, and monitoring programs to assess water quality trends.

Recommendations to strengthen the economies of rural communities include: increased funding for rural
community assistance programs, the formation of marketing cooperatives and networks, direct assistance to natural resource-based businesses, and review of land use and regulatory programs. Finally, to promote more informed decisions, the NFLC report suggests more effective coordination between states and universities in the four-state region and natural resource education programs for the general public.

In 1994, federal funds allocated to support the NFLC regional planning process expired. After submitting its final report, the NFLC disbanded and closed its office. Implementation of NFLC recommendations was taken up by state and federal legislatures, state natural resource agencies, and state universities. Since then, progress has been made on some recommendations while others have been slow to implement.

In a 1997 NFLC progress report, significant gains were reported in starting green certification programs, educating forest users and public, assessing forest practices and programs, achieving principles of sustainability, and giving direct assistance to natural resource-based businesses. For example, Maine has assessed its Natural Resource Education Program; New Hampshire has established an ongoing outreach program which includes Environmental Protection Agency grants to conduct landowner and professional workshops on recommended forest practices and Vermont has established a Forest Resource Advisory Council (FRAC) focusing on sustainability of management practices. (Note 81)

These positive developments were contrasted to several areas where NFLC recommendations seemed to be losing ground in particular, federal programs encouraging the stewardship of privately owned forests. For example, federal funds allocated to support the Forest Legacy, Stewardship Incentive Program, and Rural Community Assistance grants have all declined over the past few years—a casualty of a conservative and downsizing federal government.

**Lessons**

The NFLC represents a progressive effort to integrate societal interests with the private property rights of large industry. While the legacy of regional planning lives on through the efforts of individuals and organizations, implementation of NFLC recommendations has fallen short of the collective vision expressed in the final report. In hindsight, it may have been unwise to fund only the planning process and not the implementation phase of regional planning. Establishing a meaningful process of community input into regional planning requires a sustained and long-term effort, including the establishment of new communication channels, the identification of local leaders, and the building of rapport necessary for substantive exchanges among a diverse group of stakeholders. Still, the NFLC can serve as a useful model for further regional planning and future initiatives can learn from its experience.

**CANADA**

Canada’s timber industry is a powerful force in the economic and policy arena. More than US$32 billion worth of forest products are exported each year-making Canada the largest forest exporter by value in the world. (Note 82) Provincial government-owned “Crown lands” account for 96 percent of the forests, and more than three quarters of all timber revenues from Crown lands across Canada are generated from British Columbia. (Note 83) Under the 1945 Forest Act, Crown forests are leased to timber corporations by granting single-use cutting rights (tenures) to most of the productive forestland base in the form of Tree Farm Licenses (TFL) and Forest Licenses (FL). The multiple-use interests of other potential forest users are secondary to timber extraction.

In the past there was little or no opportunity for small-scale operators to engage in forestry without being subject to the same volume-based approach to extractions. The Annual Allowable Cut (AAC) established by the chief forester of the province tended to be much higher than any small-scale enterprise could achieve. Thus, in British Columbia, a small number of large corporations have tenure, reducing opportunity for untenured companies to access wood. This may be changing with the introduction of new legislation.

Across Canada, but particularly in British Columbia, citizens groups have increasingly demanded opportunities to engage in forestry but have rejected the volume-based tenures in a search of alternatives to large-scale industrial forestry. Some civil society groups are advocating changes in forest legislation and policy to facilitate ecosystem-based community forestry. (Note 84) Although the province of B.C. has distinguished itself during the 1990s by introducing some of the most progressive and innovative environmental and forest planning legislation, demands for community forestry opportunities have still escalated. Meanwhile, under international and national pressures, the corporations in B.C. have begun to shift their practices. In June 1998, the Ministry of Forestry introduced new legislation that, if adopted, could initiate
some fundamental changes in the role of communities in forest management. The proposed legislation will allow communities to hold tenure to engage in community-based forestry.

In many ways the strength of regional coalitions has pushed British Columbia to take the lead in Canada toward greater community participation in forest and land-use planning and forest management. The following cases explain how those changes have come about in British Columbia and Canada as a whole. The experience of Clayoquot Sound, despite its small size and remote location, has drawn considerable national and international attention in recent years. The rapid growth of Community Pilot Project petitions demonstrates the interest of local communities and recent legislation shows the responsiveness of the ministry to these demands. Meanwhile, the federal government is attempting to promote sustainable forest management with strong community involvement through the Model Forest Program and other initiatives described below.

The Changing Forest Policy Dialogue in British Columbia

Clayoquot Sound is located on Vancouver Island in British Columbia (see Figure 17). Due to the remarkable natural beauty of its coastline and old-growth temperate rainforests, provincial governmental approval of clearcutting plans attracted national and international attention in the late 1980s and early 1990s. In 1993, the independent Scientific Panel for Sustainable Forest Practices was established made up of scientists, local communities, First Nations, and foresters to study and recommend sustainable forest practices that could maintain ecosystem functions. (Note 85)

The panel's 1995 report, with 120 recommendations, was adopted by the provincial government. After years of negotiations, the board established a co-management arrangement with the timber corporation leaseholder, Macmillan Bloedel, Canada's largest logging company. One of the First Nations of the area, the Nuu-Chah-Nulth, has key decision-making power in the board. In a very recent breakthrough, Macmillan Bloedel agreed to radically transform its cutting plans and policies, agreeing to stop clearcutting entirely and to set aside ten percent of the old-growth area around the Clayoquot Sound. This agreement was crafted after 12 years of community organizing, civil disobedience in both rural and urban centers, and four years (1993-1997) of citizens boycotts against the company engineered by a coalition of international environmental groups.

The boycott strategy was successful largely because the European Union is a large consumer of B.C. products. The sensitivity of European consumers to the campaign was clearly a determining factor. (Note 86) The agreement sets a precedent for the province and the rest of the country. MacMillan Bloedel had previously shown great resistance to changing the standard industry approach. The move by MacMillan Bloedel was brought on by a combination of increasing protest from the broader civil society and a fresh executive view. New Chief Executive Officer, Tom Stephens, came to the company with a history of innovative industry solutions and the recognition that the company could only operate for a limited time in opposition to the goals of the broader civil society.

The provincial government has also been effective in establishing policies more supportive of sustainable forest management and community involvement in resource use decision making on Crown lands. In 1997, British Columbia's Premier Harcourt introduced the Forest Practices Code. (Note 87) The code requires participation of Ministry of Environment officials in its administration. It creates maximum clearcut sizes, and bans logging in riparian zones. Simultaneously, stumpage fees for logging Crown timber were increased. While the code has been criticized for dramatically increasing the complexity of the planning process, it reflects a normative shift toward multiple-use values and away from the single-use timber operations. The code was drafted in response to the growing international attention to B.C.'s cutting practices, and the government used that pressure to gain greater leverage to change industry practices. Environmental groups auditing the first timber cut approved under the new law discovered huge discrepancies between the code and the approved cutting plan. Stakeholders in the code's development were disillusioned, while the timber lobby protested that the code required too much complicated paper-work, without necessarily changing practices. Revisions of the code are currently under way.

The provincial government purposely avoided creating an open appeals process similar to that used by the U.S. Forest Service. Instead, it opted for the creation of a new administrative entity, the Forest Practices Board, to act as a public watchdog. (Note 88) Although funded by the government, the Ministry of Forests does not control the board's activities. The board does not have any legal or regulatory power, but it does have the authority to conduct investigations into the ministry's implementation of the code and can audit corporate forest practices. It can also launch an appeal to the Forest Appeal Commission on behalf of the
public. Thus, the Forest Practices Board is said to act as a buffer between public complaints and the ministry. (Note 89) Although it does not grant the kind of access to challenge the government that is available in the U.S., the board does provide the public with much more access to information about ministry decisions than has been available in the past.

First Nations, like Gitxsan in northwest British Columbia, seek alternatives to industrial forestry. They envision moving from a volume-based timber production system to an area-based, ecosystem management system. Existing planning policies fail to recognize Gitxsan land and resource management planning models, despite the ten years of work by First Nations scientists and communities in developing these comprehensive ecosystem approaches. Local, small landholders across the province recognize that the current options for communities are extremely limited, including the community forestry pilot projects that many see as industry-biased.

Increasingly, communities are joining in their dissatisfaction with the current tenure system and isolated communities are pushing for change. In the 1997 Jobs and Timber Accord, the British Columbia provincial government made a commitment to design and implement new community forest tenure programs that could increase the direct participation of communities and First Nations in the management of local forests. The government was flooded with proposals for community forest pilot projects to explore new tenure arrangements. First Nations land claims could fundamentally change the management patterns of forests in British Columbia and beyond. First Nations envision co-management arrangements with local communities and the provincial government. However remote or vibrant that possibility, there are clear signs that the government is responding to citizen demands by shifting from an industry-led timber orientation toward greater local control over land-use planning by both First Nations and local communities.

Lessons

Widespread concern over the rapid degradation of British Columbia’s rich temperate rain forest by industrial clearcutting in many ways mirrors the concerns farther south across the border. Logging and development have already degraded an estimated two-thirds of Canada’s coastal rain forest, a rare and threatened ecosystem. As in the United States, the Canadian Pacific Northwest forests serve as important habitat for salmon which depend on intact forest watersheds and streams for survival and reproduction. Unlike the U.S., Canada does not have legislation to protect endangered species habitats. Environmental groups such as the Natural Resources Defense Council, the Sierra Club Legal Defense Fund, and other local coalitions have organized around the need for maintaining ecosystem functions.

 Desire among native and non-native communities to have greater influence over Crown land management was reflected when 88 communities submitted requests for community forestry licenses under the recently established British Columbia Community Forest Management Pilot Project. Some advocates for greater community involvement in public forest management feel the pilot project is only a first step, and that much more needs to be done in terms of tenure reform. (Note 90) Proponents of ecosystem-based community forestry have even developed draft or model legislation such as The Community Forests Trust Act (Note 91) which includes detailed plans that could open up management possibilities for communities in long-term, ecologically sustainable, economically viable ecoforestry arrangements. (Note 92) Recent introduction of legislation by the Ministry of Forestry incorporates the recommendations of the community forest advisory committee, which proposed that tenure be flexible enough “to manage forests for local benefits and contribute to the long term economic stability of communities that rely on B.C.’s forests, a key principle of the Jobs and Timber Accord.” (Note 93) This legislation will allow communities to plan how to allocate and maximize a wider range of local forest resource values through alternative, community-based tenure arrangements.

The Clayoquot Sound case illustrates how national environmental organizations are cooperating with local communities and First Nations to effectively lobby for changes in the way the provincial government and large timber companies utilize Crown (public) lands. It demonstrates how even remote areas can be pulled into larger national and regional debates and effectively change the policies of large timber companies. Participation of these local communities in turn is pushing both government and industry to support alternative forestry models.

The Canadian Model Forest Network

The Canadian Model Forest Network (CMFN) was launched in 1991 to promote cooperation and collaboration in the advancement of management, conservation and sustainable development of forest resources through a national network of landscape-level working model forests (see Figure 19). According to organizers, the
model forest is defined as:

- a working scale forest encompassing a landscape that includes the full range of values associated with forests

- a partnership of people who are prepared to work together to help develop forests that are sustainable for future generations

- a "grass roots" approach in decision making that leads to collective and constructive activities and policies in the management of forests

The CMFN was established to support the transition from timber-dominated management models to a more sustainable, multi-value forest management approach based on stakeholder partnerships. In Canada, industrial partners have used the model forests as a way of consulting and including the public in their forest management processes. The program has provided both conventional forest industries and non-timber, forest-based industries with an opportunity to explore, at the operational level, the advantages and challenges raised by sustainable forest management. Private wood lots comprise six percent of all forested lands in Canada. Small private wood lots form a strong component of three of the Canadian model forests. The participation of hundreds of private wood lot owners has been a significant part of the CMFN's successes.

The model forests have provided governments and private citizens alike with the opportunity to show that they can work together to develop innovative solutions to resource management problems. Furthermore, the model forests allow for long-term sustainable management approaches to be shared across the diverse groups that can accelerate learning among forest specialists and communities. Sharing research and experimental data in these model forests has played an important role in Canada. All levels of government participate as partners in Canadian model forests, including the Canadian Forest Service of Natural Resources Canada, the major funding agency of the program. Other federal agencies like Parks Canada and the Canadian Wildlife Service have conducted research on behalf of the partnerships.

In the early 1990s, in order to strengthen the experiences of the CMFN, the network's secretariat began building international ties. Canada invited other countries to join in this experiment and, in 1992, the International Model Forest Network (IMFN) was created with the initial participation of Canada, Mexico, Russia and Malaysia. (Note 94) The United States joined the IMFN, designating three AMAs as U.S. model forests. The IMFN is based in Canada and counts as members the CMFN, the three AMAs in the United States and other international partners.
States, three Mexican model forests, one Russian model forest, and one Chilean model forest and involves Argentina, Japan, and, potentially almost two dozen other countries.

The IMFN global network of model forests will represent the major forest ecosystems of the world and hopes to ensure that all partners, regardless of political or economic status, can contribute to and share in the benefits of the network as they work toward the sustainable management of forest ecosystems. An informal meeting of government delegates to the 1997 World Forestry Congress endorsed the efforts of the network and established an international consultation process to examine the needs and interests of member countries and partners. (Note 95) Recommendations from that consultation process will be reported in Rome in 1999 to determine the future of the IMFN and the role that the network might play in promoting sustainable forest management in international fora. The IMFN aims to foster cooperation and collaboration in the advancement of sustainable forest management through a worldwide network of landscape-level, working model forests. These efforts are based on the premise that a variety of working model forests around the globe can provide useful lessons to all nations struggling with policy and land-use planning conflicts. Through collaboration of public and private forest managers with local communities, the network is creating working models that can demonstrate alternative management practices that can push the limits of forest policy. Through its international partners, the IMFN is helping to bring about the shift from timber industry-dominated extraction to multiple-use forest management with the involvement of local communities.

Lessons

While the initiation of the IMFN has been top-down, the participating model forests are working at the community level to foster collaboration and bring about valuable changes in forest resource management that may drive policy change. The goal is to enhance the economic viability of new approaches to forest management that are less focused on high-volume timber outputs and more oriented toward long-term sustainability of both forests and rural communities. The IMFN is built on the belief that forests can be managed in a sustainable way, enhancing the economic, environmental and social well-being of current and future generations. All model forests involve partnerships that include, among others, local industries, environmental groups, community associations, indigenous peoples, landowners, and governments. This approach enables stakeholders to share their knowledge, better understand the sometimes conflicting practices used to manage forests, and to collectively find new approaches to meet stakeholder needs. Each model forest is unique and requires different kinds of cooperation. The challenge for model forest strategies is to maintain momentum once federally subsidized program support comes to an end.

SUMMARY

A growing diversity of civil society groups is gaining input into decision making over both public and private forestlands management. While most frequently targeting public, often old-growth, forests, interest groups have formed around forests in many contexts including urban environments (see Box 15). National environmental organizations, university-based researchers, community groups and other members of the larger civil society are calling on governments and industries to balance timber production with long-term ecosystem health. In part, this shift reflects the changing values of a society that is increasingly well informed regarding the environment and in search of greater economic stability.

BOX 15 URBAN FORESTRY

Due to the urban character of many parts of America, there is a growing recognition that forests in cities, suburbs, and neighborhoods can contribute significantly to the quality of life. In contrast to traditional forms of forestry, urban forestry includes the planning and management of trees in and around areas where people live. Urban forests typically form a mosaic of planted landscape and native forest remnants left behind, either intentionally or inadvertently, during a community’s development (1). The urban forestry movement rests on the assumption that through careful management and planning, community benefits resulting from these urban forests can be enhanced.

Urban forestry has a rich tradition in North America. As early as 1646, shade tree plantings were completed on a highway from Boston to Roxbury, Massachusetts. Arbor Day, established in 1872, celebrates the contributions of trees to the environment and promotes the benefit of proper community tree maintenance. In the United States, several national laws have strengthened urban forestry programs throughout the country.
During the 1970s, urban forestry was placed under the jurisdiction of the USDA Forest Service State and Private Forestry Program. Also, the 1990 Farm Bill expanded the authority of the Forest Service to work with states in developing urban forestry programs. To receive federal funding, states are required to hire a full-time urban forestry coordinator, provide for coordination of volunteers, develop a statewide advisory committee, and produce a statewide strategic plan. National funding for urban forestry programs has increased every year since 1991, reflecting the commitment to enhance community life through appropriate forestry programs. Illustrating the growth in urban forestry programs, in 1989 there were only five urban forestry groups with paid staff and fewer than fifty volunteer groups. By 1996, there were more than 40 groups with paid staff and over 800 volunteer groups. (2)

Urban forests contribute significantly to the economic and environmental health and well-being of North American communities. These forests help mitigate many of the problems associated with dense human population centers. Urban forests that are well designed and managed can potentially improve air and water quality and enhance social, recreational, and ecological environments. American Forests, sponsor of the Global Relief urban forestry initiatives identifies a number of community benefits resulting from urban forests including: removal of carbon dioxide from the atmosphere; reduction of storm water runoff; shade provision and energy bill reduction; provision of wildlife habitat; and beautifying our homes, parks, streets, and schools. (3)

2 Tenusak, K. "Digging In," American Forests, 1996, Vol. 102, No. 10, p.29

The increasingly diversified rural communities of the United States and Canada are no longer as dependent on timber industry employment. For example, in Oregon in the early 1990s, while 15,000 timber jobs were lost, 100,000 new jobs were created in recreational and other industries. (Note 96) Through regional processes, local communities are finding ways to organize and find solutions that put greater control into their hands regarding management decisions affecting forestlands. These regional processes and coalitions are demanding increased control over their rural environment and economies. The motivating factor in many local coalitions has been maintaining community well-being, often involving conflict reduction through dialogue, and alternative employment creation through small-scale harvesting by local people, the harvesting of non-timber forest products, and watershed ecosystem restoration.

These changes are indicators that the dominance of the timber industry over public forestland is changing and the beginning of sustainable forest management through local stewardship may have begun. The role of rural communities in creating these solutions should not be overlooked. The interest of the larger civil society has also been instrumental in forcing public land management agencies to take a hard look at the economic and ecological sustainability of their practices. Local communities need to continue to develop the capacity to negotiate effectively with government agencies and large-scale corporations to ensure that their forest management views are represented.

Innovative processes like those described in the above case studies provide living laboratories where society can seek mutually acceptable solutions to its resource management problems. Local coalitions are a way to ensure that community interests are understood and addressed, ensuring that management decisions are made in partnership with the forest-dependent resource users. Regional processes can also help bring cooperation among communities and strengthen holistic understanding of watersheds and other ecosystem units.

The role of civil society in public forestlands management is increasingly being articulated through collaborative dialogue processes in both Canada and the United States. In the future, collaborative management systems will face a number of significant challenges. Conflicting missions and goals, combined with divergent traditions and norms, often constrain efforts by resource management agencies and voluntary agencies to coordinate their efforts. Despite these constraints, collaboration is emerging at all levels across forest landscapes. Though still regarded as demonstration projects or experiments by managing authorities, collaborative approaches to forest management and decision making are gaining in legitimacy and are acquiring greater influence in public land management decisions.

63. Bernstein and Cashore

64. Bernstein and Cashore

65. Bernstein and Cashore


67. Knight and Bates, p.152

68. Knight and Bates, p.164


71. Preister and Kent


73. Raphael, p. 217

74. Raphael, p.218

75. Personal communication from Jonathan London, June 1998

76. These figures are from the Environmental Law Institute, Sustainability in the Northern Forest, 1995, ELI Event Write-ups (Washington, D.C.: June 20, 1995), p.1

77. Environmental Law Institute, Sustainability

78. For further discussion see Charles A. Levesque’s article, “Northern Forestlands Council: A Planning Model for Use of Regional Natural Resource Land,” Journal of Forestry, June 1995, Vol. 93, No. 6, p.37

79. Information can be found in Northern Forestlands Council, Finding Common Ground: Conserving the Northern Forest (Concord, NH: Northern Forestlands Council, 1994), intro.

80. Northern Forestlands Council, Finding, p.21

81. For further discussion see Joseph A. Michaels, Northern Forestlands Implementation - 2nd Anniversary Progress Report (Durham, NH: NE Area State and Private Forestry, 1997), pp.1-7

82. Abramovitz, p.47

83. Abramovitz, p.47

84. Cheri D. Burda, D. Curran, F. Gale, and M. M'Gonigle, Forest in Trust, Report Series R97-2 (July 1997). Faculty of Law and School of Environmental Studies, University of Victoria, Canada

86. Bernstein and Cashore

87. Bernstein and Cashore

88. Personal communication, Michael Wyeth, Victoria, B.C., June 12, 1998

89. Personal communication, Wyeth

90. Bernstein and Cashore

91. See Burda et al., Forest in Trust


95. Annual Report, International

PART VI

COMMUNITY FOREST MANAGEMENT

IN THE TWENTY-FIRST CENTURY

This report provides a brief description of the history of forest management in the United States and Canada, emphasizing the role communities have played and are still playing in shaping the region's forests. During the eighteenth and nineteenth centuries, thousands of years of Aboriginal management of predominantly old-growth forests was displaced by the rapid population expansion among settlers from Europe who transformed the forests of North America for agriculture and industrial development. Government agencies emerged, working with expanding private sector companies, to manage timber through much of the twentieth century. At the same time, public conservation policies were growing in strength-establishing national systems of parks and forest reserves.

By the end of the twenty-first century, forest management in North America was at a crossroads. The huge saw logs of the old-growth forests that made the timber industry so profitable were disappearing, while many communities in both rural and urban areas supported legislation that mandated the protection of endangered species and critical watersheds. In the United States, the use of clearfelling practices on public forestlands declined by 84 percent between 1988 and 1997, witnessing the end of an era of extensive timber exploitation (Note 1). Approximately two-thirds of U.S. voters consistently supported environmental conservation policies, as did an increasing segment of the electorate in Canada. With the vast majority of citizens living in urban environments, public forests became a refuge which they expected to find in a relatively pristine and natural state. Elected representatives became increasingly cautious about supporting the timber industry. Federal forest management agencies began sensing the change of sentiment, and technical specialists also became aware of the ecological problems the nation's forests faced after over 200 years of extensive exploitation. It was evident that a new approach to forest management was required, but what that would be and how it would look was not clear.

In Canada, similar challenges were emerging in the forestry sector. By the end of the twentieth century, 90 percent of the forests of southern Ontario and Québec had been commercially exploited for timber. Industry pushed westward into British Columbia and farther north in search of wood for the world's largest pulp and paper industry. Canada, with only 30 million people, possesses nearly 1 billion hectares of land area, and nearly 45 percent is forested. One in sixteen jobs is based on the timber industry that generates C$10 billion in wages each year and C$38 billion in export earnings in 1996. Between 1980 and 1994, approximately 900,000 hectares were felled each year, with an additional 1.26 million disturbed by fires, insects, and disease. Since the first laws were passed in the eighteenth century to ensure that the nation's forests could meet the needs of British shipyards, both the federal and provincial governments have passed a growing body of policies and legislation to protect Canada's forests. National Forest Strategy meetings in 1992 and 1998, as well as a range of provincial government and judicial decisions of the past decade, emphasized public participation in Crown lands decision making, Aboriginal treaty rights, and economic sustainability for forest communities.

BRINGING GREATER STABILITY
TO HUMAN-FOREST RELATIONSHIPS

One of the most important lessons from the Canadian and U.S. experience with forest management over the past two centuries is the need to bring human-forest needs into balance with forest ecosystems. Perhaps nowhere on earth has humankind brought such great change to forests in such short a time as did the European settlers in North America who were driven by cultural and religious values that emphasized the conquering of nature, new economic systems that stressed growth, changing technologies that gave people much greater power to transform nature, and new social systems that made natural systems less relevant.

By the end of the nineteenth century, the crisis of deforestation in the United States and in some parts of Canada was beginning to draw the attention of high-level government officials. The depletion of much of the forest wealth of the continent became increasingly apparent, with scarcities growing and prices for timber and fuel rising. In this century, both nations have struggled to bring greater stability to the region's forests. Various groups began to push for change: local communities whose economies suffered as their natural resource base was overexploited, indigenous peoples whose homelands were taken away, urban conservationists who witnessed the desecration of the natural habitats they studied and admired, as well as responsible members of the timber industry who support sustainable forestry. Some political leaders supported them, sponsoring
legislation to set aside millions of hectares of natural forest for conservation, establishing regulations, incentives, and better technologies for the timber industry, and forging new laws to protect wildlife and endangered species.

Forest conservation and sustainable management have been gaining acceptance in Canada and the United States for over 150 years. Yet, it is only at the close of the twentieth century that social values, science, economics and politics, shaped by the growing concerns of communities, indigenous peoples, government planners, and even industry, are beginning to substantively redefine the region's forest management goals and strategies.

CREATING THE CAPACITY FOR GOOD FOREST STEWARDSHIP

Two factors have been particularly important in contributing to better forest stewardship in the United States and Canada. First, there has been a substantial shift and increase in the values the public places on forest resources. Second, both professionals and to the public have increasingly come to view forests as complex ecosystems generating numerous benefits, rather than simply as sources of farmland, timber, and fuel. Major scientific breakthroughs in this century have vastly enhanced the science of forest ecology, supporting shifting attitudes and the development of new management strategies. Knowledge regarding effective approaches to management has also accumulated through the practical experiences of community activists, district rangers and citizens groups.

Finally, a pervasive public awareness of forest and natural resources issues has been effectively supported through the efforts of the mass media and NGOs. Insight into the structure and functions of forest ecosystems has strengthened the belief that the wilderness, old growth, and diversity have values beyond economic and utilitarian ones. Experience with the negative impact of poor forest management has also been assimilated into the thinking of a growing segment of the public, often influencing their ideas regarding more sustainable management practices.

Values

Throughout the history of European settlement in Canada and the U.S., values applied to forest management were drawn from the Judeo-Christian tradition that reflected the concept of human domination of nature. In the book of Genesis from the Old Testament, God gives man dominion over the birds, animals, plants and other aspects of nature. The dominant western cultures of Canada and the United States have, until recently, ascribed value largely to utilitarian functions of the forest and its ownership. While the conservation movement (1880-1969) extended those values to include sustaining resources, forest management goals were still oriented towards meeting human needs and market values. Visionary thinkers like Muir, Whitman, Thoreau and others extended forest management into the spiritual realm. Yet, it was not until the environmental movement began in the 1960s that society began recognizing a wider range of forest values, and only then did the goals of management begin to substantially change. Even traditional, powerful agencies like the U.S. Forest Service reflected that change in values, and in 1992, shifted its fundamental management paradigm from utilitarian goals to sustainable "ecosystem management." (Note 2)

As the U.S. and Canada move towards more holistic forest management practices, there is growing interest in the values and beliefs that underlie this new perspective, The Native American and Aboriginal cultures of the region have provided a spiritual framework for seeing the forest in new ways. Living close to the land, they also shared many values. Nature was held as sacred, created by the Great Spirit, which manifested itself in animals, plants, stones, earth, insects, and people. All things were connected, in a web of life, through which the spirits of past and future generations lived. They often saw their own roles as caretakers of the lands they inhabited, the lands of their ancestors. According to one student of native peoples:

They speak with courtesy and respect of the land, of animals, of the objects which made up the territory in which they lived. They saw no virtue in imposing their will over their environment: private acquisition, almost without exception, was to them a way to poverty, not to riches. The meaning of their life was identified through their relationships with each other and their homelands-all of which was given depth and resonance by memory. (Note 3)

Tatanga Mani, or Walking Buffalo, an Indian from Alberta, Canada, eloquently expresses the respect of indigenous peoples for the trees, "Did you know that trees talk? Well they do. They talk to each other, and they'll talk to you if you listen ... I have learned a lot from trees: sometimes about the weather, sometimes about animals, sometimes about the Great Spirit." (Note 4)
The indigenous peoples of Canada and the United States were not afraid to manipulate the forest environment and, as this report notes, fire was widely used. They did so with knowledge acquired through centuries of experience with local habitats. A reverence for nature guided use, combined with a strong ethic of conservation that mandated that nothing should be wasted. As one expert notes: "Understanding and living sustainably within a particular environment has been a matter of survival for the Aboriginal peoples of Canada, as it has for indigenous peoples the world over." (Note 5)

The values of indigenous peoples of Canada and the U.S. have special relevance in these post-industrial societies by extending more holistic and spiritual values to the environment. The association of the spiritual with forests has helped protect and regenerate woodlands in many locations throughout the world. The cases of forest management of the Dene, Toquat, Nuu-chah-nulth, Cree, Menominee, Apache, Navajo, and Yakama presented in Part V underline the concern indigenous people still show in demanding forest protection as a priority of any management system. The cases also indicate the creativity and science required to blend multiple management objectives into a coherent set of stewardship practices.

Knowledge

Knowledge of forest ecosystems has grown rapidly in the United States and Canada, initially within the field of forestry, and later in ecology. Through much of the twentieth century, forest science largely dealt merely with the growth patterns of major timber species. The relationships between microorganisms, plants, and animals, and the processes of growth and decay were poorly understood. Developments in this field of science have led to a new paradigm for forest custodianship reflected in process, ecosystem, and adaptive management. These perspectives allow forest administrators, scientists, conservationists, and communities to better understand how forest use affects the environment. New questions are being raised about how succession takes place, the importance of fire, upstream-downstream relationships, and many other phenomena associated with the forest.

While ecological science cannot yet explain all the dynamics of the diverse and complex forests of Canada and the United States, existing knowledge and the recognition of our ignorance suggests careful monitoring and adaptive management strategies may be the best ways to achieve greater stability in human-forest relations in the future.

The recognition that both commodity and non-commodity forest resources are valued by the public has led to the development of the field of natural resource economics. There is a growing understanding that biodiversity, clean water, habitats for threatened wildlife species like the wolf or grizzly bear, and remote recreational opportunities are as important to the public as a sustainable supply of wood fiber. The capacity to more objectively evaluate the forest has better equipped society to weigh management options. The emergence of computer modeling allows forest stakeholders to begin assessing the real costs of timber exploitation.

Even at a local level, communities are beginning to acquire a greater understanding of the wider economic implications of different forest use activities.

In both Canada and the United States, the civil society appears to be acquiring a broadening range of values regarding the importance of forests and the need for ecosystem conservation. Knowledge regarding the complexity and diversity of forest ecology has expanded rapidly in recent decades. Yet, changing public values and scientific understanding are only gradually being assimilated by the society at large and by private and public institutions. Formal educational institutions at all levels will need to continue to integrate environmental values and information into their curricula. Forest-based companies and corporations require incentives to encourage them to practice ecologically sound management. Finally, it will take decades for government institutions that manage much of the forests of Canada and the United States to change their procedures and policies to reflect new social values and scientific understanding. Educating communities, the private sector, government, and the civil society at large regarding the need for sustainable natural resource management and the causes of deforestation will be important as population pressures and resource requirements build throughout the twenty-first century.

RETHINKING THE ROLE OF GOVERNMENT

In both the United States and Canada, much of the forestland is administered by government agencies at the federal, state, or provincial level. In the United States, 29 percent of the land area is under the jurisdiction of the federal government, while in Canada approximately 90 percent of QuDbec, Ontario, Manitoba, Alberta, Saskatchewan, and British Columbia fall under the control of provincial governments. From the 1970s onwards, public concern over government management of these lands has grown rapidly. Governments, responding to the interests of its citizens have increasingly sought to open dialogues with their constituents regarding forest management policies and priorities.
The periodic meetings of industry, government, NGOs, and community stakeholders to formulate the Canadian National Forest Strategy have been an important part of this process in Canada. In the United States, at the national level, the recent Seventh American Forest Congress provided a forum to chart the future goals of forest management for the civil society. The creation of a special Communities Committee reflected the increasing recognition that local groups need to be heard and have a role in policy making and day-to-day management decisions.

Forestry agencies face special challenges as their mandates change. The inter-view with Mike Dombeck, the 14th Chief of the Forest Service, indicates the commitment of the agency to major reforms in the coming years and its concern over the challenges ahead. While the U.S. Forest Service, for example, was initially formed primarily to ensure the continued availability of timber resources, the organization has increasingly been charged with ensuring that forests provide recreational opportunities and environmental services to a society which is largely urban and entering a post-industrial era. According to Dombeck, the challenge for his organization is to effectively respond to these new priorities with an institution that was designed largely to manage timber. This requires major changes in organizational vision, staff attitudes, institutional structure, planning systems, budgeting, and other administrative elements. Financing procedures are still largely based on timber harvest levels. Political representatives with ties to the timber industry have threatened to cut U.S. Forest Service budgets if they do not allow logging companies to operate as they have in the past. While timber harvests on federal lands in the U.S. have dropped drastically over the past decade, the Forest Service remains under political pressure from some groups to continue to subsidize and support logging on public lands.

The Canadian experience is reflected in the interview with Larry Pedersen, Chief Forester of British Columbia who noted: “Forest management in B.C. has gone through a series of revolutionary changes in the past ten years.” Canada has put in place new forest practice codes based on a “full range” of forest values, while setting in place mechanisms for much broader public participation in public land-use planning, with special emphasis on communities and First Nations. The federal forestry agencies are also undergoing great change. Budgetary cuts have shifted emphasis to public education, monitoring forest quality, and research.

Just as a basic paradigm shift occurred in the late nineteenth century when forest use moved from private enterprise to government ownership and scientific management, once again the existing public land-use system is in a state of political and intellectual change (Note 6). An increasing number of policymakers and forest administrators recognize that forest management cannot simply be “scientific” and value free, but has to reflect diverse public priorities. The emphasis on public dialogue and stakeholder discussions in both Canada and the United States reflects this change in orientation regarding the ways to set management objectives. In both countries, administrators of organizations vested with forest management responsibilities are directing staff to give greater consideration to the views of local communities, NGOs, and other stakeholder groups. Government planners are concerned that their roles will be taken over by the judicial system if they are unable to work with interest groups in achieving a consensus regarding how to manage natural forests and other resources.

While population and industrial demands grow, the need to manage forests more intensively will likely increase because many forest ecosystems are in poor condition after two centuries of industrial exploitation. For example, in the western forests of the United States and Canada, a century of logging has resulted in changes in species composition and overcrowding that have increased the susceptibility of many stands to disease and insect infestation. In addition, the suppression of fires over the past 50 years has created denser forests and an accumulated fuel load that poses threats of catastrophic fires. Restoring degraded forests and watersheds has been deferred for decades and concrete financial commitment is urgently needed.

Monitoring and regulating human forest use is also an important and costly component of management. Maintaining the recreational infrastructure of the national forest system will require substantial financing in the future. Government funding for public forestland management at the federal level in Canada and the United States has either fallen or remained constant in recent years.

Given the trend towards shrinking government budgets, it is unclear how such funds will be generated. In this era of fiscal constraint and downsizing, the government role is gradually moving from that of direct service provider to one of facilitator or catalyst for positive social change. In the context of forest management, this has resulted in a transition from “making” decisions to “getting” decisions by convening and providing leadership to different stakeholders. For example, in the Northern Forest Land Council, the USDA Forest Service provided both financial and technical support to this group. Similarly, the Canadian Forest Service is playing an increasingly active role in coordinating discussions among stakeholder groups, in part through mechanisms like the National Forest Strategy Session.

While there will continue to be an important role for government to ensure that the “public interest” in
sustainable forest management practices is being served, human and financial resources for managing these lands will need to come from other sources as well. Forest-user communities and the larger civil society could be involved to a much greater extent in the management of public forest-lands, providing funding and labor for monitoring, research, fire management, public education, infrastructure maintenance and other necessary tasks. New partnerships between government agencies, the private sector, and communities could bring together the authority, technical knowledge, capital, labor, and accountability to put into place more sustainable systems of management responsive to local needs and goals. In return, government agencies will need to develop ways to blend “moral and scientific elements in diverse ways to serve a growing value pluralism.” (Note 7) This will likely require some decentralization of current federal, state, and provincial authority structures, and the creation of new tenure mechanisms that vest local stakeholders with both the rights and responsibilities to make management decisions and implement them.

THE CHANGING ROLE OF THE PRIVATE SECTOR

The civil society is having an increasing impact on the behavior of the forest industry. While certification of forest products generated from sustainably managed forests is still in its infancy, there is a growing interest in rural and urban communities of Canada and the United States to ensure that consumers are not supporting forest destruction. Recent surveys indicate that 69 percent of consumers have boycotted products over environmental concerns and that 76 percent feel the forests of North America are under environmental threat (Note 8). The forest industry public image has deteriorated substantially in recent decades, and while only a limited number of high-end consumers are ready to pay a premium for certified forest products, much of the public remains suspicious of the practices of timber corporations. Large retail chains like Home Depot, responsive to customer attitudes, have taken the environmental lead by declaring that it is “committed to improving the environment by selling products that are manufactured, packaged, and labeled in an environmentally responsible manner.” (Note 9) In effect, consumers are increasingly placing pressure on retailers who in turn force timber processors to buy from certified logging companies.

While globalization of the economy has certainly accelerated deforestation in some countries, it has also tied the world community of consumers together, allowing communities in different nations or even continents to influence each other's forest management practices. The recent decision of Macmillan Bloedel, one of Canada's largest timber companies, to agree to halt all clearcutting, was in part triggered by the advocacy of such international NGOs as Greenpeace and the Rainforest Action Network (RAN) but also by pressure from European consumers for certified wood. Increasingly, large corporations and trade associations acknowledge that the days of "cut and run" are over. In 1996, Bob Hunt, president of the Western Wood Products Association warned: “The wood products business must respond to environmentalism in the marketplace or face shrinking markets and an uncertain timber supply.” (Note 10) Since the public is skeptical of industry standards, and even those imposed by government regulators, the emergence of third party certifiers to define what is sustainable use and evaluate at the site appears to be the most promising approach to insistent consumer demands. The creation of the Forest Stewardship Council (FSC) in 1993 provides a worldwide umbrella organization for third party certifiers.

THE GROWTH OF THE VOLUNTARY SECTOR

The downsizing of government in North America has created new opportunities for the voluntary sector or nonprofit organizations to provide direct service or advocate for the sustainable management of the regions' forests. Throughout Canada and the United States, nonprofit organizations are playing a leading role in advancing the cause of meaningful community participation in forest management. National advocacy or lobbying organizations like the Sierra Club and Greenpeace are influencing national forest policy towards the objective of sustainability.Locally, many of the leading practitioners of community forest management are voluntary associations. Organizations like the New Brunswick Woodlot Owners Association and the National Aboriginal Forestry Association in Canada and the Forest Trust in New Mexico or the Mountain Association of Community Economic Development in Kentucky provide examples of institutional strategies that other regions can emulate.

Recognizing the influence and capability of these voluntary groups, public forest policies and programs are gradually channeling financial and technical support to strengthen them. For example, the USDA Forest Service, through its Rural Community Assistance program, now provides direct funding to a wide range of community or ecosystem-based voluntary groups -- from watershed associations to community forestry organizations. For this partnership between the government and voluntary sector to flourish, it is particularly important for government accounting and financial and personnel requirements to remain flexible to
accommodate the unique contributions that voluntary organizations can make in supporting sustainable forest management. The Canadian International Model Forest Network is also bringing NGOs together with industry and communities. Increasingly, coalitions between government, industry, and the voluntary sector at all levels are defining the movement towards meaningful community involvement in forest management.

FINDING CONSENSUS IN DIVERSITY

As this report suggests, the communities that comprise Canada and the United States represent immense diversity, based on size, cultural composition, local economy, and region. Further, each community may be made up of different groups. Their goals for forest management may vary widely. As a consequence, there are no simple management formulas that can be broadly applied as blueprints for community forest management. Rather, what is emerging in these two North American countries is a diversity of processes or dialogues that allows differing viewpoints to be voiced and that may lead to compromise and consensus regarding how to care for forests.

There are clear trends appearing. Society is demanding that natural forests be conserved, especially endangered habitats like old-growth stands and wetlands. In both nations, the public increasingly requires that forests that are harvested be managed in ways that maintain some ecological integrity and biodiversity. A majority of the population in Canada and the United States desire to maintain forests for recreation, wildlife, water resources and other non-timber uses. A growing number are willing to pay higher prices for sustainably produced wood products. Industry and government are responding to these demands, though changing the behavior of private and public institutions will require much time. Nonetheless, the transition is in progress and it is apparent. Perhaps most encouraging is the growing knowledge among the public regarding the complexity of natural forests, the important environmental services they provide, and their need for stewardship.

NOTES

1. Personal communication from Mike Dombeck, Chief of the USDA Forest Service, March 27, 1998
4. McLuhan, p.23
7. Nelson, p.57
9. Mater, p.189
10. Mater, p.187

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Claudia D'Andrea came to the IUCN with a field background in community forestry and an M.A. in Environmental Policy from the Johns Hopkins School of Advanced International Studies. She coordinated the Working Group from the IUCN U.S. office in Washington D.C. through its initial phase while engaging in international forest policy before returning to graduate work in forest policy. She is currently a doctoral student at the College of Natural Resources at the University of California at Berkeley, and a part-time IUCN researcher, writer, and member of the Working Group Regional Profile team.

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Lynn Jungwirth is the Executive Director of the Watershed Research and Training Center in Hayfork, California, Chair of the Communities Committee of the Seventh American Forest Congress and active in its Legacy Committee, serves on the Collaborative Stewardship Task-force of the U.S. Forest Service, and is a member of the National Network of Forest Practitioners. She has served on the Seventh American Forest Congress board of directors and the California State Community Economic Revitalization Team, the presiding body for the Northwest Economic Adjustment Initiative. Born and raised in a small timber town in Oregon, Lynn has been an activist for 20 years on social issues that affect milling and logging communities.
Mark Poffenberger is the Editor of the World Conservation Union (IUCN) regional profile series on Communities and Forest Management. He has spent over 30 years designing and guiding community resource management research in Asia, while working for the Ford Foundation, the World Bank, and a number of bilateral government and nongovernmental organizations. He currently is the Director of the Asia Forest Network at the Center for Southeast Asia Studies at the University of California, Berkeley. In addition to numerous articles and papers, his published books include Patterns of Change in the Nepal Himalayas, Keepers of the Forest, and Village Voices, Forest Choices. He has a doctorate in community development from the University of Michigan.

Rosemary Romero is President and Executive Director of Western Network, a non-profit firm based in Santa Fe, New Mexico. She designs and facilitates numerous public involvement projects, assists in neutral conflict resolution in diverse cases, consults with public and private organizations on the use of alternative dispute resolution techniques, and conducts training programs on the use of negotiation and mediation skills in the environmental field. She also directs the community resource mapping for the Coyote Ranger District, having developed a community value mapping system used by the U.S. Forest Service. Ms. Romero has managed the public involvement component of two Resource Management Plans developed for Heron, Elephant Butte, and Caballo Reservoirs in New Mexico. From her background in working with Indians and Hispanics she brings a heightened awareness of cross-cultural issues in the resolution of disputes, particularly in matters involving natural resources.

Steve Selin is an Associate Professor in the Division of Forestry at West Virginia University. He has been active in supporting community-based conservation and development initiatives throughout the Appalachian region, most recently serving on the Steering Committee for the Forest Roundtable in West Virginia. Dr. Selin's research program assessing collaborative planning initiatives within the National Forest System in the United States has been published widely in journals and incorporated into recent proposed revisions to the National Forest Management Act. Dr. Selin has served as a consultant to various conservation and development agencies including the Appalachian Regional Commission, USDA Forest Service, and the World Conservation Union.

APPENDIX

CONVERSION OF ENGLISH TO METRIC UNITS

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