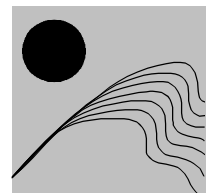


INQUIRIES For a Sustainable Future

*A Decision-Making Approach
to the Study of Selected Canadian Issues*

SUSTAINING CANADA'S FORESTS

June 1998



Learning for a
Sustainable Future

SUSTAINING CANADA'S FORESTS

Like all major ecosystems, forests are essential to the global environment. Forests have profound and complex effects on the atmosphere, the water cycle and soil; they are the habitat of most of the world's species and the home of hundreds of ancient cultures. But as the global demand for wood and wood products expands, forests are being cleared at a rate that threatens the health of the planet.

Since the signing of *Agenda 21*, the blueprint for sustainable development, in Rio de Janeiro in 1992, Canada has played a leading role in the search for a global agreement on the conservation and management of the world's forests. Consensus has been difficult to achieve between developing countries hungry for economic growth and developed states focussed on the profitability of world trade. However, the establishment of an international agreement under which every country can develop a sustainable forests strategy is an urgent objective.

Canada is custodian of some of the greatest forest ecosystems in the world, including the old-growth rainforests of British Columbia and the Boreal forests of the North, and the forestry industry is one of the most important parts of Canada's national economy. Like other Western countries, Canada has historically exploited forests without concern for preservation, sure in the abundance of the resource. However, signs of stress in Canadian forests have increasingly raised public concern and criticism, and the new priority of sustainability has given rise to the search for new approaches. In response, the Canadian government, forest industries, First Nations' organizations and scientists cooperated in a *Forestry Accord*, a national forest management strategy based on the recognition of forests as complex ecosystems.

Implementing the strategy is harder than developing it. Trying to define what a "sustainable forest" is has focussed debate around different perspectives and raised crucial questions. Should old-growth forests be preserved? If so, why and how? What logging practices are appropriate? The basic question is: what is the relationship between humans and nature?

Public pressure has helped to bring about such land-mark agreements as the one proposed for the management of old-growth forests on Clayoquot Sound, British Columbia; perhaps this agreement suggests a model for balancing the needs of society and the environment, for the preservation of forests, species and wilderness on the one hand and for appropriate economic development on the other, which could be applied to the search for an international strategy.

QUESTIONS

1. What makes a forest a forest, rather than a stand of trees? Expand your answer to include your personal perception of a forest.
 2. Why is Canada “a forest nation”? What have forests contributed to Canada’s history? List the economic, social and environmental values of the forests for Canada today.
 3. Do old-growth forests need to be preserved? Defend your opinion. If so,
 - should logging be totally prohibited or should a selective system of tree removal be put in place?
 - what changes in government policy, industrial practices and public attitudes would be needed to preserve the forest wilderness?
 - how much of Canada’s forest land should be preserved as wilderness?
 4. Why have traditional Canadian logging practices been criticized at home and abroad?
 5. Summarize the approaches towards sustainable forestry and evaluate the extent to which they have been or should be integrated into a Canadian forest management strategy. Outline a framework for sustainable forest management that could be used by Canada in promoting the development of an international forest strategy.
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BACKGROUND FOR THIS INQUIRY

Readings:

- | | |
|----------|---|
| 1 and 2 | Canada: A Forest Nation |
| 3 to 5 | Should Old-Growth Forests Be Preserved? |
| 6 | Canada's Strategy on Old-Growth Forests |
| 7 to 10 | Perspectives on Logging Practices |
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| 14 | Forest Ecosystem Management |
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| 16 | The Model Forest Network |
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| 18 | Sustainable Forest Management |
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CANADA: A FOREST NATION (1)

Canada is one of the few nations where the forest is predominately publicly owned. Forests cover 417.6 million hectares or 45 per cent of Canada's land base; 56 per cent of these forests are capable of growing commercial tree species. However, only half of the commercial forest is currently managed for timber production, and more than 7.6 per cent of forested areas are protected from harvesting by legislation. At least 140 000 species in Canada rely on forests for food and shelter.

Between 1980 and 1994, fire, insects and disease affected more area in the commercial forest than harvesting. Over the 15-year period, an average of 902 000 hectares were harvested annually, compared to the 1.26 million hectares disturbed by fire, insects and disease. Much of the forests in Canada are affected by fires on a regular basis. Each year, forest fires account for the loss of an average 70 million m³ of wood valued at one billion dollars. In 1996, 1.7 million hectares were burned by forest fires, an area lower than the annual average during the previous ten years.

More than 20 million hectares regenerated naturally, and more than 5.59 million hectares were planted or seeded between 1980 and 1994. In 1994, commercial species were not yet growing on 3.03 million hectares of the commercial forest more than ten years after harvesting. However, recent studies indicate that since 1993, the area not growing commercial species ten years after harvesting is decreasing.

Although clearcutting is still the predominant method of harvesting in Canada, the use of selection cutting is increasing. Moreover, guidelines on clearcutting have changed substantially over the past 20 years to maintain wildlife habitat, protect soils and retain natural landscape patterns.

There are 337 forest-dependent communities in Canada, i.e., where the forest sector accounts for more than 50 per cent of the community's base income. These communities are changing rapidly, resulting in instability that affects their overall social conditions. Some communities are growing, others are declining, and many more are becoming less reliant on forest products industries.

Canada's Aboriginal communities have a unique relationship with forests and wildlife. Governments are recognizing that ecological knowledge is an important tool in managing forests. In many regions of Canada, Aboriginal ecological knowledge is being integrated into forest management planning activities.

In 1996, Canada's forest directly or indirectly employed one in 16 people (an estimated 842 000 jobs). New technologies and the requirement for increased knowledge of ecosystems are changing the very nature of forest sector jobs. In 1996, the federal and provincial governments provided substantial financial assistance for silviculture-related activities on private woodlots. The federal government also provided increased opportunities for First Nation communities to develop forest-related businesses.

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Over the past 100 years, the legislation and policies governing Canada's forests have evolved to reflect the changing social values of the nation. Since the first regulations were placed on the harvesting of logs destined for Britain's shipyards in the 18th Century, provincial and territorial governments have introduced laws and policies to conserve and manage forests for multiple uses. Some provinces have amended their forest legislation and regulations to address Aboriginal rights, and several provinces have passed heritage legislation to protect Aboriginal sites. With the increasing globalization of trade and the emergence of international obligations regarding forest management and trade, the federal government also is playing a key role in the sustainability of Canada's forests.

Faced with public concern about forest management, governments in consultation with the entire forest community, have developed a framework to measure the progress towards sustainable forest management. The framework identifies the many values Canadians want to sustain and enhance. Scientists are now working with policy-makers to develop the new tools and methodologies required to measure and report on forest sustainability by 2000.

Canada is also playing a leadership role in international efforts to define and measure forest sustainability. Canada and 11 other countries have collaborated to develop national criteria and indicators for the conservation and sustainable management of boreal and temperate forests outside Europe (known as the "Montreal Process"). In addition, Canada has been promoting the need for an international forest convention that would level the playing field for the forests products trade by establishing common commitments for sustainability while recognizing the different forest ecosystems and needs of individual nations. Global stewardship of forests through a forest convention would help all nations enhance the capacity of their forests to respond to the increasing demands of a growing world population.

Today, governments and forest companies are providing citizens with increased opportunities to voice their views, interests and concerns regarding the use and management of their forests. Although public participation can be time consuming as well as costly, it allows individuals and interest groups to participate in decisions that will affect them on an economic, ecological or spiritual level. Many provinces and territories now have legislation that requires public participation to become a part of the forest management planning process.

CANADA: A FOREST NATION (2)

Summarizing the Concern of Canadians: A New Brunswick Perspective

The forest of New Brunswick has always supplied the population with forest products such as lumber, fibre for the pulp and paper mills, etc.. However, during the last decade, we started to perceive a certain uneasiness in the population. As everywhere else, the population of New Brunswick has become urbanized, if not in large cities, at least in terms of its perception, its attitudes.

We perceive that the forest has a whole series of other values that were not thought of in the 1930s, 1940s and 1950s when we set up our forest industries. During that period, we had not yet recognized the shortages that we are starting to recognize now in other non-timber forest values. For example, we have lost the salmon fishery; we have lost the trout fishery; we have lost the deer hunting in half the province.

Seeing this, the people started wondering about certain things such as, why is it that at the provincial level we have started to lose resources that we had taken for granted and that everyone considered as a right? People thought they could go for a stroll in the forest, go hunting, go and see the animals, etc..

The main concern, the first priority, is clearcutting. People are worried about clearcutting, clearcut sizes, the way in which it is practiced, and they blame clearcutting for the disappearance of streams. They blame it wrongly for the disappearance of deer. They are asking us to do something.

Another priority expressed by the citizens is the use of herbicides and phytocides in forestry. This concern is double: first, that phytocides and insecticides might end up in streams and cause the loss of biodiversity. Secondly, forests undergo change when we use a phytocide to kill what we call forest weeds because we also eliminate elements that are not harmful. . .

Beyond that, there are also major concerns about forest regeneration. People are worried that the forest is not regenerating as rapidly after human activities as it did in the past . . . people are also concerned by over-cutting. People see the trees fall, they see others grow, but they notice that they are much smaller. . .

Dr. Louis Lapierre,
University of Moncton,
in Forestry on the Hill,
Special Report on Clearcutting,
Excerpts from Parliamentary Standing Committee on Natural Resources,
edited by the Canadian Forestry Association, 1994

SHOULD OLD-GROWTH FORESTS BE PRESERVED? (1)

Four Reasons for Preservation

There are many valid reasons to save old-growth forests from extinction, as many, perhaps, as there are for saving tropical forests. One is that our forests of the Pacific Northwest are beautiful and unique in the world. Another is that the old-growth trees of the Pacific Northwest inspire spiritual renewal in many people and are among the rapidly dwindling living monarchs of the world's forests. They are unique, irreplaceable, and finite in number, and they shall exist precisely once in the world today, because whatever we create in the redesigned forest will be different. We can perhaps grow large trees over two or three centuries, but no one has ever done that on purpose. Such trees will not be Nature's trees; they will be humanity's trees. And although they may be just as beautiful as those created by Nature, they will be different in the human mind. A third reason is that a number of organisms, such as the spotted owl and the flying squirrel, either find their optimum habitat in these old-growth forests or require old-growth structures, such as large snags and fallen trees, to survive. And a fourth reason is that old-growth forests are the only living laboratories through which we and the future may be able to learn how to create sustainable forests — something no one in the world has so far accomplished. Let us examine this in more detail.

As a living laboratory, old-growth forests serve four vital functions. First, old-growth forests are our link to the past, to the historical forests. . . We must remember that knowledge is only in past tense; learning is only in present tense; and prediction is only in future tense. To have sustainable forests, we need to be able to know, to learn, and to predict. Without old-growth, we eliminate learning, limit knowledge, and greatly diminish our ability to predict.

Second, we did not design the forest, so we do not have a blueprint, maintenance manual, or parts catalogue with which to understand and repair it. Nor do we have a service department in which the necessary repairs can be made. Therefore, how can we afford to liquidate the old-growth that acts as a blueprint, parts catalogue, maintenance manual and service station — our only hope of understanding the sustainability of the redesigned, plantation forest?

Third, we are . . . playing “genetic roulette” with forests of the future. What if our genetic simplifications run amuck, as they so often have around the world? Old-growth forests are thus imperative because they — and only they — contain the entire genetic code for living, healthy, adaptable forests.

Fourth, intact segments of the old-growth forest from which we can learn will allow us to make the necessary adjustments in both our thinking and our subsequent course of management to help assure the sustainability of the redesigned forest. If we choose not to deal with the heart of the old-growth issues — sustainable forests — we will find that reality is more subtle than our understanding of it and that our “good intentions” will likely give bad results.

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Although there are many valid reasons to save old-growth forests, there is only one reason that I know for liquidating them — short-term economics. Economics, however, is the common language of western civilization; is it not, therefore, wise to carefully consider whether saving substantial amounts of well-distributed old-growth forests is a necessary part of the equation for maintaining a solvent forest industry?

Can we afford to liquidate our remaining old-growth forests? I have often heard that, “we can’t afford to save old-growth; it is too valuable and too many jobs are at stake”. I submit, however, that we are only limited by what we think we cannot do. We must be exceedingly cautious that economic judgement does not isolate us from the evidence that without sustainable forests we won’t have a sustainable forest industry. . .

We too often pursue our science and our technology in intellectual isolation from their long-term consequences to the environment. Our science and our technology are like the isolated pieces of a great, patchwork quilt with a largely random arrangement and without a thread to either relate the pieces one to the other or to hold them together. Native Americans, on the other hand, have the thread; it is a deep spiritual relatedness to the land. If we are to have a sustainable environment for ourselves and our children, we must adopt the Native American values of relatedness to the land and apply them to our values of science and technology. Thus, as we the people elevate our personal, environmental and social consciousness, the constant human struggle, we begin to take our rightful place in the universe — not as conquerors, for we have conquered nothing, but as universal custodians. In this way we can both design our quilt and sew it together for all generations to enjoy. . .

The Redesigned Forest,
by Chris Maser,
Stoddart Publishers, 1990

SHOULD OLD-GROWTH FORESTS BE PRESERVED? (2)

Today's "Managed" Forests are also Sustainable

Many misconceptions are at play in the debate about modern forestry. The worst is that timber growth areas — known as managed forests or industrial forests or successional forests — are “managed deserts”, as many activists call them. Most managed forests teem with life. In the commercial woodlands of the Northwest [United States], nearly all native plants and animals flourish. Almost everything that happens in the industrial forest is driven by nature, the main exception being that trees exit after being sawed down, not burned down, as would happen in the lightning-caused fires that restart the natural forest cycle.

In some respects, young woodlands as developed by *genus homo* are better places for biodiversity than are old-growth forests. Commercial timber operations emphasize the youthful phase of the forest, when trees grow rapidly. This is also when species proliferate. Studies conducted by the Forestry Sciences Laboratory of the Forest Service suggest that Northwest forests with trees less than 15 years of age average 167 species; old-growth forests average 152 species. The young-forest environment is open, sun drenched, and competitive — good for most forms of life. The old-growth environment, though clearly favourable for some species, is closed, with climax trees of full height blocking sunlight to the forest floor, precluding many forms of life.

The creatures that dwell in successional forests often are browsing species such as elk and deer, animals that like open-access or “edge” areas. Some who oppose managed forestry argue that the world has plenty of browsing animals, deer now overpopulating many American and European woodlands. But, they continue, the world is short of old-growth species such as the spotted owl and marbled murrelet. This may well be true, yet it is an entirely human judgement. . .

What really goes on in the industrial forest is essential to understanding how to preserve the old-growth, those glorious “sanctuaries of wildlife and of the human spirit” as the ecologist Timothy Hernach has called them. In its zeal to portray all commercial use of trees as horrifying, environmental orthodoxy has overlooked something essential: the more timber that can be produced from managed stands, the less pressure to log out ancient forests. In this sense, the industrial forest is like high-intensity agriculture: by producing more from less space, it frees land for return to a natural condition. If done in a manner that respects biodiversity, timber production ought to be an ecologically desirable form of commerce. . .

Let us start with a few basics about the actualities of forestry.

- Ancient forests are renewable too. Logging opponents call the places in dispute in the Pacific Northwest “ancient” forests to make them sound irreplaceable. Ancient forests are precious, but can be restored. Every Northwest forest today depicted as irreplaceable has been destroyed by glaciers, fire and other natural factors many times. . .

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- Logging is sustainable. Many industries someday will be converted to renewable economics; logging is among the few already in that category. Rational environmental policy might encourage consumers to substitute wood for materials based on nonrenewable metals and petro-chemicals. Instead, policy now discourages wood use. And it is working: per capita wood consumption in the United States has been declining since the 1970s at a faster rate than reductions in use of materials generally.

Green dogma is anti-wood partly owing to the stereotype of the logger as swaggering foe of the wild. This stereotype has founding in truth, mainly in turn-of-the-century logging practices that cleared wide swaths of forest. But those forests today have regrown, while the callous logger is on the wane. Nearly all timber companies today employ university-trained foresters whose education includes course work on biodiversity. Large logging concerns are beginning to employ wildlife biologists. “Unlike what happened ’til the turn of the century, today’s loggers do not wipe out some remote area, then move on,” says Kevin McElwee, a forester in Michigan’s Upper Peninsula timber zone. “Most live where they log and plan to stay. . . [and] understand that the continued health of the forest means income not only for us but for our children.”

Michigan’s Upper Peninsula, a region of several million acres, is today more than 90 percent forested: rich with animal and plant life, with restrictions on logging there to protect what is generally presumed a private forest. Yet the Upper Peninsula is almost entirely second- and third-growth managed forest. Around the turn of the century “nearly the whole Upper Peninsula had been slicked off,” McElwee says. “The old-timers talk about patches that were flat for 50 miles in every direction. Now it is beautiful, dense forest again.” . . .

The current total is less than the estimated 950 million wooded acres [380 million ha] that existed in pre-colonial times, but it represents only a 23 per cent overall North American forest reduction from the arrival of Europeans to the present — hardly the drastic devastation depicted by environmental orthodoxy. Today, about a third of the United States land area is forested, versus about two per cent built up for cities, suburbs, roads, and all other concrete-footprint impositions of civilization. Many trees growing in the United States are not primal but are young trees replanted after logging. But why would nature care about that, so long as ample mature forests continue to exist? And they do, preserved in the 98 million acres [40 million ha] (about the size of California) of protected federal wilderness area, most of which is mature forest, and in millions of additional acres of state parks. New York, for example, is one-sixth protected state park, mostly mature forest. . .

A Moment on the Earth,
The Coming Age of Environmental Optimism,
Gregg Easterbrook,
Viking/Penguin USA, 1995

SHOULD OLD-GROWTH BE PRESERVED? (3)

The Questions for Canadians

The Canadian Forestry Association asked some thirty individuals and organizations to offer their definitions, descriptions and prescriptions for old-growth forests. While there is no one universally accepted and applicable definition of “old growth” across Canada, there is remarkable consistency in the responses. There is absolute consensus, for example, on the need to preserve in Canada representative areas of old-growth forests. The reasons are as diverse as old growth itself, and include such values as tourism, recreation, biodiversity, research, aesthetics, heritage, culture, rare and endangered species, medicinal benefits, spiritual values, carbon sinks, fisheries, and on and on.

The conflict arises in the determination of how much old growth to preserve. Media coverage of the summer of '93 in Clayoquot Sound illustrates the degree of polarization on this issue. Blockades, arrests, protests, threats of tree spiking, international lobbying, even the infamous storming of the BC Legislature, all underscore the volatility of the debate. Old-growth forests are worthy of the emotion. On the one hand they represent critical employment for families who have depended on the forest industry for several generations — they represent community stability until there are adequate supplies of second growth to harvest. On the other hand they are the highly visible and tangible evidence of increasingly scarce ecosystems, individual trees of great size and majesty, forests often older than Canada itself. . .

Foreword, Forestry on the Hill,
Special Report on Clearcutting,
Excerpts from Parliamentary Standing Committee on Natural Resources,
edited by the Canadian Forestry Association, 1994

Canadians want to ensure that there are old-growth forests for future generations. Heated conflicts have arisen recently over preservation of old growth, notably Sitka spruce forests in coastal British Columbia and Eastern White pine and Red pine forests in northern Ontario.

There is much disagreement over a definition for just what old growth is. Foresters think in terms of climax or late succession stages of forest development, while some of the public have used the term to mean any forest which has not been affected by human intervention. A simple and reasonable definition is forest ecosystems dominated by old trees. Most often we think of huge old trees like the Sitka spruce and Eastern White pine mentioned above, but the ancient yet small cliff-side Eastern White cedars of the Niagara Escarpment and the stunted spruce of Canada's Arctic would meet almost any definition of old growth too. Some agreement on definitions of old growth would clarify objectives and allow foresters to plan management of these objectives.

Some old-growth forests contain highly valued timber which may be included in plans for harvesting. When these forests are also important for values such as recreation, old growth dependent wildlife habitat, natural heritage and scientific study, foresters are faced with the

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challenge of balancing these values and finding the best mix of uses within the available range of locations and ages of different forest types. . .

Three main problems must be resolved before foresters can plan properly for the provision of old growth to meet public expectations:

1. The desired characteristics of old growth must be clearly defined;
2. An inventory of existing old growth and of younger stands must be completed and made available to all stakeholders;
3. Society must decide what proportion of forest land is to be maintained as old growth.

Old Growth in Canada's Forests,
Canadian Institute of Forestry,
in The Forestry Chronicle, December 1992

CANADA'S STRATEGY ON OLD-GROWTH FORESTS

Definitions of old growth range from forests with majestic trees, to wild forests, or ones that simply “look” natural. Characteristics of old-growth forests generally include large or old trees, dead trees either standing or fallen, and a variety of trees of different species, ages and heights.

Old-growth forests vary considerably. For example, a 1000-year-old western red cedar and a 120-year-old aspen may both be considered old-growth trees. This disparity makes it difficult to arrive at a widely accepted definition of old growth.

Old-growth forests are valued for their wildlife habitat, scenic beauty, biological quality, and recreational and spiritual opportunities, and as unique areas for ecological research. In addition, because 44 per cent of Canada's forests are mature or old, they form a fundamental component of Canada's timber supply.

Not all forests become old-growth forests. Most of Canada's forests are subject to regular natural disturbances from fire, insects and disease. As a result, they may never grow old.

It is important to sustain the values of old-growth forests for future generations. Representative old-growth forests may be designated as protected areas or, depending on their characteristics, they may be managed carefully to safeguard their old-growth qualities. An area of particular interest is the West Coast of Canada, where an absence of natural disturbances, such as fire, has resulted in large areas of old-growth forests.

Canada is protecting its old-growth forests by:

1. Defining old-growth forests
 - Canada is expanding its forest inventories to include characteristics of old-growth forests.
 - as part of its National Forests Strategy, Canada is developing working definitions of old growth for different regions as a first step in establishing conservation strategies.
2. Conserving old-growth forests
 - Canadian governments, in consultation with the public, are developing management strategies to conserve old-growth forests as an important natural heritage. For example, British Columbia has prepared a three-year action plan to protect unique old-growth forests and to develop new forestry practices that conserve old growth conditions. Strategies are also being developed in other provinces such as Ontario and Nova Scotia.

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- Canada has protected 11 per cent of its forests from harvesting. In addition, through the National Forest Strategy, the forest community is working toward establishing a network of protected areas, including old-growth forests, by the year 2000.

3. Managing old-growth forests

- In its network of model forests, Canada is testing new techniques for managing old-growth forests. The network comprises six million hectares — an area one and a half times the size of Denmark — in ten sites across Canada's major forest regions.

Forestry on the Hill,
Special Issue — Old-growth Forests
Special Report on Clearcutting,
Excerpts from Parliamentary Standing Committee on Natural Resources,
edited by the Canadian Forestry Association, 1994

PERSPECTIVES ON LOGGING PRACTICES (1)

Clearcutting Destroys Biodiversity

Clearcutting is the most efficient, the most ecologically damaging, and (in the short term) the most cost-effective method of converting trees to logs and forests to non-forest human uses such as pastureland, cropland, town sites, and tree plantations. . .

Technically, clearcutting means cutting every tree on the site and removing those trees considered to be merchantable to a mill. Other logging systems, lumped under the general category of partial cutting, cut and remove only selected trees and leave the rest standing. But in practical terms, many systems of partial cutting currently in use are simply variations on conventional clearcutting. . .

Understood mainly as a simple, efficient method of timber extraction, clearcutting has dominated human relationships with the forest in North America, beginning with the era of European settlement and accelerating with each new wave of technological development. This seemed to work fine as long as we had low levels of population, low levels of consumption, and low levels of pollution. If the timber industry fouled up one forest, there was always another . . .

We were wrong. As a result of this philosophy — our activities (we are now clearcutting more than 90 per cent of the land logged in much of the world), and our indifference to testimony of the forest itself — we are now facing serious and growing problems in forest ecosystems and in human economies. The decisions that we made in the past regarding timber are now affecting all forest uses: air, water, carbon storage, climate modification, wilderness, public recreation, tourism, fish, wildlife, and the long-term timber supply itself. The problem that transcends all of these is the exponential loss of biological diversity — the genetics, the species, the communities, and the landscapes that form the basis for life — for sustaining the Earth as we know it. As a result of clearcutting in the forest, this basis for life is now disappearing at a rate several thousand times average rates of natural extinction. . .

The dominant view that forest ecosystems can be made into “fiber factories” through application of “industrial forestry” and “scientific management” creates the illusion that we can force ecosystems to produce more timber through practices such as clearcutting, planting genetically improved seedlings, fertilizing these seedlings, and destroying any “undesirable” species that might compete with these seedlings for the light, water, and nutrients necessary to grow timber.

Clearcutting: Ecological and Economic Flaws,
by Herb Hammond,
Clearcut: The Tragedy of Industrial Forestry,
Sierra Club Books/Earth Island Press, 1993

PERSPECTIVES ON LOGGING PRACTICES (2)

Clearcutting is Appropriate for the Boreal Forest

The Boreal forest represents the major region. It is characterized by even-aged stands of relatively short-lived, shade-intolerant species. This region is dominated by jack pine and black spruce, which together represent 64 per cent of the working group, by area, on Ontario crown land. The Boreal forest and the species within it have developed in response to large-scale disturbances . . . Such as fire, wind and insects.

The increased use of modified clearcuts to meet other objectives, from protecting wildlife habitat and water quality to reducing the visual impact and disturbance, has become common practice. Techniques are being employed to achieve these ends, including leaving things like game corridors, limiting the block sizes and providing buffers and screens in highly travelled and riparian areas. One of the public's key concerns appears to be the impact clearcutting has, the perception that clearcut forests do not regenerate and that this practice reduces biological diversity. In fact, clearcutting is the best method in the Boreal forest for ensuring successful regeneration and maintaining diversity. . . in Ontario, 55 per cent of our harvested areas are renewed by natural methods, while the balance receive artificial treatments including planting and seeding. The planting stock and the seeds are carefully selected to ensure they are appropriate to the site. The site is then prepared to ensure successful renewal. . . the clearcutting silvicultural system — combining harvest, site preparation, renewal and tending activities to meet specific management objectives — is the most appropriate system for managing the Boreal forest species in Ontario.

Marie Rauter,
President of the Ontario Forest Industries Association,
in Forestry on the Hill,
Special Report on Clearcutting,
Excerpts from Parliamentary Standing Committee on Natural Resources,
edited by the Canadian Forestry Association, 1994

PERSPECTIVES ON LOGGING PRACTICES (3)

Clearcutting Should Be Site Specific

There are clearcuts that have regenerated well. It is a tribute to the resiliency of natural ecosystems to withstand substantial disturbances. It is not necessarily the best way in a blanket form. When you look at the level of clearcutting in this country it is about 95 per cent. It varies from province to province. In Newfoundland, it is mandated as the only way to cut. In most of Canada it is 90 per cent, 92 per cent, 95 per cent of everything that is cut. Given what you now understand about how site-specific, how different ecosystems are, it just cannot be a universal prescription for how we go about managing our forests. I do not think we can make blanket generalities that no clearcuts under any circumstances are ever justifiable, but that is the way they are being used now, as a blanket prescription, and that clearly has to be non-sustainable and ecologically degrading to these ecosystems.

Elizabeth May,
Executive Director, Sierra Club of Canada,
in Forestry on the Hill,
Special Issue — Old-growth Forests,
Special Report on Clearcutting,
Excerpts from Parliamentary Standing Committee on Natural Resources,
edited by the Canadian Forestry Association, 1994

PERSPECTIVES ON LOGGING PRACTICES (4)

Developing National Policies on Clearcutting

Clearcutting has become a sort of scapegoat or a symbol for all the criticisms levelled against the management of Canada's forest in general. It symbolizes over-cutting, the issue of protected areas and outdoor recreational areas, protection of wilderness, the problem of old-growth forests, the issues of regeneration and silviculture, the issues associated with jobs and the survival of rural communities. It is, therefore, clearly a high-profile public issue, not just in Canada, but also around the world.

Canada has gone from an administrative approach, under which governments universally applied legislation and regulations without necessarily taking into account the intrinsic characteristics and variability of the forests, to a forest management approach based more on the ecology of tree species and on the forest environment in general. It is in this context that we must deal with questions relating to clearcutting and other wood harvesting methods. As a number of witnesses pointed out, the worst mistake would be to attempt to ban clearcutting everywhere and replace it with various forms of partial cutting that are not necessarily appropriate to all types of forest found in Canada.

The Committee [Parliamentary Standing Committee on Natural Resources] notes that certain types of forests are not appropriate for clearcutting. These include areas where excessive heat, frost or a potential rise in the water table following clearcutting may lower the probability of successful regeneration: steep, geologically unstable areas; and areas where structural variability is considered an important component of wildlife habitat. On the other hand, the clearcutting silvicultural system is appropriate for most types of forest in Canada. This is the case, for example, for trembling aspen and lodgepole pine forests in Alberta, and indeed for a large part of the coniferous forest in Canada.

The Committee believes that, in an absolute sense, the fact that most of Canada's forests are even-aged should not preclude the examination of alternative harvesting options in such forests. Selection logging methods should be examined in cases where potential for significant ecological damage exists. On balance, however, the Committee concludes that clearcutting is an economically sound system that is used extensively and successfully throughout the world. The Committee stresses the necessity of using this system not only as a method of wood production and harvesting, but also as part of a comprehensive management of Canadian forests. . .

The fact that clearcutting often represents ecologically sound forestry does not imply that it should be used universally nor does it suggest that methods of clearcutting need not change. Indeed, the report identifies instances where the practice of clearcutting would be inappropriate. The Committee has also observed a definite trend towards smaller clearcuts and improved design. It concludes, however, that additional research needs to be undertaken to determine the effects of

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various harvesting approaches on such aspects of the forest as biodiversity, soil, water and wildlife habitat. Based on this research, the practice of clearcutting needs to be further refined in order to more closely mimic natural forest disturbances and to minimize associated ecological impacts. The development and more wide-spread use of sophisticated computer technology in the planning of harvest operations and silvicultural work could be of invaluable assistance in achieving this objective.

Many Canadians also equate clearcutting with overall forest management. Yet as the Committee heard repeatedly, clearcutting is simply a tool to be used within the broader context of a complete silvicultural system, which includes both the harvesting and regeneration aspects. It should not be singled out as the only issue to examine for evaluating Canada's performance in the management of its huge forest base. The report concludes that the challenge for Canada is to sustain both the timber and non-timber values of our forests over long periods of time.

Forestry on the Hill,
Special Report on Clearcutting,
Excerpts from Parliamentary Standing Committee on Natural Resources,
edited by the Canadian Forestry Association, 1994

IN SEARCH OF SUSTAINABLE FORESTRY (1)

New Forestry: a Revolution in Forest Management

. . . Another innovative approach to forest management is what its advocates are calling the new forestry. It asks for nothing less than a revolution in forest management, an approach that would champion ecosystems instead of fibre factories. According to its proponents, which include senior officials in the United States Forest Service, it would do far less damage to the environment, while at the same time allowing timber harvesting to continue at sustainable levels. It would accommodate the traditional needs of Native people, satisfy wilderness buffs and recreationists and cost less to maintain.

No more than two or three years old, new forestry has grown out of 20 years of studying the old-growth temperate rainforests on the United States West Coast. A handful of scientists now agree that the key to a healthy, productive forest lies in the complex biological relationships that enable the old forest to regenerate new life continuously. "The legacy of the old forest must pass on to the new forest," explains David Perry, a professor of ecosystem studies at Oregon State University and a leading proponent of new forestry. To do this, new logging methods must be devised to meet new goals. One is to protect the integrity of the soil, from which all life springs; another is to maintain the diversity of plant and animal life present in the original forest; and a third is to maintain genetic diversity within a single species of tree. Foresters of the future must try to preserve all visible and invisible components of the original forest, rather than eliminating them in favour of the commercial species. One of the most important organisms, for example, is the mycorrhizal fungus, an almost invisible plant that lives underground but is crucial for helping trees to gather nutrients and water and as a defence against root pathogens. "We lose some of these critical organisms," says Perry, "and we lose the trees."

Logging, then, must be done in ways that mimic the natural patterns of disturbance in a particular type of forest. Instead of clearing a site of all dead trees and woody debris, for instance, snags and fallen logs could be left behind to rot, providing organic matter, nutrients and wildlife habitat and increasing the water-holding capacity of the soil. The new theory does not repudiate clearcuts, but it would limit them to appropriate sites. A 200-square kilometre forest managed under such a system might leave intact 30 square kilometres each of old, mature and young forest. Of the remaining 110 square kilometres, one-third on fertile flat ground might be one continuous ragged-edged clear-cut with some standing green trees, another third, on hilly slopes, might be cut in narrow strips; the rest could be a mixture of selective harvesting, leaving small open sunny patches, ragged patches or checkerboard squares. After harvesting, that area would be closed to further development for perhaps 100 years to allow natural processes to take over.

By keeping large forest regions in a more or less natural state, new forestry would conserve wildlife, accommodate Native people and sustain a large forest industry. However, it would also mean an end to further industry expansion. "The expansionist mode is destroying the forest," says

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biologist Chris Maser, a leading proponent. “But if we redesign and scale down industry to match what the forest can produce, then — and only then — we can have an economically sustainable forest industry.”

Canada’s forest industry has not welcomed new forestry ideals. “I think it’s bunk,” says Stephen Smith, vice president of timberlands for Weyerhaeuser’s Saskatchewan Division. “It presumes that we have not learned anything over all these years about how to grow trees and that strip cuts are better. I think we are smarter than that. We see no evidence to support it, so why should we do it?”

Ecologists reply that the future looks poor for the industry without far-reaching change. “The question is, do you bite the bullet now and try to manage forests in what some of us see as a more ecologically sound way, or do you bite it later?” asks Perry. “Society has to make that decision. We have to drop back to a sustainable timber yield, or nature is going to drop us back there.”

Heartwood,
by Christie McLaren,
EQUINOX, September/October 1990

IN SEARCH OF SUSTAINABLE FORESTRY (2)

The Ecoforestry Approach

Ecoforestry is advanced by proponents of the deep-ecology movement, which holds that sustainability lies in recognizing the equal importance of all life forms and the need to value nature for its intrinsic worth.

The Principles of Ecoforestry

1. Retention must be the first consideration in any planned removal of trees from a stand. Emphasize what must be left to ensure the protection of such things as rare species, sites of Native cultural significance, riparian zones (that is, watercourses, lakeshore, etc.).
2. Leave riparian zones intact. No tree removal should take place in the most sensitive areas. Protect water quality by minimizing alterations to natural drainage patterns.
3. Maintain composition and structures to support fully functioning forests. Important forest structures such as large old trees, snags, and large fallen trees are maintained by letting a minimum of 20 to 30 per cent of over storey trees (well distributed spatially and by species) grow old and die in any timber extraction area.
4. Use the lowest impact removal methods possible. Avoid building roads and compacting forest soils as much as possible — all roads should be small-scale, contour, low-grade roads requiring a minimum of blasting.
5. Plan in terms of the needs of the larger watershed, even if the owner does not control or own the watershed. A watershed zone plan must designate areas where tree removal is not permitted and those where different levels and types of removal are possible.
6. Prohibit clearcutting as currently practiced and utilize ecologically appropriate partial cutting methods that maintain the canopy structure, age distribution and species mixtures found in healthy natural forests of a particular ecosystem type.
7. Select trees as candidates for removal by considering how abundant and redundant their structures and functions are to the rest of the forest as a whole, leaving potential wildlife trees (to become snags and large woody debris).
8. Allow the forest to regenerate trees through seeds from trees in the logged area. Tree planting will generally not be required because a diverse, fully functioning forest is always maintained, assuring natural regeneration.

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9. Maintain ecological succession to protect biological diversity. The process of brush control will be avoided. Over time, all forest phases must occupy every forest site, even on sites managed solely for timber.
10. Prohibit slash burning. Fire is an acceptable tool in landscapes that have a history of naturally occurring fires, but use with caution.
11. Prohibit pesticide use. Disease, insects and shrub/herb vegetation are essential parts of a fully functioning forest.
12. Maintain and restore topsoil quality by leaving sufficient large and small debris.
13. Maintain beauty and other natural esthetic qualities in the visual, sound, and odor landscapes.
14. Always look at the forest as a whole and how each part contributes to the needs and health of the whole in which it resides.
15. Rely as much as possible on local people and markets. Engage in full-cost accounting.
16. Remember that wisdom begins with recognizing our limitations and ignorance. When in doubt, don't!

Ecoforestry,
Alan R. Drengson and Duncan M. Taylor, eds.,
NEW SOCIETY PUBLISHERS, 1997
Gabriola Island, British Columbia

IN SEARCH OF SUSTAINABLE FORESTRY (3)

The Ecoforestry Approach

SUMMARIZING DIFFERENT PERSPECTIVES	
Industrial Forestry	Ecoforestry
1. Trees are seen as products	1. Forests are ecological communities
2. Short-term production goals	2. Long-term sustainability
3. Agricultural production model	3. Forest ecosystem model
4. Trees are the only cash crop	4. Diverse forest products and services
5. Trees' survival is dependent on humans	5. Self-sustaining, self-maintaining, self-renewing
6. Chemicals	6. No chemicals
7. Clear-cuts	7. Harvesting surplus wood, selective removal
8. Same age stands of trees	8. All ages of trees
9. Mono-culture of single or few species	9. All species of trees
10. Simplified ecosystem	10. Natural biodiversity and complexity
11. Capital-intensive and corporate-based	11. Labour-intensive and locally based
12. Redesigning nature	12. Accepting nature's design
13. Life-span, 60-100 years	13. Life-span, millennia
14. Loss of the sacred	14. Sense of the sacred and mysterious
15. Older traditions, aboriginal knowledge outdated	15. Older traditions and aboriginal knowledge are sources of wisdom

FOREST ECOSYSTEM MANAGEMENT

Measuring the Health of Forests

Traditionally, our view of wildlife focussed only on a few animals: big game and fur-bearing mammals, sport fish, migratory birds and some endangered species. Today, the term has come to mean all wild life. This change in perspective is a result of the growing recognition of the importance of biodiversity — the total variety of living things on Earth.

Maintaining diversity in our natural systems helps ensure that the planet's ecological systems are strong and healthy enough to withstand the stresses and changes from human intervention and nature. Consequently, conserving biodiversity has become an important objective for forest and wildlife managers. A new approach to managing forests — ecosystem management — is emerging, one that aims to sustain all species, as well as the relationships among them, and the environmental systems upon which they depend.

This new attitude has important implications for how we manage forests, because two-thirds of Canada's estimated 300 000 species require a forest habitat, including 60 per cent of birds and 76 per cent of mammals. Furthermore, new species continue to be discovered: in recent years, scientists working in British Columbia's Carmanah Valley have identified more than 60 new insect species in the canopies of coastal old-growth forests.

In addition to its ecological importance, a diversity of forest wildlife provides Canadians with a wealth of economic and social benefits. Canada's early development was driven by the fur trade, which relied on forest-dwelling mammals such as beaver, marten, fox, mink and raccoon. Wildlife continues to be important to local economies. In 1991, Canadians spent more than five billion dollars participating in wildlife-related activities, including hunting, fishing, hiking, canoeing, nature photography, and guiding and outfitting.

Although it is difficult to put a price on educational, aesthetic, cultural and spiritual values, these intangibles are becoming increasingly important factors in decisions regarding forest management. Some Canadians living in urban centres may never see much of Canada's wildlife, but value forest species and want wilderness areas preserved for future generations.

Conserving the natural diversity of forest species preserves the potential to discover and develop new products for medicine, biotechnology, forestry and agriculture.

When timber production was the primary goal of forest managers, a "healthy" forest was thought to be one that was free of insects and disease, protected from fire, and well-stocked with commercial tree species. With the growing recognition of the importance of forests as natural ecosystems, a new view is emerging. Today, forest managers increasingly believe a healthy forest is one that maintains its natural processes (ability to recycle nutrients), its productive

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capacity (ability to support life), and its natural resiliency (ability to recover from, and adapt to, environmental stresses such as fire).

For example, many species in the boreal forest have adapted their life cycles to periodic natural disturbances such as fire. Jack pine depends on recurrent fires to open its cones and shed its seeds, and to create soil conditions that favour seedling growth. Similarly, large stumps of fire-killed spruce and poplar are important to many birds that nest in the boreal forest, such as the yellow-shafted flicker and bufflehead.

A healthy forest also depends on the complex relationships between tree species and other organisms. For example, soil fungi that are spread by small mammals, such as the California red-backed vole, enable the roots of young Douglas-fir seedlings to absorb essential nutrients from the soil. In general, there is still much to learn regarding these and other interrelated roles of organisms in maintaining ecological processes.

Knowing why an area is rich in species and what natural factors contribute to this richness helps scientists predict how a species will be affected by human activities. For example, in the flood plains of western Canada, stands of black cottonwood are naturally diverse, productive ecosystems because the soil in these regions is inundated periodically with nutrient-rich water. Changing the flow of the river would affect the species richness of these ecosystems by altering their nutrient dynamics and lowering their productivity.

The State of Canada's Forests: A Balancing Act,
Natural Resources, Canada, 1994

THE CANADIAN CRITERIA FOR SUSTAINABLE FOREST MANAGEMENT

Forests are a major consideration in global discussions on sustainable development. Because Canada accounts for ten per cent of the world's forest land and almost 20 per cent of global trade in forest products, our decisions and actions with regard to sustainability can have a major impact on global economic, social and environmental systems.

In 1993, the Canadian Council of Forest Ministers (CCFM) embarked on an initiative to define, measure and report on the forest values Canadians want to sustain and enhance. With the support of technical and scientific advisors, the CCFM consulted extensively with officials and scientists from the federal, provincial and territorial governments, as well as the experts from the academic community, industry, non-governmental organizations, the Aboriginal community and various other interest groups.

The results were reflected in *Defining Sustainable Forest Management: A Canadian Approach to Criteria and Indicators*, which was published in March 1995. The development of these criteria and indicators (C&I) is an important step in meeting Canada's domestic commitments on sustainable forest management.

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The C&I are intended to provide a common understanding and scientific definition of sustainable forest management in Canada. Together they serve as a framework for describing and measuring the state of our forests, forest management practices, values and progress toward sustainability. This information and data are needed to shape forest management policies and to focus research on areas where we need to improve our technology and knowledge. The C&I framework reflects an approach to forest management which is based on the recognition that forests are ecosystems that provide a wide range of environmental, economic and social benefits to Canadians and that sustainable forest management demands an informed and participatory public, as well as the best available information and knowledge.

The six sustainable management criteria that have been identified include traditional concepts, such as timber values, but go beyond economics to encompass — among others — environmental, social and Aboriginal values. Each criteria is subdivided into elements, and from those elements, 83 indicators have been established to help track the nation's progress in achieving sustainable development and balancing environmental, economic and social objectives. No single criterion or indicator is a measure of sustainability on its own, but together they can highlight trends or changes in the status of forests and forest management over time.

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This first C&I report describes our present ability to measure the forest values that Canadians want to sustain and enhance. Generally speaking, the most current data available describe

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traditional timber management. This is because values such as forest type and age, and the incidence of natural and human disturbances have been measured and monitored for many years. Economic factors, such as employment trends in the forest sector and the value of timber exports, can be reported at a national level. Some indicators, such as the carbon budget, which is measured through computer models, also can be reported on nationally.

In other areas, national and quantitative data do not exist. Currently, efforts are underway to determine means of addressing the lack of information on such topics as biodiversity at the genetic level and measures of soil and water quality. There are also gaps in data for some socioeconomic indicators. Canada is presently unable to provide national economic analyses of non-timber values, such as the recreational, subsistence and Aboriginal use of forests, nor can we fully report on the in-depth public involvement at various levels in planning and monitoring forest practices. Qualitative descriptions or case studies are used to provide some level of understanding of the status of indicators that lack data.

There has been a great deal of progress in developing measures of Canada's achievements in sustainable forest management, but more work remains to be done. Future CCFM efforts will focus on maintaining and expanding current databases, developing methodologies to collect data for such areas as the social elements of sustainability, and improving our understanding of forest ecosystems. The framework will be updated to include only those indicators that provide a comprehensive picture of the sustainability of our forests and can be reported on nationally

CRITERIA AND INDICATORS OF SUSTAINABLE FOREST MANAGEMENT THE CANADIAN APPROACH

Canada . . . will develop a system of national indicators to measure and report regularly on progress in achieving sustainable forest management.

Conservation of Biological Diversity	Ecosystem Condition and Productivity	Soil and Water Conservation	Global Ecological Cycles	Multiple Benefits	Society's Responsibility
Ecosystem Diversity	Disturbance and Stress	Physical Environmental Factors	Global Carbon Budget	Productive Capacity	Aboriginal and Treaty Rights
Species Diversity	Ecosystem Resilience	Policy and Protection Forest Factors	Forest Land Conversion	Competitiveness	Participation by Aboriginal Communities
Genetic Diversity	Extant Biomass		Carbon Dioxide Conservation	Contribution to Economy	Sustainability of Forest Communities
			Policy Factors	Non-timber Values	Fair and Effective Decision-making
			Hydrological Cycles		Informed Decision-making

THE MODEL FOREST NETWORK

Picture the following: a local paper mill employs several hundred residents and needs to harvest part of the forest to stay in operation. However, a recreation association also wants to use the forest for mountain biking and skiing. As well, a group of naturalists would like to see part of the forest left untouched, and a fish and game club is concerned about potential damage to fish spawning beds. First Nations people have traditionally used the area for hunting and trapping. Finally, a university is interested in studying the plants and animals to ensure none are in danger of extinction.

The task of forest managers is to try to accommodate all these interests and, at the same time, ensure the economic well-being of the forest-dependent community.

The Model Forest Network is an initiative in building partnerships locally, nationally, and internationally to generate new ideas and on-the-ground solutions to sustainable forest management issues. Originally a Canadian initiative, the network has expanded to include Russia, Mexico, Malaysia and the United States with more than 25 other countries expressing interest in getting involved. Currently, there are 18 model forests: ten in Canada, three in Mexico, one each in Russia and Malaysia, and three in the United States.

A common feature of each model forest is the building of a working partnership among individuals and organizations who have an interest in sustainable forest management in the area. Each model forest commits itself to a set of objectives that reflect the environmental, socio-economic, cultural, and political context of its area. This partnership then tries to develop solutions to the local forest management issues in the short term and strategic plans for sustainable forest management in the long term.

The differing activities and philosophies of each model forest clearly illustrate the diversity and complexity of global forest systems and management issues. Each has specific objectives

relating to the conservation of biodiversity, cross-cultural awareness, economic diversification, public education, and agricultural improvement, to name but a few issues.

The 18 model forests in the Network are following different paths in their search for effective decision-making structures that will lead to sustainable forest management. In all cases, the enthusiasm and innovative spirit that emerge are a far more powerful force than of groups working against each other or independently for single objectives.

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MODEL FOREST NETWORK

Canadian Model Forest Program	International Model Forest Program
- Western Newfoundland	Malaysian Model Forest Program
- Fundy	- Bentong
- Lower St. Lawrence	Mexican Model Forest Program
- Eastern Ontario	- Calakmul
- Lake Abitibi	- Mariposa Monarca
- Manitoba	- Chihuahua
- Prince Albert	Russian Model Forest System
- Foothills	- Gassinski
- McGregor	United States Model Forest Program
- Long Beach	- Applegate
	- Cispus
	- Hayfork

SETTING THE STANDARDS FOR FOREST MANAGEMENT IN CANADA

In early 1994, the Canadian forest industry formed a coalition and asked the Canadian Standards Association (CSA) to develop a sustainable forest management (SFM) certification program. (The CSA is the pre-eminent standards-writing body in Canada, having developed standards and certification programs for over 75 years in more than 35 technology fields.) The CSA agreed to the task of developing standards for sustainable forest management through a multi-stakeholder technical committee with representatives from the “forest industry, governments, academics, scientists, technical experts, and non-governmental, environmental and Aboriginal organizations” . . .

The CSA approach was to develop standards to certify a “system” rather than a product, that is, to certify that the forest management system used by a forest company has met the CSA SFM standards. Once the standards have been met, certification would be used to assure consumers that the wood used to manufacture the goods they buy is derived from forest operations managed in an environmentally sound and sustainable way.

In establishing goals and indicators of sustainable forest management, the CSA SFM system has adopted the CCFM criteria and indicators as a starting point for developing a “value set” at a local or forest management unit level. The six Canadian criteria must be followed in the CSA system, with some flexibility for developing indicators at the local level through public participation. . .

On January 9th, 1996, a Canadian Working Group of the Forest Stewardship Council (FSC) was formed . . . to develop regional standards based on ecosystem types. The Committee will concentrate on standards for the Boreal forest, Canada’s largest ecosystem, based on established FSC principles, including:

1. forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC principles and criteria;
2. long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established;
3. the legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected;
4. forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities;

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5. forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits;
6. forest management shall conserve biological diversity and its associated values, water, resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest;
7. a management plan — appropriate to the scale and intensity of the operations — shall be written, implemented, and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated;
8. monitoring shall be conducted — appropriate to the scale and intensity of forest management — to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts;
9. primary [natural] forests, well-developed secondary forests and sites of major environmental, social or cultural significance shall be conserved. Such areas shall not be replaced by tree plantations or other land uses.

While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests. The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

SUSTAINABLE FOREST MANAGEMENT

Strategies Across Canada

Public concern over the environment in general and forest management in particular has for many years led to questions regarding the sustainability of Canada's forests. Governments are responding to these concerns by enacting more stringent legislation relating to forest management activities.

In February 1997, Newfoundland released a draft forest development plan for the province. The new 20-year plan shifts the emphasis from managing the forest as a timber resource to managing it as an ecosystem. The plan also outlines a number of strategies to combat the short-to-mid-term wood supply deficit.

Prince Edward Island established the Round Table on Resource Land-use and Stewardship to conduct public hearings, to examine and make recommendations regarding the sustainable development of Crown and private forests, and to explore farm practices, erosion, pesticide use and other factors that affect the island, its people and its natural resources. The Forest Partnership Council, which comprises groups representing woodlot owners, saw millers and harvest contractors, as well as the PEI government, developed a code of practice for harvest contractors.

In February 1997, Ontario initiated a revised land-use planning system, Lands for Life, to address the demands of various users on provincial Crown land. Regional Round Tables will consult users and develop recommendations (including land-use allocations) to meet objectives related to resources-based tourism, forest management, and parks and protected areas.

In June 1996, Saskatchewan passed the Forest Resources Management Act, which replaces the 30-year-old Forest Act. The new Act is helping the province ensure that forest development is consistent with long-term environmental sustainability. For example, all large forest companies are now required to complete an environmental impact statement regarding the effect of their long-term forest operations, and every person licensed to harvest is required to pay a fee toward forest renewal. In 1996, Saskatchewan recorded its most successful fire suppression season in ten years — 428 fires burned only approximately 14 000 hectares of forest land. Its success is attributed to a major reorganization of the province's fire management program, combined with timely rainfall over much of the northern provincial forest.

The second annual report of the Alberta Forest Products Association's (AFPA) FORESTCARE Program, entitled Continual Improvement, was released in May 1997. The report highlights the efforts of the AFPA's members to improve their performance in three main areas: the forest, community and environment. The Program includes annual self-assessments and formal independent audits conducted every three years by a team of professionals and an observer from the local community. By September 1997, the Program had completed 39 independent audits of AFPA members at various locations across Alberta.

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In December 1996, British Columbia completed its first legislated, province-wide review of harvest levels. As a result of the Timber Supply Review, the total allowable annual cut (AAC) for the province was decreased by 0.5 per cent. In August 1997, BC released its second annual report of compliance and enforcement statistics for the Forest Practices Code. The report showed that the industry achieved a compliance rate of approximately 94 per cent in more than 34 000 inspections of forest operations. Roughly 28 000 industry employees and contractors underwent extensive training on the Code in 1996 and are credited for the high rate of compliance.

In January 1997, the Yukon Territory and 14 First Nations signed an umbrella agreement that serves as a template for land claims agreements. Four of the First Nations have since signed land claims treaties, giving them responsibility for oil and gas, forests, minerals, water and lands. A broad deadline of April 1999 was set for the transfer of these responsibilities from the federal government to all 14 First Nations, with completion by 2000.

In October 1996, Canada became the first country to adopt voluntary national standards for sustainable forest management. The CAN/CSA-Z808-96 and CAN/CSA-Z808-96 Standards for Sustainable Forest Management are modeled after the ISO 14001/4 environmental management system. They are intended to assure the public that the timber harvested by Canadian companies comes from well-managed forests. Requirements under the new standards include broad public consultation, development of local forest management objectives, compliance with sustainable forest management criteria, and third-party audits of management systems and forest operations.

The State of Canada's Forests: Learning from History,
Canadian Forest Service, Natural Resources Canada, 1996-97

INTEGRATING ABORIGINAL KNOWLEDGE

Forest Management at Clayoquot Sound

The Nee-Chah-Nulth nations have lived for thousands of years on the west coast of Vancouver Island in the Clayoquot Sound region. The area, which contains large stands of old-growth forests, has been the scene of numerous anti-logging demonstrations, particularly in the early 1990s.

In 1993, the Government of British Columbia announced its Clayoquot Sound land-use decision: although harvesting in the area would continue, logging practices would be tightly regulated and would reflect the highest standards for sustainable forest practices. To this end, the Government established a scientific panel whose mandate was to develop world-class standards for sustainable forest management. The panel included scientific experts, Nee-Chah-Nulth elders and experts in their traditional ecological knowledge. . .

To integrate Nee-Chah-Nulth knowledge and scientific knowledge related to sustainable forest management, the panel worked on two fronts. The decision-making process had to be acceptable Aboriginal as well as non-Aboriginal panel members, and the actual technical standards had to reflect Aboriginals' ecological knowledge as well as scientific knowledge. . .

The panel recognized that decisions based on ecosystem management principles should be the responsibility of those most closely affected by the decisions made. The panel also recognized that Nee-Chah-Nulth traditions regarding decision-making were relevant to forest management planning. . .

Considerable progress still needs to be made, but a dramatic change has already been achieved in the way forest management is carried out in Clayoquot Sound. In the past, forest management plans were prepared by forest companies and laid out for the Nee-Chah-Nulth nations to examine. Today, each First Nation has qualified people involved on the technical side who are able to assess and explain these plans to their communities. The central region board also ensures that the plans meet the approval of the Nee-Chah-Nulth at a regional level.

The activities of the past few years in Clayoquot Sound have begun to create a shift in forest management from "maximum allowable cut" toward "health of the forest". It is recognized that such a change in perspective will take considerable time to implement fully.