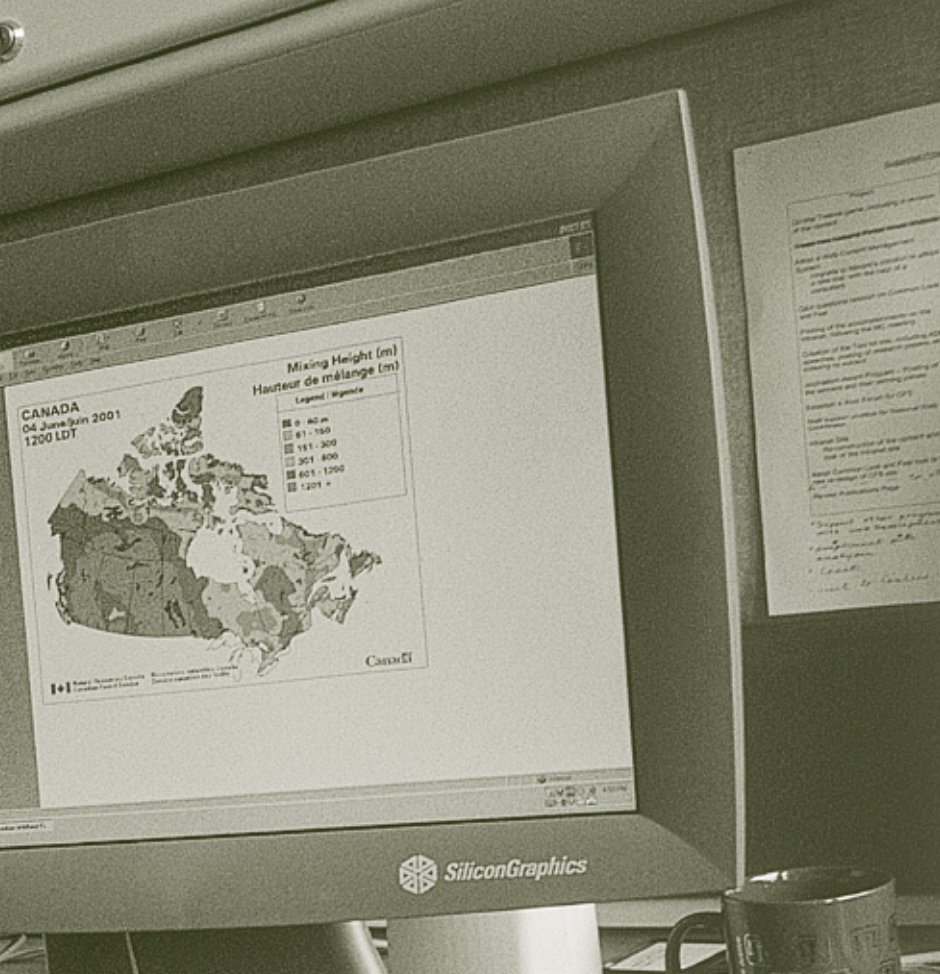


Government on line: An ecologist at Natural Resources Canada checks national fire information on the Fire M3 Internet site.



Special Articles

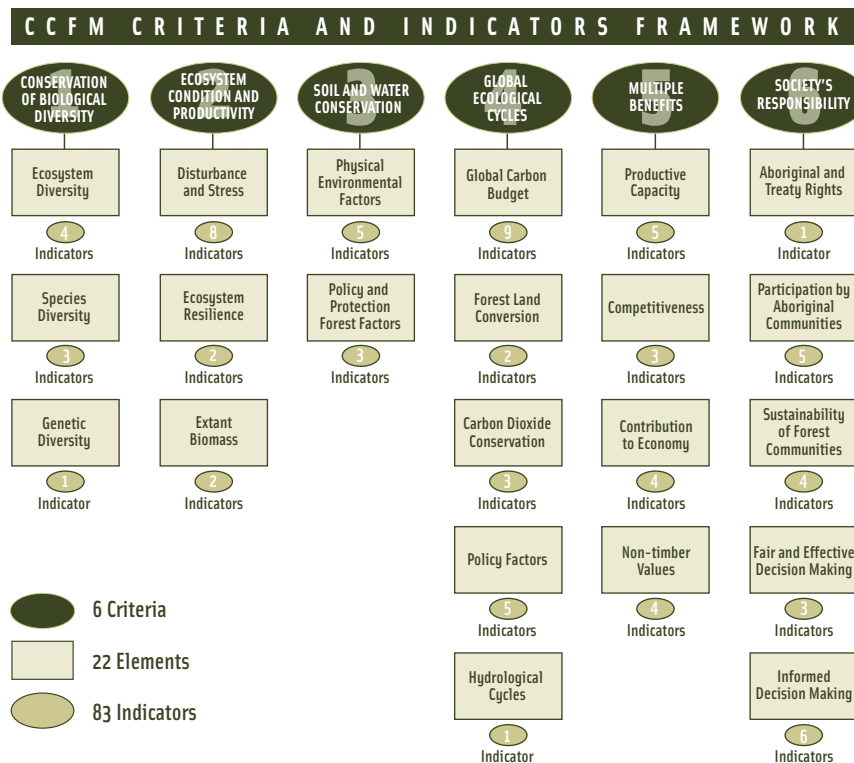


Criteria & Indicators of Sustainable Forest Management:

National Status 2000

Canada's efforts to report on progress in the sustainable management of forests began in earnest in 1995 with the release of a national framework of criteria and indicators (C&I) by the Canadian Council of Forest Ministers (CCFM). In 2000, the CCFM released its *National Status 2000* report, which represents Canada's first attempt to document progress on the sustainability of its forests by reporting on 62 of the 83 indicators in Canada's

national C&I framework. The selection of these indicators was based on the availability of information, on retaining those consistent with international C&I processes, and on indicators fully applicable at the national level.



National Status 2000 draws upon the best available information based on the best research and expertise available to establish, where possible, baselines from which progress can be measured for future reporting. In compiling this and previous reports on C&I, it became apparent that key, relevant data and information holdings are dispersed in a variety of formats throughout multiple agencies and institutions and that C&I reporting could be greatly improved with the establishment of a national mechanism to access the most accurate and up-to-date information. Fostering collaboration between the various data gatherers, information custodians and user groups is critical to improving the nation's ability to report on the sustainability of its natural resources.

The CCFM C&I framework is composed of six criteria representing forest resource values that Canadians have identified as wanting to enhance and sustain.

National Status 2000 highlights for each criterion include:

Conservation of biological diversity

The conservation of biodiversity ensures that forest ecosystems continue to be productive and to adapt to changing conditions. Since 1992, significant progress has been made toward the completion of a network of conservation areas representative of the diversity of Canada's forests. To ensure continued progress in conserving biodiversity, the federal, provincial and territorial governments, together with their partners, have reaffirmed their commitment, through Canada's National Forest Strategy (1998-2003), to completing a network of representative areas and to establishing inventories, plans, guidelines and monitoring programs for maintaining the network.



Maintenance and enhancement of forest ecosystem condition and productivity

The incidence of ecosystem disturbance and stress, the ability of the ecosystem to recover from those stresses, and biomass production are all indicators of forest ecosystem condition and productivity. These indicators provide the basis for improved decision making in managing forests as a renewable resource. *National Status 2000* reports that knowledge regarding the impact of stressors such as pollutants and other human-induced disturbances on forest ecosystem condition and productivity is improving. For example, sophisticated fire information



systems have improved Canada's ability to predict, monitor and fight forest fires. The report also explains how better understanding the frequency and severity of such disturbances can enable better assessments of how well ecosystems will recover from such disturbances.

Conservation of soil and water resources

Sustainable forest management acknowledges the critical role of forest ecosystems in regulating the flow of water and in preserving water quality and quantity for all living creatures. *National Status 2000* discusses the guidelines and management objectives in place in Canada for the protection of soil and water resources in forest ecosystems. The report also reveals that, while it is difficult to provide quantitative indicators of this value, in general, guidelines to protect streams, riparian zones, steep slopes and other sensitive forest sites have been significantly increased and enhanced in recent years for both public and private lands across Canada.



Forest ecosystem contributions to global ecological cycles

Understanding the role forests play in global ecological cycles, such as those responsible for recycling the Earth's limited supplies of water, carbon, nitrogen and other life-sustaining elements, is essential for the development of sustainable forestry practices. By modelling carbon budgets, Canada is able to track the effects of forest disturbances on global carbon cycles. In the past, Canada's forests have acted like a carbon sink—removing more carbon from the atmosphere than they contribute. Since the 1980s, Canada's forests have started to release more carbon into the atmosphere than they absorb, possibly due to fire, insect infestations, harvesting and climate change. Whether Canada's forests will be sinks or sources of atmospheric carbon into the future has yet to be clarified. Canada's forest sector has made significant gains in reducing its use of fossil fuels and, as a result, carbon dioxide emissions have not increased despite significant increases in energy use and production.



Multiple benefits to society

Forests provide a multitude of benefits to society. Sustainable development requires that Canada's forests maintain their ability to provide this array of



benefits for future generations, including non-market goods, environmental functions and preservation values. The increasing value that is being placed on the non-timber attributes continues to challenge policy makers and forest managers in their quest to ensure a sustained optimal mix of forest benefits for society now and in the future. Examples of indicators of multiple benefits that are presented in *National Status 2000* include labour productivity in the forest sector, which has increased significantly over the last two decades, and expenditures on nature-based activities (Canadians spent over \$11 billion on nature-based activities in 1996). The report also notes that the number of visits to Canada's parks increased almost 14 percent between 1990 and 1996.

Accepting society's responsibility for sustainable development

Sustainable development extends beyond trees and encompasses the people in forest communities. It is important that society's values are incorporated into management processes and that members of society are engaged effectively to ensure that forest resources are managed in a manner that is in the best interests of present and future generations. *National Status 2000* provides evidence that governments and industry have increased public involvement in forest planning and management processes, and that the unique needs of particular cultures and communities are being recognized.



Future reporting

National Status 2000 provides valuable information relating to the sustainability of Canada's forests, but measuring the sustainability of forests is accepted as a long-term and progressive exercise. The challenges which lie ahead for evaluating progress toward sustainability include linking the indicators of various criteria to achieve an overall assessment of Canada's progress and defining indicator benchmarks.



Recognizing that sustainable forest management is an adaptive process and that assessing sustainability is a continuous activity, the CCFM will be undertaking a review of the 83 indicators in the 1995 framework. This review is expected to improve the relevance and efficiency of the indicators for reporting and assessing progress toward sustainable development.

National Status 2000 is available at <http://www.ccfm.org>

Climate Change

Discussions

Since the Kyoto Protocol was adopted in late 1997, international negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) on detailed rules for implementation of the Protocol have been ongoing. The Protocol includes a requirement that industrialized countries account for carbon sinks and sources resulting from planting new forests (afforestation and reforestation) and permanent removal of forest (deforestation) in meeting their greenhouse gas emission reduction targets. It also includes a provision for further negotiation including credits for other land use, land-use change and forestry activities to add to the accounting. Issues related to these three topics have been one major focus of negotiations during the past year.

In 1998 the countries involved in the UNFCCC had asked the Intergovernmental Panel on Climate Change (IPCC) for advice on definitions, how to calculate credits and debits and other related issues that needed to be considered in elaborating the Protocol rules for carbon sinks. In May 2000, the IPCC released its resulting *Special Report on Land Use, Land-Use Change, and Forestry*. Canadian scientists played an important role in the development of the Special Report, which examines the scientific and technical state of understanding on carbon sequestration activities relevant to the Kyoto Protocol.

Canadian scientists have also been helping in the preparation of the IPCC *Third Assessment Report*. When finalized, the *Third Assessment Report* will be a comprehensive and up-to-date assessment of the policy-relevant scientific, technical, and socio-economic dimensions of climate change. It will concentrate on new findings since 1995, pay greater attention to the regional (in addition to the global) scale, and include non-English literature to the extent possible. The *Third Assessment Report* will be released in the fall of 2001.

During the past year, Canada has prepared two detailed submissions to the UNFCCC on its views on issues related to forests in the Protocol. In its August 2000 submission on land use, land-use change, and forestry, Canada outlined proposals for consensus definitions, carbon accounting rules and inclusion of

forest and agricultural land management in the Protocol accounting. In March 2001, Canada made a submission summarizing its views on accounting methods for dealing with harvested wood products. *(Both these submissions, along with submissions from other countries, are available at <http://www.unfccc.de>).*

Countries had decided that they would try to reach agreement on these issues at the Sixth Conference of Parties (COP6) to the UNFCCC in The Hague in November 2000. At that meeting consensus could not be reached on all issues and negotiations were suspended. COP6 negotiations continued in Germany in July 2001, where Canada was successful in obtaining recognition for forest and agricultural land management in the Protocol accounting. Technical discussion will continue in Morocco in the fall of 2001 at COP7, and at other international meetings. Repeated statements made by the United States since March 2001 that it does not support the Kyoto Protocol because it would harm the US economy have added another level of complexity to the process.

Under the Kyoto Protocol, Canada agreed to reduce its greenhouse gas emissions to six percent below 1990 levels by 2008-2012. Population and economic growth by then will have caused our emissions to grow significantly. In order to meet our six percent reduction objective, greenhouse gas emissions will need to be reduced by about 26 percent from currently projected 2008-2012 levels. In October 2000, Canada's federal government released its *Action Plan 2000 on Climate Change*, as a first major step toward achieving this goal.

Action Plan 2000 provides \$500 million over five years for various measures in key sectors, including the forest sector (other sectors include energy, transportation, industry, agriculture, waste management and technology). Once implemented, the federal government estimates the measures will reduce Canada's greenhouse gas emissions by an estimated 65 megatonnes annually during the 2008-2012 commitment period, or one-third of our Kyoto Protocol objective. This federal contribution to the federal-provincial First National Business Climate Change Plan is in addition to the previous federal investment outlined in the February 2000 Budget, in which \$600 million was committed over five years toward increased action on climate change.

The forest component of Action Plan 2000 includes a three-year preparatory measure: the Feasibility Assessment of Afforestation for Carbon Sequestration, which focuses on assessing, planning, designing and evaluating the feasibility of a large-scale afforestation program in Canada. As a means to assess the design, mechanics and feasibility of such a program, afforestation pilots/trials will be identified across the range of suitable lands in Canada.

Forest 2020: A Budding Dialogue in Canada

Across Canada, there are growing societal demands for land use decisions to place a greater emphasis on recreation, resource protection and species at risk. If, as a nation, we are to dedicate larger areas to protection, resource conservation, and integrated use, while guarding Canada's position as a leading exporter of wood products, and ensuring community stability, a newer, more balanced approach to responding to these demands is needed.

As a key engine of the national economy it is essential that Canada's forest sector consider the realities of the global forest products marketplace in order to remain competitive. Canada, as a forest nation, is also committed to contributing to global conservation efforts and to demonstrating environmental stewardship.

At first glance, it may appear contradictory that the forest sector needs to find ways to produce more wood while at the same time undertaking forest conservation efforts. The Canadian Council of Forest Ministers (CCFM), however, is committed to ensuring Canada approaches these two apparently contradictory challenges from the perspective of harmonization.

The CCFM is currently undertaking a dialogue with Canadians to seek their views on a new approach for the sustainable development of the forest sector. The new concept under discussion has become known as Forest 2020.

The demand for wood

Wood products are sometimes viewed as one of the staples of human life, but their role in the global economy is also important. It has been estimated that total global annual industrial fibre production reached 1.5 billion cubic metres at the end of the millennium. Wood production has risen by 50 percent since 1960 and is expected to rise between 20 and 50 percent by 2020. These increases in wood fibre production will be required to meet the needs of the ever-increasing world population, which is expected to reach 10 billion by 2050. Although nearly 50 percent of annual global wood harvest is for fuelwood for use within developing countries, continued development at the global level is also influencing the consumption of forest products.

Where will this wood come from?

With the global demand for wood expected to continue to increase for the foreseeable future, it is reasonable to ask: where will this wood come from and what are the possible environmental impacts on the resource and its associated values of increased fibre extraction?

The world's total forest area is estimated to be 3.5 billion hectares, which represents 27 percent of the Earth's total land area. Less than half of this forest area is currently available for fibre production. The remaining forest areas are not economical to harvest due to factors such as prevailing market conditions, or are protected by legislation. Industrial wood production is also currently concentrated in particular regions—North America, Europe and Asia.



Until recently, much of the world's wood has come from natural, relatively undisturbed forests (also called primary forests). But according to the United Nations' Food and Agriculture Organization (FAO): "Timber harvesting is gradually shifting from forests undisturbed by humans to semi natural (second-growth) forests (where human disturbance is evident), plantations and trees outside forests". The shift has already occurred in Europe, which now has mostly semi-natural forests. The FAO also reports that the area of semi-natural forests, forest plantations, and forest fallows on agricultural land is increasing worldwide.

Plantation forestry has surged in popularity over the past 20 years and now provides substantial amounts of wood in some countries. The FAO estimates that there are approximately 125 million hectares of forest plantations worldwide, which represents 3.6 percent of the world's forest resources, supplying 22 percent of the industrial roundwood and five percent of the fuelwood consumed globally.

A Canadian discussion

Throughout the Forest 2020 dialogue, several issues will be examined to ensure balanced stewardship of the forest resource. For example, there are discussions regarding possible approaches for the intensive management of some forest areas for the primary purpose of timber production, the management of other areas of the natural forest specifically for multiple benefits, and possible ways and means of increasing the conservation value of the forest. Plantation forestry, or tree farming, could be one other possible approach to diminishing the pressure on Canada's natural forests while at the same time competitively meeting the predicted increases in the global demand for wood by providing Canada with a new source of wood fibre.

Intensive forestry is considered a core element of any potential Canadian strategy—including one that might be developed through the Forest 2020 concept—for increasing the supply of wood fibre needed in order for the sector to remain competitive. Plantation forestry, or tree farming using high yield tree species, is often an element of an intensive forestry regime and is a practice being used by an increasing number of countries for producing more wood on smaller land bases while at the same time addressing matters relating to the conservation of natural forests. The FAO estimates that, given the high fibre yields of plantations, plantations could theoretically provide the total world demand for fibre from only five percent of the current global forest landbase.



In the late 1960s and early 1970s, provincial governments and industry in Canada began investing in ways to produce trees more quickly and from smaller land bases closer to wood processing centres. This research has continued, encouraged by issues such as the use of wood as an alternate fuel and the use of forest plantations as one possible means of combating global warming (trees remove carbon from the atmosphere).

To this day, however, there is no large-scale industrial use of fast-growing trees in plantations in Canada. The reason for this is not, as many assume, that a tropical climate is required to be competitive in tree farming. Climate is only one of many factors. Canada has other competitive advantages, such as its sophisticated forest and agricultural sectors, its extensive land base, its ample water resources, a highly trained workforce, and a comprehensive research capability. Canada's success in tree farming is expected to be achieved through innovation and the application of current knowledge.

Intensive forest management, including tree farms, merged with parks and conservation areas, and an integrated landscape approach to natural forest use could offer a solution to the balance being sought. Federal, provincial and territorial governments are working together to develop these ideas, and the dialogue with Canadians is continuing.

Additional information on Forest 2020 is available at <http://www.ccfm.org/forest2020>

Forest Management Practices in Canada as an International Trade Issue

Beginning in 1998, the then House of Commons Standing Committee on Natural Resources and Government Operations undertook to study the issues at stake in connection with the forestry practices used in Canada, particularly in mid-coastal British Columbia, within the context of the international export of Canadian forest products. The Standing Committee tabled an interim report on its findings in June 1999, in which it made two recommendations and expressed its intention to broaden its study to other forest regions of Canada.

The Standing Committee tabled its final report on Forest Management Practices in Canada as an International Trade Issue in June 2000, in which it made 10 recommendations.

As result of the dissolution of Parliament in October 2000 (because of the election), and the requisite striking of a new Standing Committee in January 2001, this former Standing Committee was replaced with the new House of Commons Standing Committee on Aboriginal Affairs, Northern Development and Natural Resources. In May 2001, this new Standing Committee adopted the final report of the former Standing Committee and requested a federal government response to the recommendations contained in it.

Of the 10 recommendations in the final report, five pertained directly to the certification of Canadian forestry practices and forest products. The remaining five addressed related subjects.

With regard to certification, the Standing Committee found that there should be several recognized (forest) certification systems, each respecting principles of openness, transparency, accountability and equity. The Standing Committee also suggested a role for governments in: monitoring certification systems and encouraging the training of certifiers; maintaining the policy-making and regulatory functions of governments and international institutions; and, promoting mutual recognition among certification systems internationally.

The Standing Committee also emphasized: the need for forest management to be governed by sound scientific principles; more active marketing of Canadian scientific expertise in forest management; the importance of reporting on Canada's forests and forestry practices; involving people who live and work in Canada's forests in delivering accurate information to the marketplace; and the need for rigour in both ensuring that international trade rules are respected and in avoiding the erection of non-tariff trade barriers.

The federal government will be responding to the Standing Committee's recommendations later in 2001.

The final report of the Standing Committee is available in the Committee Business section (of the 36th Parliament, 2nd session) of Canada's Parliamentary Internet site at <http://www.parl.gc.ca>

Forest Certification

Forest certification is a market-based instrument aimed at promoting sustainable forest management. It involves the independent verification of forest management practices against an established standard. Successful certification allows companies to claim that their products come from sustainably managed forests. It may also offer them the option of using a label on their forest products, depending on the system.

The interest in certified forest products is a recent but growing marketplace reality, especially in Europe and the United States, which are two of Canada's key markets for forest products. Recognizing the apparent growing demand for certified forest products, certification systems have been developed and implemented by most countries who produce forest products

In Canada, as of April 2001, roughly 44 million hectares, or 37 percent, of Canada's 119 million hectares of managed forest land had been certified under one or more of the four main certifications systems currently in use in Canada: those of the Canadian Standards Association (CSA), Forest Stewardship Council (FSC), Organization for International Standardization (ISO) and the Sustainable Forestry Initiative (SFI). This area of certified Canadian forest is almost three times larger than that of the same time a year ago (see *The State of Canada's Forests 1999-2000*, page 11).



At a global scale, the Food and Agriculture Organization (FAO) of the United Nations estimates that there are close to 100 million hectares of forest land certified, mostly in developed countries, and that some 50 different certification schemes are either currently available or in the process of being implemented around the world.

This current multiplicity of certification systems in the global marketplace is a reflection of the early stages of certification as a market-based tool to promote sustainable forest management. While in the future some certification systems may prove to be more efficient than others from either the global or local perspective, there is no current reason to believe that one approach is best. This multiplicity is also a reflection of the diversity of forest circumstances which exist worldwide—forest circumstances are highly diverse because of

environmental, developmental, economic, social and cultural differences.

While it would appear that this growth in the number of systems is important to maximize efficiency of certification in promoting sustainable forest management, it has also led to some debate between the various system supporters not only on the comparability between systems but also on the value of having such a multiplicity of systems. Potential market confusion is an issue.

This debate is resulting in pressure on the marketplace, particularly from retailers and producers, to come to agreement on acceptable approaches to certification. Increasingly, it is being suggested that equivalency and mutual recognition frameworks which recognize differences between certification systems could contribute to solving some of the issues at hand by bringing clarity to the marketplace, while at the same time ensuring that the diversity of forest circumstances is recognized. However, while many would agree on the need for some framework of equivalency across certification systems, views are quite divergent regarding how such a framework might be implemented.

It is still too early to objectively assess the potential impact that certification will have on promoting sustainable forest management. However, looking at producers' current efforts in forest certification, it is expected that there will be significantly more certified forest areas in the months and years to come under the various existing systems, both domestically and internationally. This anticipated trend can be expected to increase the pressure to achieve some agreement on issues related to the multiplicity and comparability of certification systems.

Should equivalency and mutual recognition approaches not succeed, there is a risk that the potential efficiency of certification in promoting sustainable forest management may be affected as only a few systems might prevail, reducing opportunities for each producer's circumstances to be fully taken into account and raising potential trade issues and market confusion. Recent trends suggest that retailers will be key players in resolving these issues as they are increasingly involved in comparability and equivalency initiatives.

ON THE GROUND PROGRESS IN CERTIFICATION HAS BEEN SIGNIFICANT IN CANADA, PARTICULARLY WITH REGARD TO THE CSA, ISO AND SFI SYSTEMS.

CSA: (5 million ha) Developing options for 'chain of custody' (a system linking the final product to the originating certified forest) and labelling;

FSC: (36 000 ha) Efforts are being made to develop regional standards in all Canadian regions;

ISO: (44 million ha) ISO certification is seen by many Canadian companies as providing the necessary framework for forestry-specific systems such as CSA, FSC and SFI; and,

SFI: (4 million ha) SFI, developed by the American Forest & Paper Association, is new to Canada. SFI has been widely adopted by large companies in the United States.

Sources: Canadian Sustainable Forestry Coalition (<http://www.sfms.com/>) and Forest Stewardship Council international Internet site (<http://www.fscoax.org>)

Forest Sustainability in Action Across Canada

A Mid-Term Evaluation of Canada's National Forest Strategy (1998-2003)

Canada needs to examine the representativeness of protected areas and to establish benchmarks for measuring the impacts of forest management practices on biodiversity; to undertake additional assessments and communications of the benefits of public participation in decision making; to pursue further opportunities for Aboriginal peoples' training, employment and business ventures; to take actions that will ensure a secure land base for Canada's forest industries and that will enhance industrial investment; and, to increase the implementation of economic diversification strategies for forest-dependent communities. Three years into the National Forest Strategy (1998-2003), these are some key recommendations made by an Independent Expert Evaluation Panel. They are published in *A Mid-Term Evaluation of the National Forest Strategy (1998-2003)– Sustainable Forests: A Canadian Commitment*.

The evaluation meets the commitment made by the Canadian Council of Forest Ministers (CCFM), as public trustee of the National Forest Strategy, and by the National Forest Strategy Coalition to formally evaluate the efforts of the Canadian forest community as a whole by an independent third party.

Overall, the independent Panel's *Mid-Term Evaluation* report, on 39 of the Strategy's 121 commitments, concludes that Canada is increasing its attention to multiple forest values and records substantial progress in monitoring and evaluating management outcomes and in developing value-added manufacturing, improving productivity, ensuring market access and developing certification systems.

The Panel also identifies some key accomplishments of Canada's diverse forest community, brought together in the National Forest Strategy Coalition's recently released *Canadian Accomplishments: Our Evolving Journey Toward Sustainable Forests* report. It showcases some of the achievements by over 50 government and non government organizations working to advance the goal and the collective vision of Canadians toward sustainable forests nationwide. For example, the expansion made to our nation's parks and protected areas; the progress that has been made in certifying our managed forests; and the expansion of Canada's model forest network to 11 model forests.

"When you look at these achievements, you realize that, if all forests were managed as well as Canada's, the world's forests would be in pretty good shape," said National Forest Strategy Coalition Chair, Mike Apsey.

"Certainly, we still have room to improve, but this glimpse of our activities gives all Canadians reason to be proud. There is a strong need to continue to work together, to broaden partnerships, and to communicate our work in Canada and abroad," he added.

The National Forest Strategy Coalition oversees the implementation of the National Forest Strategy (1998-2003) by addressing nine strategic directions: forest ecosystems, forest management, public participation, forest industry, science and technology, communities and workforce, Aboriginal peoples, private woodlots and the global view. Coalition members, who have all signed the Canada Forest Accord, are committed to actively working together to maintain and enhance forest ecosystems while providing environmental, economic, social and cultural benefits for present and future generations. This is Canada's fourth National Forest Strategy since 1981.

The recommendations contained in the *Mid-Term Evaluation* report will assist Canada's forest community, especially Coalition members, to adjust their actions to better face the challenges ahead and encourage further positive and required activity toward sustainable forests nationwide. The Coalition will ensure a final independent evaluation of the Strategy by 2003, which will aid the planned development of a new strategy.

For more information and to view these reports, visit the National Forest Strategy Coalition Internet site at <http://nfsc.forest.ca>

Forest-Dwelling Species at Risk

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent organization that uses the best scientific information available to determine the level of risk for Canada's wildlife species. In May 2001, COSEWIC released the results of its latest species assessments.

At its May meeting of wildlife experts, COSEWIC reassessed 19 species that were already on the list of Canadian Species at Risk. These reassessments were undertaken using recently developed quantitative criteria that estimate the risk of extinction built on the model used by the World Conservation Union (IUCN). Thirteen of these species remained in the same category of risk as the previous year.

The COSEWIC list now includes 380 wild species in various categories of risk, including 82 species in the Threatened category and 115 species in the Endangered category. COSEWIC began reassessing the categorization of the species at risk in 1999 and has now completed over 160 reassessments.

The degree of forest dependence of the species listed in *The State of Canada's Forests* report has not yet been scientifically determined.

A comprehensive listing of all species can be found on the COSEWIC Internet site at <http://www.cosewic.gc.ca/cosewic/>

Definition of COSEWIC Risk Categories

Extinct	a species that no longer exists
Extirpated	a species no longer existing in the wild in Canada, but occurring elsewhere
Endangered	a species facing imminent extirpation or extinction
Threatened	a species likely to become endangered if limiting factors are not reversed
Special Concern	a species of special concern because of characteristics that make it particularly sensitive to human activities or natural events
Not at Risk	a species that has been evaluated and found not to be at risk
Data Deficient	a species for which there is insufficient scientific information to support status designation

FOREST-DWELLING SPECIES AT RISK

MAMMALS

American marten (NF*)
 Vancouver Island marmot (BC)
 Wolverine (Eastern population)
 (QC, NF, Labrador)
 Woodland caribou
 (Atlantic-Gaspésie population) (QC)

BIRDS

Acadian flycatcher (ON)
 Kirtland's warbler (ON)
 Northern spotted owl (BC)
 Prothonotary warbler (ON)
 White-headed woodpecker (BC)
 Western yellow-breasted chat (BC)

PLANTS

American ginseng (ON, QC)
 Bashful bulrush (ON)
 Blunt-lobed woodsia (ON, QC)
 Cucumber tree (ON)
 Deltoid balsamroot (BC)
 Drooping trillium (ON)
 Heart-leaved plantain (ON)
 Large whorled pogonia (ON)
 Nodding pogonia (ON)
 Prairie lupine (BC)
 Purple twayblade (ON)
 Red mulberry (ON)
 Seaside centipede (lichen) (BC)
 Small whorled pogonia (ON)
 Spotted wintergreen (ON)
Tall hughbane (BC)
 Wood-poppy (ON)

REPTILES

Blue racer (snake) (ON)
Night snake (BC)
 Rocky Mountain tailed frog (BC)

Ermine haidarum subspecies (BC)
 Pallid bat (BC)
 Wood bison (AB, BC, NT, YT)
 Woodland caribou (Boreal population)
 (AB, BC, MB, NF, NT, ON, QC, SK)
 Woodland caribou
 (Southern mountain population) (AB, BC)

Hooded warbler (ON)
 Marbled murrelet (BC)
 Queen Charlotte goshawk (BC)

American chestnut (ON)
 Bird's-foot violet (ON)
 Deerberry (ON)
 Goldenseal (ON)
 Kentucky coffee-tree (ON)

Black rat snake (ON)
 Blanding's turtle (NS)
 Eastern Massasauga rattlesnake (ON)
Jefferson salamander (ON)
 Pacific giant salamander (BC)

Lyall's mariposa lily (BC)
 Phantom orchid (BC)
Purple sanicle (BC)
 Round-leaved greenbrier (ON)
Scouler's corydalis (BC)
 White wood aster (ON, QC)
 White-top aster (BC)
 Yellow montane violet (BC)

Eastern wolf (ON, QC)
 Fringed bat (BC)
 Gaspé shrew (NB, NS, QC)
 Grizzly bear (AB, BC, NT, NU, YT)
 Keen's long-eared bat (BC)
 Mountain beaver (BC)
 Nuttall's cottontail (BC)
 Southern flying squirrel (NB, NS, ON, QC)
 Spotted bat (BC)
 Wolverine (Western population)
 (AB, BC, MB, NT, NU, ON, SK, YT)
 Woodland vole (ON, QC)

Bicknell's thrush (NB, NS, QC)
 Cerulean warbler (ON, QC)
 Eastern yellow-breasted chat (ON)
 Flammulated owl (BC)
 Lewis' woodpecker (BC)
 Louisiana waterthrush (ON, QC)
 Red-headed woodpecker
 (MB, ON, QC, SK)

American columbo (ON)
 Blue ash (ON)
 Broad beech fern (ON, QC)
 Coastal wood fern (BC)
 Crooked-stem aster (ON)
 Common hop-tree (ON, QC)
 Dwarf hackberry (ON)
 False rue-anemone (ON)
 Green dragon (ON, QC)
 Oldgrowth specklebelly (lichen) (BC)
 Shumard oak (ON)
 Seaside bone (lichen) (BC)
 Wild hyacinth (ON)

Cœur d'Alène salamander (BC)
 Five-lined skink (ON)
 Mountain dusky salamander (QC)
 Northern red-legged frog (BC)
 Wood turtle (NB, NS, ON, QC)
 Cryptic paw (lichen) (BC)

Endangered

Threatened

Special Concern

*(Population)

Bolding indicates species added to the list in 2001

Source: Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

Tall bugbane



The Tall bugbane is a perennial, large-leaved understory plant that stands one to two metres tall. It has 50 to 900 small, white, closely-crowded flowers. Fruits are “follicles” and each contains approximately 10 red to purple-brown seeds. It grows in shady, moist, mixed, mature western red cedar/hemlock and Douglas-fir forest stands, but also in predominately deciduous stands. The deciduous component is extremely important, providing the perfect balance of shade and light, and moisture retention. In Canada the Tall bugbane occurs in southwestern British Columbia. There are seven known populations, ranging from one to 63 plants, which are relatively small and sporadically distributed over the landscape. Certain forest harvesting practices may impact the survival of this species. The Tall bugbane was classified by COSEWIC as “endangered”.

Lyall's mariposa lily

Lyall's mariposa lily is a long-lived perennial with white to purplish petals, arising each year from an underground bulb and reproducing solely by seed. It occurs in open grass-like meadows in Douglas-fir forests along the eastern slope of the Cascade Mountains from extreme south central British Columbia to Yakima County, Washington. In view of the highly restricted geographical range (there are 11 known colonies in Canada) it is at potential risk from habitat disruption and loss due to grazing, afforestation of potential habitats and exotic/invasive species. Lyall's mariposa lily was classified by COSEWIC as “threatened”.

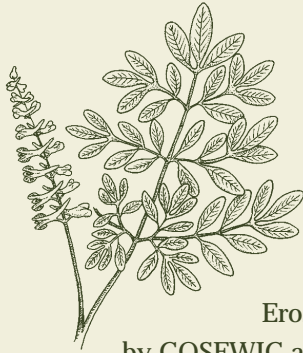


Purple sanicle

The Purple sanicle is a short-lived perennial (some say biennial) herb. The leaves are on the lower stem and resemble a feather. Flowers are tiny, inconspicuous and unspecialized and either deep purple or wine-coloured. Flowering occurs by the beginning of May and may continue to the end of June. The fruits are dry and split into several one-seeded “carpels” when mature. They are egg-shaped and covered by stout, hooked prickles. The Purple sanicle occurs in grass-like meadow openings in certain forest types, on eroding, sandy banks on seashore cliffs, and on shrubby grassy knolls. It is relatively shade intolerant, occurring on very dry to moderately dry, nitrogen-rich soils.

The 18 populations of this species, ranging in size from one plant to over 1 100 individuals, have a narrow range in Canada, occurring only on southeastern Vancouver Island and the Gulf Islands. Populations of the Purple sanicle are mainly limited by human disturbance. The Purple sanicle was classified by COSEWIC as “threatened”.





Scouler's corydalis

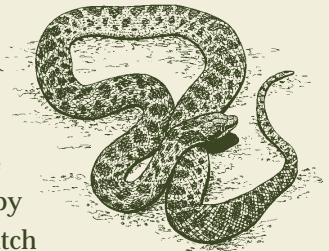
Scouler's corydalis is a perennial herb with blue-green, large dissected leaves and rosy-pink, bilaterally symmetrical flowers that grow on short stalks. The Canadian populations are limited to 20 sites within a restricted geographical range in southwestern Vancouver Island. It occurs in wet, cool habitats associated with water-courses. There are logging operations in the areas where Scouler's corydalis is found.

Erosional damage from flooding is also a limiting factor. Scouler's corydalis was classified by COSEWIC as "threatened".

Night snake

The Night snake is a small, rear-fanged snake. In Canada, it is found only in the hot, dry interior of British Columbia, where only 16 individuals have been recorded. Most of these were mature snakes from areas with rocks, shrubs and grasses. The only known food item for the Night snake in Canada is a neonate rattlesnake, although lizards, squamate eggs, frogs and snakes are eaten by populations outside Canada. This species produces eggs that develop and hatch outside the maternal body and the female lays three to nine eggs. Night snakes in British

Columbia can live at least four to five years. Despite intensive and frequent search they have rarely been found and appear to be confined to habitat that is rapidly disappearing in Canada. The Night snake was classified by COSEWIC as "endangered".



Jefferson salamander

The Jefferson salamander occurs in southern Ontario and is associated with mature, usually Carolinian forests where there are ponds which provide breeding sites. Eggs are laid on stems of submerged vegetation following an elaborate courting ritual between the males and females.

Factors influencing the survival of both the embryos and larvae of the salamander include low water levels, pond pH, the presence of invertebrate predators, and cannibalism. Although surviving adults tend to live a long time, there are high levels of mortality among adults crossing roads while migrating from underground overwintering sites to their breeding ponds. This factor probably has a large effect on population size. The Jefferson salamander was classified by COSEWIC, in November 2000, as "threatened".

