In 1999, the Canadian Forest Service celebrated its centennial. The organization's durability through a roller coaster of organizational focus and financial support is its legacy. For more than 100 years, its forward-looking solutions to forest management challenges have left a lasting imprint on the Canadian forest. Canada's forests represent about 10 percent of the forests worldwide and with that responsibility the CFS is taking a leadership role on the international stage.

THE CANADIAN FOREST SERVICE:

CATALYST FOR THE FOREST SECTOR

Canada is defined by its forests. They are the country's dominant geographical feature. They are also of central importance in the lives of Canadians, whose attitudes toward their forests have changed over time. A little more than a century ago, an entirely new way of thinking about forests and the uses to which they could be put, evolved. The idea of the perpetual forest emerged, a forest maintained forever by human effort, employing scientific management practices.

Since then, there has been a steady evolution of that concept. Today, as we enter a new phase of the human relationship with forests, the scientific foundations of forest management, in combination with new social objectives, are more important than ever. Throughout this period, a single, small agency, now known as the Canadian Forest Service, led development of scientific forest management in Canada. In doing so, it set a global standard for forestry.

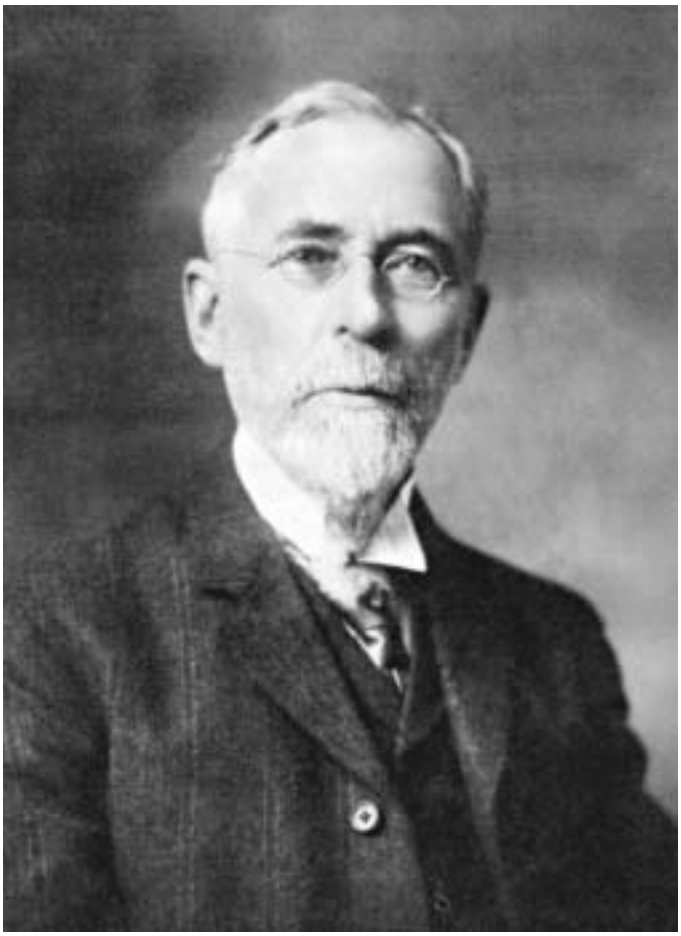
The CFS was established in 1899, with one staff member and a budget of $1,000. Its size and fortunes have waxed and waned through a century of often-turbulent economic and political change. On several occasions, it almost disappeared. Its success is demonstrated by its continued existence and the enormous influence it has had, and still has, on the evolution of forestry in Canada and around the world. That success is based upon the CFS's expertise at providing a sound, scientific foundation for the evolving economic and social policies that determine the fate of Canada's forests.

THE CANADIAN FOREST: LIQUIDATION TO CONSERVATION

The mythical Canadian forest—an eternal pristine wilderness unaltered by human intervention—has never existed. Until about 10,000 years ago, for several hundred centuries, virtually all of Canada was covered with glaciers. As the world warmed and the ice receded, human beings moved in, likely in advance of the forests that slowly reclaimed the lifeless landscape.

These early aboriginal inhabitants of Canada used, and in some cases extensively modified, these new forests to meet their needs. They used trees for fuel and shelter, and harvested wildlife for food and clothing. They learned to burn large areas of forest to increase grazing lands for buffalo, deer and elk. In some areas, they cleared the forest and planted crops.

BY KEN DRUSHKA AND BOB BURT



W.J. TOPLEY PHOTO, PA 91095, NATIONAL ARCHIVES OF CANADA

Elihu Stewart, Canada's first superintendent of forestry, from 1899–1907.

The first economic use of these forests by Europeans, in collaboration with aboriginal residents, was to harvest fur. For several centuries, this was a sustainable use that maintained forest habitat and wildlife populations. As settlement began, the forests, which covered most of the land, were seen as obstacles to the primary goal of the colonial era, the building of an agricultural economy. The forests, at best, were looked upon as a non-renewable resource, like a mineral deposit. They could be harvested once for whatever value they might bring in the timber trade, after which the land would be settled and farmed, as had been the experience in the homelands of the settlers.

By the mid-19th century, the timber industries established to harvest these forests were the largest creators of wealth in the colonies. They employed by far the largest number of workers, including many settlers who worked in the Canadian woods during winter months to earn the cash required to develop their farms. The forests provided colonial and—after Confederation—provincial administrators with a rich source of revenues to pay for the infrastructure needed for national development.

When the new nation of Canada acquired the prairie and northern territories of Rupert's Land from the Hudson's Bay Company in 1870, it assumed jurisdiction over the forests in this area. In exchange for building a railway to the Pacific, Canada acquired two large blocks of forest land in British Columbia. Legislative authority to administer this land was included in the 1872 Dominion Lands Act, and a year later the federal Department of the Interior was established to be responsible for aboriginal affairs and federally owned lands. It included a Timber, Mineral and Grazing Lands Office, which issued licenses to harvest timber on federal lands.

By this time, a realization was dawning that future development of Canadian civilization was not possible without the continued existence of forests. They provided essential fuel and building materials, as well as employment and the generation of wealth from the export of forest products, and were an important source of public revenues.

From his parliamentary office overlooking the Ottawa River, Prime Minister John A. Macdonald, in an 1871 letter to John Sandfield MacDonald, observed:

> *The sight of immense masses of timber passing my windows every morning constantly suggests to my mind the absolute necessity there is for looking into the future of this great trade. We are recklessly destroying the timber of Canada, and there is scarcely a possibility of replacing it.*

His sentiments were widely shared, and coalesced to create a powerful North American conservation movement that was based upon a belief in scientific management, especially forest management. It included the concept of a perpetually renewed forest through the application of scientifically derived methods, applied by trained professionals.

Under the government of Prime Minister Wilfrid Laurier, elected in 1896, conservationist ideas dominated Canadian public administration, including forestry. A scandal involving corruption in the issuance of federal timber berths, then administered by politically-appointed staff in the Timber Branch, led to the creation of a new position within the Department of the Interior—Chief Inspector of Timber and Forestry—responsible for the protection and management of federal forests by scientifically-trained professionals. This, in 1899, was the beginning of the Canadian Forest Service.

THE BIRTH OF CANADIAN FORESTRY

Elihu Stewart was the first superintendent of forestry appointed. He immediately began organizing a forestry service, with a primary focus on conservation and forest propagation. Stewart noted in his first report to the Department, that conservation consisted of protecting forests, primarily from fire, and utilization through

> *…a judicious system of cutting the timber required for use so as to retain for all time a continuous supply from those districts that are better adapted for the growth of timber than for agricultural purposes.*

Stewart's first propagation programs were concerned with tree planting on the prairies to provide settlers with windbreaks, and timber for fuel and building materials. To launch this program, the first forest nursery was opened at Indian Head in 1902, and within three years was supplying two million seedlings a year. Apart from this program, practically all of the branch's work was conducted on federal forest lands. The programs he instituted marked the first—but certainly not the only—time the CFS anticipated

NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

Dr. Clara Fritz, seen here at her microscope, was Canada's first female timber pathologist. She joined what was then the Dominion Forest Service to work at the Montreal forest products laboratories in 1925 and retired as chief of timber pathology at the Ottawa forest products laboratories in 1954.

future needs and future philosophies of those we now term forest stakeholders.

Stewart's term in office, which lasted to 1907, coincided with an intense period of conservationist activity in Canada. The federal government hosted the country's first forest congress in 1906, convened by Prime Minister Laurier. The same year, the Dominion Forest Reserves Act was passed, placing 14,000 square kilometres of prairie forests under management by scientifically trained foresters. A year later, the country's first forestry school opened at the University of Toronto, with a second established at the University of New Brunswick the following year, and a third at Laval University in 1910. Their task was to develop a cadre of professional foresters in Canada.

It was not completely coincidental that those schools opened shortly after Stewart had returned from visiting the forests of Europe. Upon his return, he proposed training foresters in this country where, as they learned, they could gain practical experience working in the forests they would manage. He recognized that conditions were so vastly different in Europe from those in Canada, that it would be unwise to adopt their management methods in Canadian forests.

Stewart was also a key figure in the creation of the Canadian Forestry Association in 1900. It organized prominent politicians, lumbermen and Canadian public figures in support of conservation measures, and, in turn, provided public support for the new forestry branch. His successors were equally active in helping establish the Canadian Society of Forest Engineers, a professional organization of foresters, in 1908.

With responsibility for timber still assigned to the Timber Branch, the scientific emphasis of the forestry branch was clear from the outset, and continued with increased vigour under its second director, R.H. Campbell. In 1908, an economics division was set up to gather statistical data on forests and forest products. A research function was introduced in 1913 with the opening of a forest products laboratory at McGill University, including a pulp and paper division added the following year.

During the war, a second lab was built in Vancouver to test west coast species for use in aircraft construction. Research on tree diseases, initially white pine blister rust in Quebec and Ontario, began in the early years of the war in cooperation with the Department of Agriculture. The two federal agencies collaborated again with the establishment of a forest insect laboratory at Vernon in 1917, the beginning of 50 years of joint ventures. In collaboration with the defense department, an experimental research station opened at the Petawawa military reserve in 1917 that would eventually become the country's leading forest research centre.

Following a particularly bad fire season in 1919, the branch stepped up its work on protection. Aerial fire patrols were initiated in Alberta and BC. In addition to spotting and reporting fires, the air patrols dropped leaflets over campsites and small towns to educate the public about forest protection, the beginning of what eventually became a large public information program. A fire research program was established at Petawawa and within a few years produced a unique method of forecasting fire hazards.

NATURAL RESOURCES CANADA/ CANADIAN FOREST SERVICE

Researchers number a tree on a permanent sample plot in the Petawawa Research Forest in 1919.

In 1924, Ernest Finlayson succeeded Campbell as director of forestry. Like Campbell, Finlayson was a proponent of a major role for the federal government in forestry. This was a sensitive political issue, as some provincial governments were opposed to any federal involvement in forestry, which, constitutionally, was a provincial jurisdiction.

That same year, federal and provincial forest ministers met for the first time to discuss fire protection policies, although their talks ranged beyond this subject. The federal minister proposed federal contributions, financial and otherwise, to the provinces to fund forestry activities. Although there was no immediate implementation of this proposal, it was accepted in principle and marked the beginning of a national forestry program. For its part, the federal government committed itself to a more intense forest conservation program, and instructed its Forestry Service to apply sustained yield policies on the 9.2 million acres of forest reserves now under its jurisdiction.

At this point, national political issues intervened and, as part of their resolution, in 1930 control of the huge western national forest reserves was turned over to the western provinces. It was a devastating blow to Finlayson and others who supported a strong federal role in forestry and had linked the fortunes of the federal Forestry Service to jurisdiction over a substantial forest land base.

IN SEARCH OF A NEW ROLE

Under Finlayson, the service had developed a strong administrative role primarily concerned with management of federal forest lands. Because of its conservationist roots and its professional staff, however, it had incorporated a level of scientific expertise into its operations that was missing in most provincial forest services. What saved the agency was its scientific capability. Soon after the transfer, senior staff within the service defined a research role, focused on seven broad areas: silvicultural research, the operation of experimental stations, forest products research, forest inventories, protection, mensuration, and forest policy development for the federal government.

Adoption of this role dragged on through the 1930s, during which time the very existence of the service was in question. Its budget was slashed and its staff reduced by 70 percent. These measures were intensified by the onset of the Great Depression. In 1936, tired of the struggle to maintain a strong central role for his agency in the forest sector, Finlayson disappeared and was never seen again. He was replaced by D. Roy Cameron, a professional forester with a strong commitment to research and the diplomatic skills needed to steer the forestry service through the turbulent political waters of the pre-war period.

In spite of its reduced circumstances during this difficult time the service laid the foundations of a new role. Silvicultural research forests were established in New Brunswick, Quebec and Manitoba. A major report on the national forest economy was produced by the Economics Division. Numerous fire protection techniques were developed, and, in spite of many operational upheavals, the forest product laboratories continued to produce results with the strong support of industry. The National Forestry Program to employ young men in forest work was organized. A forest insect survey was launched and a national forest classification system devised.

NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

E.H. Finlayson, director of Dominion Forest Service 1924–1936.

Perhaps the most dramatic accomplishment was the development of a method to conduct forest surveys from aerial photographs. This system was pioneered by H.E. (Si) Seely, a forester employed in the Economics Division, who discovered how to identify tree species and calculate timber volumes from aerial photos. His method provided inventory data that was more accurate than results provided by previous methods. These techniques were also of immense value to the allied war effort in World War II, reinforcing arguments for the service's continued existence.

The war years were a period of reduced activity for the service. The forest product laboratories shifted their emphasis to wartime needs. The silvicultural research staff ran an alternative service program for conscientious objectors. By one means or another, the scientific research capabilities of the service remained intact.

Even before the end of the war, a new concept of governmental relations had evolved, permitting participation of the federal government in areas of provincial jurisdiction. This cooperative concept, combined with an awakened public awareness of the strategic importance of Canada's forests, and growing pressure from the forest industries for increased management of the country's state-owned forests, gained momentum.

In 1946, the service received substantially increased allocations for its research programs, and the following year was assigned responsibility for taking inventories and developing management plans for forests on Indian reserves. At the same time the country was developing a new awareness of its forests,

NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

Forester Harry Holman rests amid a huge log boom in this photo from 1920.

a growing international forestry presence emerged. Canada, and its national forest service, became key participants in this process in 1947 when Cameron was appointed chief of the European forestry office of the newly formed United Nations Food and Agricultural Organization. The directorship passed to D.A. Macdonald, a University of New Brunswick-educated forester who had joined the federal service in 1914.

By 1948, national forestry awareness was evident. There was a growing belief that federal income and corporate tax revenues from forests justified increased federal expenditures on forestry, and an admission by government of the need for increased management to sustain forest yields. Several provincial governments initiated Royal Commissions on forestry, all of which called for the adoption of sustained yield policies. In 1949, the government responded to these pressures and passed the Canada Forestry Act which launched the federal forestry service on a new path.

SUSTAINING THE YIELD

The legislation provided the federal forestry agency, then in its 50th year, with the statutory authority it had lacked since 1930, a new mandate, and a new name within a new department–the Forestry Branch of the Department of Resources and Development.

The branch was empowered to enter into agreements with provinces for the protection, development and utilization of forest resources, to enter into arrangements with other federal departments, to undertake economic studies, research and demonstration projects, and to operate laboratories. It was reorganized into three divisions: research, operations, and forest product laboratories.

Initially, agreements were concluded with provincial governments for federal funds to finance inventory and reforestation programs, to purchase fire-fighting equipment and to build access

NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

H.E. (Si) Seely pioneered ways to use aerial photography to identify tree species and calculate timber volume. The techniques were later put to good use by the Allied forces in World War II.

NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

Hugh McPhee, a field ranger with the Forest Insect and Disease Survey, Forest Biology Division, Department of Agriculture, in an army surplus Heavy Utility Personnel (HUP) vehicle in 1948.

roads. In 1953, joint agreements were entered into with the federal Department of Agriculture's Forest Biology Division, forest companies, and the provincial forest services of Quebec and New Brunswick to combat major spruce budworm infestations with a program of aerial insecticide spraying.

In 1954, an agreement was concluded with the Department of National Defense to manage the forests on its newly acquired base at Gagetown, New Brunswick. The branch continued its cooperative management program on Indian reserves.

Throughout the 1950s, the post-war economic boom gained momentum with Canada's forest industries playing a central role. Noting that federal forest revenues had increased to several hundred millions of dollars a year, and that expenditures were less than $10 million, the industries lobbied hard for an increased federal forestry role, particularly in research.

The government referred the matter to a House of Commons Standing Committee and, following its recommendations, in 1960 passed the Department of Forestry Act, granting the branch full departmental status. J.D.B. Harrison, who had become director in 1956, was elevated to deputy minister.

At this stage, the new department had a staff of fewer than 500 and a budget of only $6 million, making it one of the smallest federal departments. The Act did not give it much scope for growth. The one significant exception was to relocate the venerable Forest Biology Division from Agriculture into the new forestry department. Other federal agencies with substantial connections to forests—parks, wildlife, northern affairs—retained their jurisdictions, leaving the Department of Forestry without a land base, but with a strong science and research focus.

This was reflected in Harrison's first report where, in addition to reiterating its traditional science and research functions, he described an expanded research role in improving management practices and the protection of forest resources, increasing timber utilization, and bolstering the competitive position of the forest industries.

From the outset the new department faced turmoil. In 1962, the government changed again, Harrison retired and was replaced by L.Z. Rousseau, who was immediately confronted with a government austerity program that hindered development of new programs. Several changes of ministers occurred and various unrelated administrative responsibilities—ranging from the Agricultural and Rural Development Act to the Western Feed Grains Freight and Storage Assistance Program—were unloaded onto the department.

In spite of these setbacks, some progress was made. A new Pacific Forest Research Centre was opened in Victoria in 1965. Perhaps the high point in the department's brief existence was its organization of the first federal-provincial forest ministers conference in Ottawa in 1963. A reorganization plan was finally approved in 1965, less than a year before the department was downgraded to a branch in a new Department of Forestry and Rural Development. A year later the federal-provincial funding agreements expired and were not renewed, weakening the department's provincial support.

Part of the department's difficulties could be traced to a lack of the right kind of leadership through this politically turbulent period. Its strength lay, as always, in its scientific capabilities, and its leaders had been drawn from its scientific ranks. They were not always the type of astute political operators often required for survival in the federal political arena. M.L. Prebble, who headed the forestry agency from 1965 to 1971, fit this description fully. He was a renowned entomologist, who had an self-admitted distaste for administration.

Beginning in 1968, another string of mishaps occurred. Election of a new government signalled a major shift in public concern. The branch was downsized and became a service in the new Department of Fisheries and Forestry, under a minister with little or no interest in his forestry portfolio. Budget reductions and a name change to Canadian Forestry Service followed.

The CFS's lowest ebb began in 1971 when it found itself as one of five divisions in the newly-minted Environment Canada, a lumping together of several resource departments and agencies. An attempt to reorganize these agencies, including the CFS, into regional centres undermined the capabilities of most of them. The department's primary duty was to protect air, water and land resources, a mandate not always seen as compatible with the industrial component of the traditional CFS role. By 1974, the top position in the CFS was reduced to that of a director general, budget cuts continued, and an attempt to close the Petawawa research centre was barely averted.

During this phase, the forest-sector research community was reorganized. Pulp and paper research had much earlier become a cooperative program of government, industry and universities within the Pulp and Paper Research Institute of Canada (PAPRICAN). In 1975, PAPRICAN's woodlands research group was disbanded and reborn as the Forest Engineering Research Institute of Canada (FERIC), funded by industry and the federal government. In 1979, the western and eastern forest-products laboratories were privatized under the name Forintek Canada. This marked the end of the federal government's direct participation in industrial forest research, and its replacement by arms-length funding arrangements.

New forces were at work, however. After almost three decades of industrial expansion, alarm over the timber supply on provincial lands was mounting . A 1978 report by a Vancouver economic consultant, F.L.C. Reed, concluded the country's current industrial capacity could not be maintained without more intensive management of second-growth forests. The report precipitated a renewal of federal-provincial discussions leading to federal funding of forest-management programs.

Following a change of government, Reed was appointed CFS assistant deputy minister in 1980, a clear break with a long

NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

Budworm City was the name given to the camp that sprang up alongside one of the first airstrips built in the bush in 1952 for budworm spraying. It was in the upper Upsalquich River country, 50 or 60 miles south of Dalhousie, New Brunswick. By the early 1960s, it had evolved into a camp for pulpwood cutters. The CFS had a small field station nearby and field researchers would sometimes get their meals there.

NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

Dr. J.D.B. Harrison, director of Forestry Branch, 1956–60 and deputy minister of the Department of Forestry 1960–62.

tradition of scientific leadership. The emphasis shifted from science and research to a heavily-funded stress on industrial forest management. In 1982, the first of two five-year Forest Resource Development Agreements were concluded with the provinces. By 1985, federal forest expenditures exceeded $1 billion a year, with the CFS in a key coordinating role.

By this time, the overall structure of federal forest administration had been dramatically revised. The Canadian Council of Resource Ministers had been created, providing a framework for federal-provincial cooperation. A federal forest-sector strategy committee was set up to co-ordinate federal forest activities. The CFS had been moved into the Department of Agriculture, with a minister of state for forestry established, and Jean Claude Mercier appointed associate deputy minister.

In 1985, the Canadian Council of Forest Ministers was formed. It sponsored a series of Canadian forestry forums across the country, which led to the adoption of a National Forest Sector Strategy in 1987. This followed a 1981 strategy that had focused on the long-term need to increase timber supply and forest renewal. The 1987 strategy was the first that expanded to more comprehensively address the multiple uses of forests.

While these events were transpiring, a major shift in public attitudes about forest use had occurred. Even at a time when the sustained yield of timber was still an unrealized goal in much of the country, a new concept of forest use had appeared which gave greater weight to non-timber forest values. This new idea lay at the centre of the 1987 report by the World Commission on Environment and Development, and was known as "sustainable development." Over the next decade this concept would be adapted by the Canadian forest sector to create a new, more inclusive approach to the human use of forests. The CFS, its scientific capabilities still intact, was at the centre of this development.

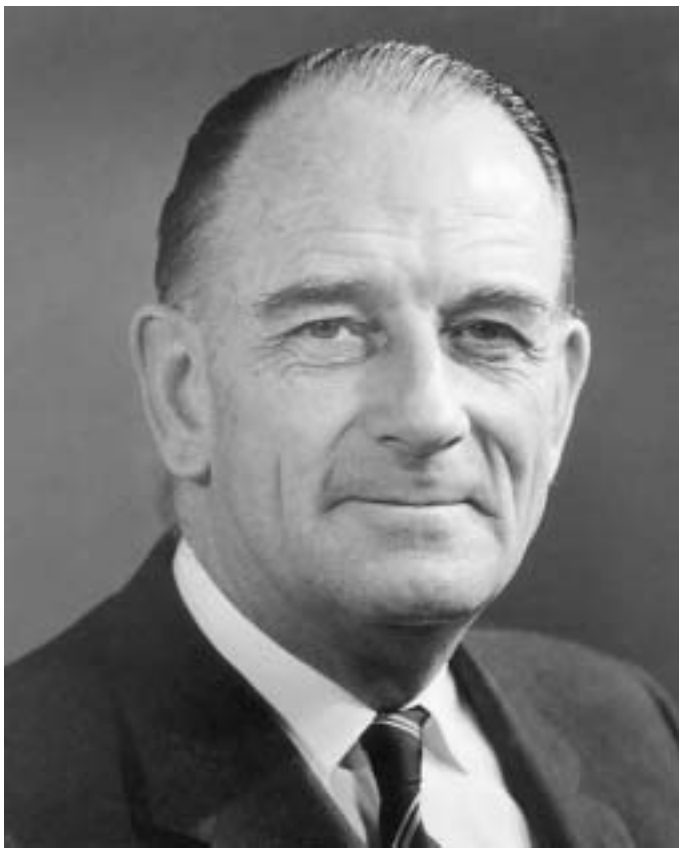
THE SHIFT TO SUSTAINABLE FOREST MANAGEMENT

The concept of sustainable development posed an immense challenge to the prevalent Canadian idea of sustained yield forest policy—as well as to the vast array of social, industrial, economic and political forest-sector institutions which had evolved over the previous century, including the CFS. The 1987 National Forest Sector Strategy, although a notable achievement in its comprehensive articulation of a national outlook, still reflected a primary concern with sustaining industrial timber yields. Public expectations, however, had changed dramatically, as reflected in the growing opposition to industrial forest activity in some parts of the country.

A change of government led to restoration of departmental status for the CFS in the 1989 Department of Forestry Act. It instructed the new Department of Forestry to "have regard to the integrated management and sustainable development of Canada's forest resources."

This new way of thinking about Canada's forests was reflected in the Canada Forest Accord, endorsed by government, industry, and environmental organizations:

> *Our goal is to maintain and enhance the long-term health of our forest ecosystems, for the benefit of all living things both nationally*



NATURAL RESOURCES CANADA/CANADIAN FOREST SERVICE

Dr. L.Z. Rousseau, deputy minister of the Department of Forestry 1962–66 and the Department of Forestry and Rural Development 1966–67.

and globally, while providing environmental, economic, social and cultural opportunities for the benefit of future generations.

In keeping with this objective, the department's focus and resources were shifted to basic science and cooperative research programs. The department also increased its international role, most significantly, perhaps, by bringing Canadian expertise in forest science and technology to a growing array of global forest-related forums. As custodian of one-tenth of the world's forests, Canada is expected to take a lead role in the global forest community. Perhaps the most valuable contribution the country can bring to this forum is its forest science, along with its century-long experience in forest management.

Beginning with the Rio Summit in 1992, Canada became a signatory to a string of international agreements related to sustainable resource use. Most of them have a forest component and it fell to the CFS to represent Canada and take a lead role. The CFS function, in this case, was to provide other nations with Canada's expertise and experience, and to bring the content of the agreements home to the provincial governments that, ultimately, bear the responsibility for implementing them on the forest floor.

In certain respects, within the jurisdictional framework defined by the constitution, the CFS has assumed a leadership role within the diverse network of interests that comprise Canada's forest sector. It has succeeded at this by maintaining a balance between its scientific and policy-coordination functions.

Perhaps the most important function the CFS has come to fulfill in recent years is that of the pilot or navigator, looking beyond the next wave for problems and opportunities unforeseen by managers engaged directly in the day-to-day work of caring for the country's forests. The CFS has always been a bit ahead of its time. It has undertaken visionary, forward-looking research that led to many forest management tools, methods, policies and programs. But its successes are often forgotten, even within the sector.

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Dr. M.L. Prebble, assistant deputy minister of the Department of Forestry 1965–66, the Department of Forestry and Rural Development 1966–68 and the Department of Fisheries and Forestry 1969–71.

In several instances, the CFS has initiated research projects where findings are passed along to forest managers. That knowledge or product becomes a part of everyday forest management, with the CFS role diminishing as it moves on, and tending, over time, to fade from consciousness. But, even as one product is being turned over to forest managers, CFS has already begun work on the next challenge—and usually, on several "next" challenges simultaneously—to develop the tools and techniques that will become the new standard for forest management practice a few years, or perhaps a few decades, down the road.

A prime example of this process was its work in developing—well ahead of the call for alternatives—the biological insecticide, *Bacillus thuringiensis*, for use when it became apparent the spraying of chemical insecticides on insect-infested forests had undesirable side effects. For this kind of work, CFS scientists have received numerous awards, including, during the past several years, three Orders of Canada and a Governor General's Meritorious Service Medal.

One of the biggest challenges facing the Canadian forest sector over the past decade has been to take the concept of sustainable development, add to it the scientific foundations and feedback capabilities it requires to become practical, and realize this complex of visions and strategies—known as "sustainable forest management"—in actual Canadian forests. To help meet this objective, in 1992 the CFS initiated and funded a Model Forest Program. It consists of 11 sites, totalling 7.5 million hectares, in different forest regions across the country. Each involves a diverse partnership of people—governments, landowners, various types of forest-resource users and others—with a common interest in sustainable forest management of a particular forest area they have agreed on.

Another research partnership, the Montane Alternative Silvicultural Systems project–between the CFS, the B.C. Ministry of Forests, FERIC, the University of Victoria and MacMillan Bloedel (now Weyerhaeuser) provided the scientific information needed by the company to undertake the radical initiative of phasing out clear-cut logging.

In 1993, the CFS once again lost its departmental status and became a service within the Department of Natural Resources. Dr. Yvan Hardy, a well-known entomologist and former Dean of Forestry at Laval University, became assistant deputy minister. Unfortunately, the task of meeting the new challenges coincided with a period of budgetary restraint. The Federal Research Development Agreement (FRDA) programs were wound down, the CFS budget cut by 60 percent, and the staff reduced by one-third. In spite of the difficulties these curtailments created, the service has continued to thrive.

To meet the social and economic aspects of sustainable forest management, the CFS expanded its scientific capabilities to include social sciences and a broader range of economic sciences. One application of this thrust was a First Nation Forestry Program, jointly funded and administered with the Department of Indian Affairs and Northern Development, to promote forest-based economic development in First Nations communities.

Other CFS researchers are developing a means of quantifying non-timber forest values, such as hunting, fishing, camping and biodiversity.

Today, the CFS uses its legacy of scientific knowledge and experience in both traditional and new ways. It is still a leading agency in forest fire research, protection and control, in forest entomology, and forest pathology. It continues to provide the economic analysis required for policy development and the maintenance of industrial competitiveness. It is also applying these skills in new fields, such as the development of criteria and indicators needed to make the concept of sustainable forest management an operational reality in Canada's forests.

CONCLUSION

For more than a century the CFS has been most successful in its role as a catalyst in the Canadian forest sector. At times it has been assigned, or even sought, a more bureaucratically conventional and, on occasion, administratively powerful role in the country's governing structures. At various points in its history, some of its leaders or its critics have looked wistfully at its southern counterpart, the U.S. Forest Service, with its vast national forest land base, and its authoritative position in U.S. society.

If the primary purpose of a public agency such as the CFS is to expand, and its success is to be measured in the number of its staff and the size of its annual budget, then the CFS could be rated a failure. Today, as has been the case during most of its long history, it possesses no abundance of either of these attributes. But, if the true measure of such an agency is the degree of positive influence it has had in its field of operations, and its ability to survive hard times and emerge when its skills and capabilities are needed, then the CFS story is one of astounding success.

Looking carefully at forest management successes in Canada and abroad over a span of decades, the CFS thumbprint, if not its brand, can be found on many of them. Moreover, an extraordinary number of CFS initiatives have been remarkably prescient. More often than not the CFS was developing innovative solutions to problems that had yet to be defined, and in some cases, would not be clearly identified until five, 10 or 20 years later. Judging by much of the current research underway in the CFS one could predict that the important Canadian forest issues in the early part of this new century are likely to be biodiversity, ecosystem management, biotechnology and plantation forestry.

Where to from here? During the CFS centennial celebrations in 1999, Ralph Goodale, Canada's Minister of Natural Resources, indicated the service's future role:

> "As we head into the 21st century, this is my vision: We must become the smartest steward and developer of our forests, the smartest user and exporter of our forest products. This means we must be the most high-tech; the most environmentally friendly; the most socially responsible; the most productive and competitive.
>
> And we look to the Canadian Forest Service and the men and women of the CFS to continue to lead the way in anticipating and preparing for these challenges and in building consensus among all parties with interests in the Canadian forests."

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Dr. Yvan Hardy, assistant deputy minister of the Canadian Forest Service of Natural Resources Canada.

The future of Canada's forests is, today, as uncertain and insecure as it has always been. The best insurance for their continued health and well-being is the vision, the knowledge and the skill of those who work in and care for them. At the centre of this group, where it has been for more than 100 years, is the Canadian Forest Service. □

Ken Drushka is a journalist and author in Vancouver, BC and Bob Burt is Manager of Communications with the Canadian Forest Service in Ottawa, ON.