

trained scientists. Canada's core capacity in the biological sciences, particularly biosystematics, is declining.

Canada still has a long way to go to develop long-term environmental monitoring and assessment capability for comprehensively studying ecosystems. Although information is available to monitor some issues, it may take several decades to establish the information bases necessary for new requirements on an integrated ecological basis. Efforts are under way, however, to strengthen monitoring capacity to address current and emerging issues. Canada has established the Ecological Monitoring and Assessment Network, which is a national network with ongoing ecological (biotic and abiotic) research and monitoring across terrestrial and marine ecozones. The northern component of this network is addressing the need for more information and knowledge in the sparsely populated Arctic and sub-Arctic. Canada has also played an important role in establishing the Global Ocean Observing System and is adding a living marine resource component to the current system of monitoring physical and chemical attributes of the marine environment.

Although significant advances in developing a common framework for viewing ecosystems and for organizing and communicating information have been made in Canada, there remains a great deal that is not known about ecosystems. For example, we do not fully understand ecosystem processes, how to measure the integrity of ecosystems, or the nature of cumulative impacts on ecosystems.

We need to monitor stresses on ecosystems, such as the urbanization of farmland and the presence of toxic substances in species, on a more regular basis. A critical gap for the successful implementation of integrated land use planning in Canada is the lack of a cost-effective national system to monitor land use change. This is essential to planning for the conservation and protection of unique natural areas, critical habitats, wetlands, and our best agricultural and forest lands.

With the exception of data collected in the context of the ecological framework, few data have yet been integrated on an ecosystem basis in Canada. Although Statistics Canada is working to improve a system of natural resource accounting, there is currently no coordinated capacity in Canada, either through a government agency or another organization, to conduct applied sustainability economics research and to develop tools to measure and manage multiple themes of economic, ecological, and social well-being in a holistic fashion.

### Ecological Gifts

*Under the federal Income Tax Act or the Quebec Income Tax Act, private and corporate landowners in all provinces and territories of Canada can make donations of ecologically sensitive lands, or interests in these lands, without taxation penalties. Federal criteria for defining ecologically sensitive land have been published in Ecological Gifts: Implementing Provisions of the Income Tax Act of Canada. A wide range of habitat types, such as beaches, prairie grasslands, woodlots, and seashores, can be "ecological gifts". Since late 1995, 140 gifts in eight provinces, totalling about 12 000 hectares in area and \$25 million in tax value, have been made. These donations have been facilitated by six federal-provincial implementation agreements.*

### Volunteers Make a Lasting Difference

*Volunteers make a vital contribution to ecological monitoring in Canada. They collect data for "Ecowatch", a component of the Ecological Monitoring and Assessment Network. Others volunteer as atmospheric observers and birders conducting breeding bird surveys. Canadian youth are important contributors to associated initiatives, such as "Frogwatch Ontario" and "Wormwatch".*