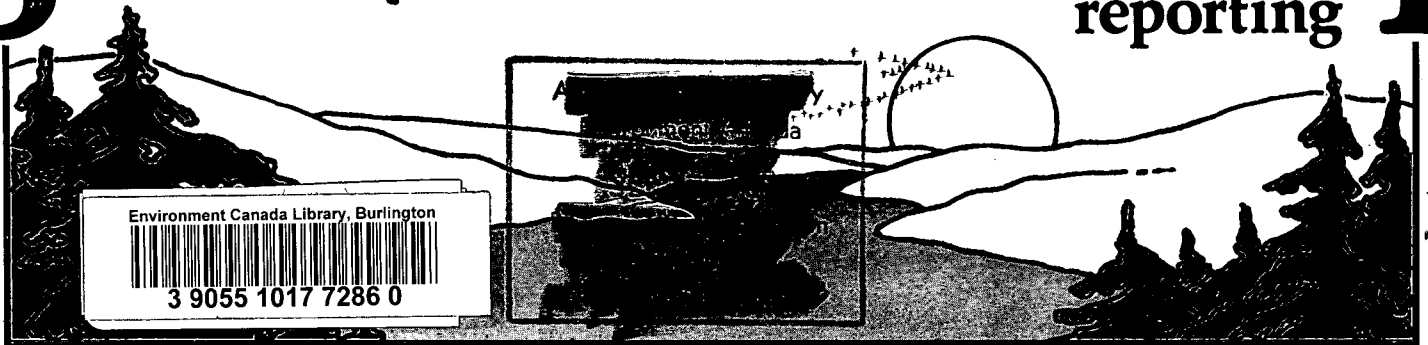


STATE ^{of} the ENVIRONMENT

reporting



Environment Canada Library, Burlington

 3 9055 1017 7286 0

HC
 120
 .E5
 S72
 no. 4
 C-2

No. 4

July, 1989

Great Lakes Region State of the Environment

In September, 1987, **The Institute for Research on Public Policy** (Canada) and **The Conservation Foundation** (United States) jointly initiated a review of the state of the environment in the Great Lakes region. The two-year project is now into its second year, with the final report scheduled for publication in August, 1989.

The Great Lakes hydrological basin holds 20% of the world's fresh surface water. In addition to the five Great Lakes and their connecting channels, the surface water system includes more than 80 000 small upland lakes and more than 750 000 km of waterways in an area of 521 830 km². Approximately 27.3 million Americans and 7.8 million Canadians (almost a third of our country's population) live in the basin.

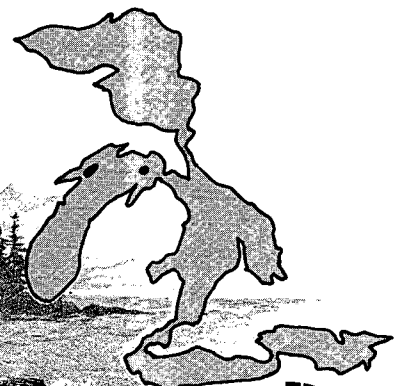
The Great Lakes has undergone profound change since the first European settlement. Vast forests are now fields, towns and cities. Marshes, and swamps once teeming with life have been drained. Species of fish, reptiles and birds that were once common are now gone. Access is now restricted to shorelines once undeveloped and unfettered, and many shorelines structures that were sited

without concern for natural climatic fluctuations are vulnerable to extreme erosion. These changes are continuing. Unfortunately, the nature and importance of natural chemical, physical and biological characteristics and processes are not always recognized by policy- and decision-makers. The result has been costly degradation of both natural and man-made environments.

Abuse of the natural environment led to the typhoid fever and cholera epidemics at the turn of the century. Chlorination subsequently rectified the problem but by the 1950s the southern third of the Great Lakes basin had become a *vast ecological slum*, and by the mid 1960s many considered Lake Erie dead because of its dreadful eutrophic state caused by low water levels and the massive influx of pollutants. Perhaps the low point of conditions was marked on June 22, 1969 when the Cuyahoga River in Cleveland was carrying such high concentrations of oil and other flammable industrial wastes that it caught fire and burned two railway bridges beyond use.

However the story of the Great Lakes ecosystem is far from bleak. Some encouraging success stories have been documented — such as the reduced nutrient enrichment of Lake Erie and the general decline in toxic contaminants in water throughout the region. But current conditions cannot be considered *healthy* or *sustainable* and efforts to maintain and accelerate improvements are essential. These efforts will depend on a further acceptance of ecosystem management and the pursuit of human activity that leaves an enriched, rather than depleted, environmental endowment for the generations to come. Clearly, the old react-and-cure approach must be supplemented by one of anticipation and prevention.

The purpose of this Great Lakes region review is to describe and assess present and past environmental conditions, the various factors causing significant change and the implications for management. Since the project began



LIBRARY
 CANADA CENTRE FOR INLAND WATERS
 17 LAKESHORE ROAD
 BURLINGTON, ONTARIO, CANADA

HC
 120
 .E5
 S72
 NO. 4

Environment
 Canada

Environnement
 Canada

Canada



Great Lakes (cont'd)

over a year ago, more than 30 background studies have been completed. In addition, several round-table discussions have been held with representatives of governments, the academic community, non-governmental organizations and industry. These sessions have focused on such topics as wetlands, fisheries,

toxic contaminants in fish and wildlife and the links between the environment and the economy.

The project will identify actions that would improve environmental quality, while allowing long-term, sustainable economic development. If the residents of the region, with the support of their respective governments, accept this challenge, a vastly improved quality of

life can be achieved — supporting, and supported by, a revitalized regional economy. □

*Tony Hodge
The Institute for Research on Public
Policy
275 Slater Street, Suite 500
Ottawa, Ontario, K1P 5H9*

The Organization of SOE Reports

How have various authors and countries approached the complex task of state of the environment (SOE) reporting? To address that question and explain how different SOE methods may be used to their best advantage, the SOE Reporting Branch commissioned a study of **Organizational and Spatial Frameworks for State of the Environment Reporting**.

Two important decisions must be made in preparing an SOE report. The first is how to organize the subject matter, and the second is what spatial context to use for data analysis and display. The study reviewed current SOE reports from around the globe, comparing alternative organizational and spatial reporting frameworks, and analyzing their strengths and weaknesses.

Four basic types of organizational frameworks were found: issues, resource sectors, environmental media, and environmental processes. An **issues** framework involves selecting topics based on environmental problems. Examples of current issues addressed include acid rain, marine pollution, and changes in forest cover. In a **resource sector** framework, the conditions and trends of natural resources are reported in relation to particular resource sectors such as agriculture, fisheries, forestry, mining, oil and gas. These sectors often parallel government responsibilities (as indicated by departments and services). The **environmental media** approach describes the state of environmental media such as atmosphere, water, land, flora and fauna. The **environmental process** approach attempts to reflect the dynamic nature of ecosystems by considering ecological relationships. The 1986 State of the Environment

Report for Canada used this approach, based on a stress-response model.

There are three basic types of spatial frameworks: jurisdictional or administrative, environmental components, and ecosystems. With a **jurisdictional or administrative** framework, information is compiled by geographic units based on jurisdictional or administrative boundaries. Obvious boundaries are provincial, urban areas, or census districts. An **environmental components** framework uses geographic units which are determined by particular environmental factors. Examples of this type of framework include watersheds, vegetation or climatic zones, and soil units. With an **ecosystem** framework, information is presented for geographic units which contain distinctive sets of abiotic and biotic features that are ecologically interrelated.

The report identifies and describes a number of SOE reports that best illustrate the use of particular types of frameworks for state of the environment reporting. But, how does one choose one type of organizational or spatial framework over another? That depends on the answers to some basic criteria — the objectives, the types of information available, the audiences and the budget. Applying these criteria, the report provides a brief summary of alternatives and suggests a number of publications as models of each. □

*Gregg Sheehy
Environmental Consultant
7011 Bilberry Drive
Orleans, Ontario, K1C 2C2*

Editor's Column

The State of the Environment Reporting newsletter is a free periodical published three times annually, providing information on the state of the environment reporting in Canada. Contents may be reprinted without permission, but credit would be appreciated.

Items and suggestions for possible publication in the newsletter are welcome. The ideas and opinions expressed in the articles are those of the authors, and do not necessarily represent those of the SOE Reporting Branch or of Environment Canada. Authors are identified to enable readers to obtain information directly. For information or referrals, to add names to the mailing list, or for more information on state of the environment reporting, contact:

Tom Pierce, Editor
SOE Newsletter
SOE Reporting Branch
Canadian Wildlife Service
Conservation and Protection
Environment Canada
Ottawa, Ontario, K1A 0H3
(819) 953-1448

ISSN 0835-703X

Copies of the Organizational and Spatial Frameworks report are available from the editor.

SOE — From the Outside Looking In

Marshall McLuhan is credited with the insight that environment tends to be invisible unless transcended in time or in space. "We don't know who discovered water," he said, "but we're pretty sure it wasn't a fish."

Humans discovered their environment with the first outerspace photos that revealed the ecosphere as a blue, cloud-swathed globe in whose watery skin various protoplasmic bits and pieces are enveloped. Suddenly we saw ourselves as a part of it: self-conscious, deep-air animals.

How would today's science look if we had seen this vision first? Just suppose that this vision, this reality, had preceded the development of today's science. Suppose we had been given the outside perspective to see the Earth whole before, immersed in it and feeling around like the six blind men, we had decided what was important. Would we not have recognised the **ecosphere as the unit**, the whole thing to be valued and studied? Then we would have analysed it into its sectoral components — atmosphere, water bodies, continental platforms, plants and animals — to understand better its marvellous functional unity.

Unfortunately, submerged in it, we were unaware of the whole. We took the parts to be the real entities, things-in-themselves, starting with humans and working out from there. To us, the most important objects were those with properties similar to ours — other organisms. Later, it was forced on our attention that various peripheral odds and ends were somewhat important too: climate, soils, sediments, salt water, fresh water, surface and sub-surface geological strata. These we tagged with the vague name "environment", meaning that which surrounds something of greater importance, namely organisms like us.

By the time we got this view from outside, our disciplines were already set in cement, our universities and governments departmentalized, assured of certain certainties. In hundreds of thousands of books and learned treatises, the fragments of the ecosphere have been confirmed by the savants as self-standing entities. "Soils are natural bodies." "The proper study of mankind is man." "Endangered plants and animals must be preserved."

Today, ecologically educated, we know intellectually that the parts we study in the disciplines are indeed parts. What we call atmosphere, lithosphere, hydrosphere and biosphere have no evolutionary or functional reality except in our heads. But we haven't assimilated the facts; we don't know them in the way that counts: in our hearts.

It remains difficult to accept the implications: that the real thing is the ecosphere, one of whose properties is the phenomenon called life. Life is not a property of bundles of protoplasm nor of complex protein molecules; it is a property of the skin of the planet and of the ecological systems that it comprises.

The ecosphere, the world, is the Unit, the Real Thing, the most perfect ecological system, evolving, adjusting, self-repairing. It is layered, consisting of an air layer lying on a water-earth layer with organisms sandwiched at the solar-energized interface. It is a three-dimensional entity.

One of the tools of human understanding is reduction, anatomising an object of interest into its parts. Into what parts should the ecosphere be dissected to aid comprehension?

If it is accepted that the three-dimensional ecosphere is the unit of

importance, and that life is not a phenomenon that exists apart from it, then anatomising the ecosphere into three-dimensional, sectoral ecosystems whose components include plants and animals will provide simplified but almost complete homologues of the Real Thing. Volumetric ecosystems, chunks of the ecosphere, can very nearly exist on their own, like terraria and aquaria. No way can plants and animals do that!

Given that we have begun to accept the ecosphere as the Real Thing, reporting on the **state of the environment** must deal with comprehensible units. While it is still important to report on sectors of the environment, the changes and quality of each should be described as ecosphere chunks to which Canadian environmental stakeholders relate. Areas such as the Saint Lawrence River Basin, the Great Lakes Watershed, the grasslands of the Saskatchewan River drainage are being used.

Using an analogy, people who want to purchase a home will examine each room and section in turn but will make their decision on the overall home environment. Even though the house has a perfect kitchen and bathrooms, it will not be considered highly if there are no windows and the roof leaks. The earth is our home; we should evaluate its state in the same fashion. □

*Stan Rowe
Department of Crop Science and
Plant Ecology
University of Saskatchewan
Saskatoon, Saskatchewan, S7N 0W0*

Adapted from an article in the Canadian Plant Conservation Programme Newsletter, Vol. 3(2), Winter, 1988.

The Worldwatch Institute

The Worldwatch Institute is an independent, non-profit, research organization created to analyze and to focus attention on global problems. It is committed to a world in which society can meet its requirements without diminishing the prospects for its children.

The goal of the institute, based in Washington, DC, is to provide information on Earth's natural systems and resources and their relationships to humanity, that will evoke effective responses from government. Although threats to the environment, are severe, the institute tries to be positive. We can do something about the earth's deteriorating condition; action must be initiated and directed by government, but governments can be influenced by pressures exerted by informed citizens.

The institute's mission is to research, assemble and assimilate high-quality information and to meld it into packages that can be understood by the public. The staff has established a network to obtain information on the changing state of the environment around the world. Interdisciplinary research programs analyze issues from a global perspective.

The Institute was established in 1974 by William M. Dietal, President of the Rockefeller Brothers Fund and Lester R. Brown, currently the president and senior researcher of the institute. It receives regular grants from a number of foundations, while support for specific projects comes from a variety of charitable foundations and such agencies as the United Nations Fund for Population Activities.

The Institute issues a variety of papers and books and a periodical; more recently it has produced television programs. Worldwatch papers focus on research into issues, such as energy, food policy, population, development,

technology, the environment, human resources and economics throughout the world. They are written for decision-makers, scholars and the general public. A total of 88 papers has been published so far. Recent titles include: *Environmental Refugees: A Yardstick of Habitability*; *Protecting Life on Earth: Steps to Save the Ozone Layer*; and *Action at the Grassroots: Fighting Poverty and Environmental Decline*.

The institute has produced 15 books, including *By Bread Alone*, *The Twenty-Ninth Day*, *Building a Sustainable Society*, *Running on Empty*, and *Renewable Energy: the Power to Choose*. Of most recent interest to SOE reporting is the *State of the World* series. These are annual publications, starting in 1984, subtitled "A Worldwatch Institute Report on Progress Toward a Sustainable Society". (See the accompanying article on the 1989 report).



The **State of the World** reports are assessments of the state of the global environment, in effect an annual physical checkup. The reports include criteria for evaluating government initiatives towards the sustainable society. They summarize important achievements, major issues that impact on the global environment and emerging issues. The 1988 report

discusses Earth's vital signs and the impacts of population growth, land degradation, increasing energy consumption and climate change. Separate chapters, often based on Worldwatch papers, discuss energy use and efficiency, forest cover, toxic chemicals and the diversity and extinction of species, and relate these topics to the development of a sustainable society.

The *State of the World* reports are so popular that they are available in Spanish, Arabic, Chinese, Japanese, German, Italian and French. They are required reading in many university courses; circulation has grown from 27 000 in 1984 to more the 210 000 in 1988.

World Watch, a periodical newly launched by the institute, will use the same focused analytical approach to issues as the institute's other publications. In the May-June issue, there are articles on desertification, the greening of the Soviet Union, saving the rainforest, and Canada's environmental seal of approval.

The public television system (PBS) in the United States is producing 10 parts of the award-winning *Nova* series based on the *State of the World*. Also, "Running on Empty", a public-television series broadcast in 1988, was based on the Worldwatch Institute book of the same name. □

*Tom Pierce, editor
SOE Reporting Newsletter*

For more information, contact
Worldwatch Institute, 1976
Massachusetts Avenue, NW
Washington DC, 20036 U.S.A.

State of the World 1989

The Worldwatch Institute's report, **The State of the World 1989** is a candid document. In the same sober prose that won justified acclaim for previous reports, Worldwatch warns that the world's great environmental battles will be won or lost in the 1990s. The message is made all the more chilling in that the Institute believes that the gap between what needs to be done and what is in fact being done continues to grow.

The environmental and economic problems that lead to this gloomy prediction are by now depressingly familiar. One of the strengths of the 1989 report is that it quickly zeroes in on the most pressing issues. In the Institute's view, none is more pressing than global warming.

The Institute compares the potential of global warming to disrupt human and ecological systems to that of nuclear war. In the next few decades, climatic change is expected to harm forests, fisheries, food production and water supplies. The accelerating rate of warming now predicted will make human adaptation to these changes very difficult.

It is essential therefore that governments start now to reduce the rate of climatic change. The challenge they face is to mobilize the political will to act now, even though scientific evidence remains incomplete. The alternative — of waiting for more conclusive proof — will force draconian solutions, Worldwatch warns.

To its credit, Worldwatch does not merely document the barriers it sees to a sustainable future; it also advocates a far-reaching global agenda to get us there. This agenda includes:

- A climate-sensitive energy strategy: such a strategy must emphasize continued gains in efficiency, perhaps through the imposition of a "carbon tax" on CO₂ emissions, a recommendation that Canadian environmental

groups are endorsing in increasing numbers. Eventually, such a strategy must also lead to a greater reliance on renewable energy. Given this prescription for change, the recent divestitures by US oil companies of their renewable energy subsidiaries appears incomprehensibly short-sighted.

- A massive reforestation program: indiscriminate logging and burning not only contribute to climatic change, but can also prompt devastating floods (Bangladesh suffered the worst floods in its history in 1988, partly as a result of the deforestation of the Himalayan foothills) and impair long-term soil productivity. An expansion in forest cover is vital for other reasons also: to preserve biological diversity, to provide fuelwood (upon which most of the world's poor still rely for cooking and heating) and to rehabilitate degraded environments.
- The stabilization of the world's population: long-term food security will depend more on the success of family planners than that of farmers, because the world is running out of uncultivated areas. Worldwatch predicts that, increasingly, countries in Africa and Asia will depend on North American grain production to feed themselves. In this context, the fact that the 1988 drought led the United States, for the first time in its history, to harvest less grain than it consumed is particularly worrisome.

The long-term goal of these initiatives must be to restore a global equilibrium. In Worldwatch's words, we must restore "a global balance between births and deaths, carbon emissions and carbon fixation, soil erosion and soil formation, tree cutting and tree planting". If we cannot make progress in correcting some of the current imbalances within the next decade, Worldwatch warns that

environmental deterioration and social disintegration will soon start feeding on each other. □

*François Bregha
Rawson Academy of Aquatic Science
Suite 404, 1 Nicholas Street
Ottawa, Ontario, K1N 7B7*

SOE Reporting in Manitoba

Manitoba enshrined State of the Environment Reporting in its new Environment Act, proclaimed in 1988. Clause 4(1) of the act states:

The Minister shall cause to be prepared a "State of the Environment Report" within three years from the date of the coming into force of this Act and at least every two years thereafter containing the following information:

- description of Manitoba's environmental quality, and activities related to present environmental issues; and*
- future environmental issues, projected trends and environmental management activities.*

The first State of the Environment Report must be released by the Minister of the Environment by March 31, 1991, and every two years thereafter. Provincial officials are currently developing the process and look forward to the challenge ahead. □

For more information contact D.L. Wotton, Terrestrial Standards and Studies, Environment and Workplace Safety and Health, Building 2, 139 Tuxedo Avenue, Winnipeg, Manitoba, R3N 0H6.

IDIAS — State of the “Icy” Environment

Across the street from the “glace” dome of the new National Art Gallery in Ottawa, **Environment Canada’s Ice Centre** is installing the latest in high technology. The Ice Centre, part of the Atmospheric Environment Service (AES), is responsible for reporting ice conditions in Canadian navigable waters. A variety of products are issued daily to serve the Canadian Coast Guard, international shipping, the fishing industry and offshore hydrocarbon exploration, as well as the government’s regulatory and environmental protection agencies.

Federal government ice information services, when started in 1945, were based on airborne visual estimates of ice conditions. In the past decade, more sophisticated remote sensing techniques have become increasingly important. The task now facing the ice analyst is to integrate large volumes of the unreferenced satellite and radar data in hard-copy form with visual observations and computer forecasts, and to do it within operational deadlines. Aside from its particular focus and the real-time nature, the task is analogous to that facing anyone dealing with mounting volumes of remotely-sensed data in reporting the state of the environment.

The Ice Centre solution to the task of

data integration is the **Ice Data Integration and Analysis System (IDIAS)**, a major database useful for state of the environment reporting. As such, it is one of the databases inventoried in the federal State of the Environment Information System, to make its existence more widely known to all users of environmental data.

IDIAS, at a capital cost of approximately \$10 million, was designed and developed under contract by the private sector with performance, flexibility, cost efficiency and ease of operation in mind. It will automate the ingestion and processing of the large volume of digital radar data arriving in real-time from the ice-reconnaissance aircraft, NOAA AVHRR (Advanced Very High Resolution Radiometer) data, digital LANDSAT imagery and future input from ERS-1, RADARSAT and DMSP (Defence Meteorological Satellite Program) satellite systems. IDIAS has been designed to handle approximately 550 megabytes of data daily and has on-line image storage capacity of 7.4 gigabytes. Each of the five IDIAS work stations, based on a dedicated Sun 3/280 micro processor, will provide sophisticated, full-colour, dual-screen display to enable operational personnel to overlay, analyse and integrate graphical and

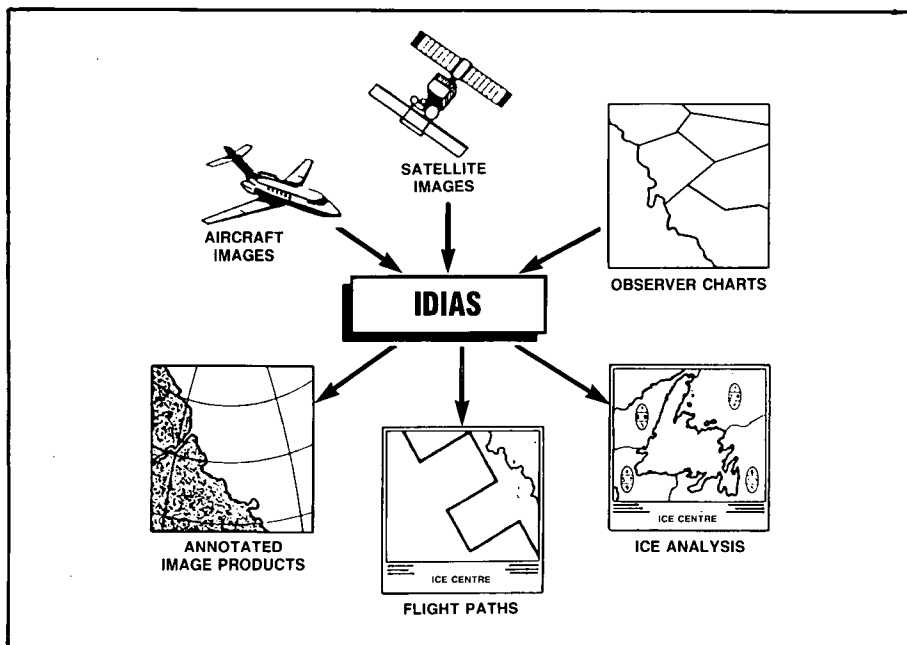
digital image data; thus eliminating many of the present manual, labour-intensive functions. A task-oriented user interface, based on the industry standard X-windows, will allow for ease of operation.

A projected turn-around time of three to six hours will enable the timely production of a variety of analyses and forecasts including both analogue and digital form, alphanumeric bulletins and aircraft flight schedules. IDIAS must be reliable as it will be required to operate 24 hours per day, seven days a week. The attached figure provides an overview of the major inputs and outputs of IDIAS.

This system will enable AES to maintain and improve its archival and retrieval capabilities. The ability to predict changes in ice conditions in the context of long-term trends in climate will be enhanced by a complete and up-to-date climatology of ice conditions. Only through this type of comprehensive understanding will the ice-sensitive shipping, fishing and offshore oil industries be able to plan for and adapt to the coming climate changes.

IDIAS, with its significantly increased throughput, functionality and flexibility, will allow the Ice Centre to take advantage of and use in timely fashion the new forms of digital image data that will become available in real-time over the next few years. The successful integration of the system into the operational environment, scheduled for the summer of 1989, will initiate a unique episode in the annals of the ice information services program. IDIAS, in concert with other systems under development, will result in a greater assortment of timely ice information products delivered to users, and more-efficient use of resource staff. It will provide a firm platform on which to build the ice services program well into the 1990s. □

*Dave Henderson
Product Development Division
Ice Centre
Environment Canada
Ottawa, Ontario, K1A 0H3*



New Publications

OECD Environmental Data Compendium 1989. 1989.

Organization for Economic Cooperation and Development, 2 rue André-Pascal, 75775 PARIS CEDEX 16, France.

Concern for Tomorrow, A National Environmental Survey 1985-2010.

1989. Ir. F. Langeweg, ed. National Institute of Public Health and Environmental Protection, Antonie van Leeuwenhoeklaan 9, P.O. Box 1, 3720 BA Bilthoven, The Netherlands.

Silviculture Statistics for Canada: an 11-year summary. 1989. D.H.

Kuhnke. Information Report NOR-X-301. Northern Forestry Centre, Forestry Canada, Edmonton, Alberta, T6H 3S5.

The Benefits of Wildlife. 1989.

Canadian Wildlife Service, Conservation and Protection, Environment Canada, Ottawa, Ontario, K1A 0H3.

Les états généraux de l'environnement du Saguenay/Lac-Saint-Jean — état de la situation. 1988. Conseil Régional de l'Environnement, 425, rue Sacré Couer ouest, Alma, Québec, G8B 1M4 (\$10).

Toxic Substances in the Great Lakes

Environment Canada released a report April 3, 1989 detailing sources and loadings of toxic chemicals and other substances of concern entering the Great Lakes system through the St. Marys River, the St. Clair River and the Detroit River. The findings were presented at public meetings in Sault Ste-Marie, Detroit and Sarnia.

The Upper Great Lakes Connecting Channels Study (UGLCCS) is the product of a four-year, bilateral, multi-agency, research project to provide scientific input to **Remedial Action Plans (RAPs)** for the three rivers, which have been designated as "areas of concern" by the International Joint Commission (IJC).

The Stolen Future: How to Rescue the Earth for our Children. 1988

Patrick Rivers. Green Print, Merlin Press, London, U.K. (\$5.95, available in Canada from DEC Books, 229 College Street, Toronto, Ontario M5T 1R4).

The Brundtland Challenge and the Cost of Inaction. 1988. A. Davidson

and M. Dence, eds. Institute for Research on Public Policy. P.O. Box 3670 South, Halifax, Nova Scotia, B3J 3K6.

Environmental Progress and Challenges: EPA's Update. 1988.

U.S. Environmental Protection Agency. Washington D.C.

Environmental Quality The 17th Annual Report of the Council on Environmental Quality. 1988.

Council on Environmental Quality. available from Supt. of Documents, U.S.G.P.O., Washington, D.C.

The Future of the Environment: the Social Dimensions of Conservation and Ecological Alternatives. 1988.

D.C. Pitt, ed. Routledge, London, UK.

World Resources 1988-1989. 1988.

World Resources Institute and the International Institute for Economic Development. (Order from World Resources Institute, Publications Department, 1750 New York Avenue NW, Washington, D.C. 20006. 16.95 + 2.00 handling US\$).

A Citizen's Agenda for Restoring Lake Ontario — Report of a regional meeting on Lake Ontario water quality issues. 1988.

Great Lakes United. State University College at Buffalo, Cassety Hall, 1300 Elmwood Avenue, Buffalo, New York 14222.

The Cassandra Conference: Resources and the Human Predicament. 1988. P.R. Ehrlich and

J.P. Holdren, eds. Texas A&M University Press.

Miljostatistikk 1988 Naturressurser og Miljø. (Environmental Statistics 1988 Natural Resources and the Environment). 1988.

Sosiale og Okonomiske Studier 68. Central Bureau of Statistics, Oslo, Norway.

Resources and World Development, Report of the Dahlem workshop on resources and world development: Part A, energy and minerals; Part B, water and land. 1987. D.J. McLaren and R.J. Skinner, eds. John Wiley, Chichester (England), New York. \$88.00.

The New Environmental Age. 1987. Max Nicholson. Cambridge University Press, New York.

The Green Capitalists. 1987. John Elkington. Victor Gollanz, London, U.K.

The State of the Environment in the European Community 1986. 1987. Commission of the European Communities, Luxembourg. (US\$18).

To make the Connecting Channels Study information accessible to a larger public, a State of the Environment fact sheet will be released shortly. It will summarize the data on sources and loadings in a way that allows for comparisons between study areas, and promotes understanding of the impacts of studied substances on water, sediment and biota in each channel. □

For more information, contact UGLCCS, Conservation and Protection, Environment Canada, 6th floor, 25 St. Clair Ave. E, Toronto, Ontario, M4T 1M2.

SOE Publications

1991 National SOE Report

A National SOE Report for Canada must be produced every five years. In a significant departure from the first SOE Report in 1986, which was produced by two main authors, the 1991 edition will be prepared by an extensive number of contributors. Many federal agencies, provinces and territories, industrial, academic and non-governmental groups (NGOs) will collaborate to produce this national SOE assessment.

Currently, chapters for the **Conditions and Trends** and **Regional Case Studies** are being written. This summer, work will be initiated on the **Emerging Issues** and **Management Response** sections. All chapters must be completed by spring 1990, to allow time for publication. The Report is to be tabled in Parliament by the Minister of the Environment in June 1991.

SOE Fact Sheets

This new series has been designed to highlight important environmental conditions or trends, and to emphasize the significance of these changes in terms of ecological conditions, economic opportunities, health risks and quality of life. These timely, attractive and informative reports, 4-12 pages long with full colour, are

intended to stimulate interest in environmental concerns among the media, NGOs, high schools, libraries, politicians and the broad "interested environmental audience".

The series has been launched with the recent printing and release of a publication that documents a phenomenon that is of interest and concern in many parts of Canada: the loss of agricultural and other resource lands to urban development.

Urbanization of Rural Land in Canada, 1981-86, SOE Fact Sheet 89-1, by L. Warren, A. Kerr and A. Turner was based on data from the former Canada Land Use Monitoring Program. Produced by the Canadian Wildlife Service, the publication highlights the conversion of rural lands to urban uses for 70 Canadian urban-centred regions.

Other Fact Sheets dealing with issues such as contaminants in seabirds and pollutants in British Columbia's marine environment are in progress.

SOE Report Series

The Report Series will feature more detailed information and interpretation on a wide variety of environmental issues of national or regional significance, presented in a 25-100

page, 2-colour format. The intended audience will include universities, resource managers, and interest group members who require more thorough examination of the topic. With one exception the SOE Reports, like the Fact Sheets, will be free of charge.

Approximately eight reports dealing with endangered species in Canada, people and parks, state of air quality, groundwater in Canada, water resources in the Prairies, contaminants in seabirds, pollutants in British Columbia's marine environment, and impacts of global climate change in Canada are under way. □

*Wendy Simpson-Lewis
SOE Reporting Branch
Canadian Wildlife Service
Conservation and Protection*

Requests for copies of the Fact Sheet **Urbanization of Rural Land in Canada, 1981-1986** (Catalogue No. En 40-210/89-1E) can be sent to Jean Séguin, SOE Reporting Branch, Canadian Wildlife Service, Conservation and Protection, Environment Canada, Ottawa, Ontario, K1A 0H3.

Conservation Council Calls for SOE Reporting

The Conservation Council of Ontario recently completed a review of the province's recent environmental initiatives. The report, **Ontario's Environmental Track Record: A Review of Significant Ontario Government Conservation Initiatives**, evaluates the programs and broader strategies that have been undertaken by the provincial government to improve the environment since the release three years ago of the Conservation Council's report, **Towards a Conservation Strategy for Ontario**. The ministries involved are Agriculture and Food, the Attorney General, Culture and Communications, Energy, Environment, Municipal Affairs,

Natural Resources, and Tourism and Recreation. Within each of the ministries there are programs that meet their stated objectives. According to the report, however, the real problem was to determine the impact of the programs on the broader state of the environment and their ability to meet wider environmental objectives.

One of the recommendations is for improved research and reporting on the **State of the Environment**. The council found that "one recurring problem in conducting this review was a lack of concise information of the state of the environment in each area of interest. There is extensive research being done in many fields, but the

packaging and communication of that information to the public and people in other disciplines must be improved." An independently produced SOE Report "would be valuable for determining the success of government programs and developing an overall strategy and new initiatives." In addition, an SOE report would help to achieve some of the other improvements recommended by the Council — improved public consultation; better government strategic planning; a development assessment program; and widespread promotion of sustainable development. The Council believes that state of the environment reports would complement

The International Scene

Environment Statistics in Indonesia

Two members of Statistics Canada spent December and January in Jakarta, Indonesia, as part of the Environmental Management and Development in Indonesia (EMDI) project. This CIDA-funded program aims to increase the capability of the Indonesian Ministry of Population and Environment in environmental monitoring, information, standards and regulations; all essential elements to form an **effective SOE reporting program**.

With 172 million people scattered over 13 000 islands straddling the equator, Indonesia embodies a huge diversity of cultures and natural environments. Environmental problems span resource degradation, declines in forests and fisheries, destruction of unique biota and adverse impacts of extractive activities. These problems are exacerbated by extreme population densities in Java and Bali, poverty, a nascent structure for environment and resource management, and conflicting objectives of government departments.

The Minister of Population and Environment in Indonesia is Dr. Emil Salim, a member of the United Nations Brundtland Commission. Not surprisingly, sustainable development is the prime goal of environmental policy.

Conservation (cont'd)

the detailed information to be stored in a **Geographic Information System** being developed in the Ministry of Natural Resources. To keep SOE reporting at arms length from other programs, it should be sponsored by the Ontario Round Table on the Environment and Economy. The process, and the report card produced, would be linked more to overall environmental strategy than to specific programs. □

Copies of the report can be obtained for \$10 from the Conservation Council at 506 - 489 College St., Toronto, Ontario, M6G 1A5.

However, this must fit within the broader policy goals of preserving and enhancing the quality of life. In Indonesia, where more than 80% of the population depends directly on local resources, environmental quality is particularly important.

Statistics Canada's role in the EMDI project is to advise the Central Bureau of Statistics (CBS) in Jakarta on environment statistics. Like most statistical offices, the CBS is competent in surveys rather than physical measurements. A "local environment" module of the National Socio-Economic Survey, which covers some 60 000 households, holds particular promise for obtaining environmental information. It surveys such things as fuels used for lighting and cooking; sources of water for drinking, washing and bathing; toilet facilities; disposal of garbage and waste water; and environmental nuisances.

The Statistics Canada team will concentrate on four aspects of the CBS work: strengthening the environment module of the National Socio-Economic Survey by adding questions on plastic waste, pesticide use, natural disasters and sharpening the focus on other questions; advising on increasing the environmental content of other surveys, especially the population census; reorganizing the publication Environmental Statistics of Indonesia, including increased use of indicators, graphics and maps; and organizing an interdepartmental demonstration project on environmental data and mapping.

This project a part of Canada's foreign aid effort. It also offers useful professional experiences to the Canadians involved. One of these is the opportunity to test concepts, definitions and models of environment statistics in a different setting. □

*Kirk Hamilton
Environment and Natural Resources
Section
Statistics Canada
Ottawa, Ontario, K1A 0T6*

The Canadian Climate Impacts Program

The **Canadian Climate Centre (CCC)** of Environment Canada has been studying the impacts of the "greenhouse effect" on Canada. Since 1984, a number of studies have been funded to investigate the potential impacts of the long-term warming that is expected to result from increased atmospheric concentrations of CO₂ and other "greenhouse" gases. Most of the studies identify potential changes in the state of the environment which could be expected under doubled CO₂ (or equivalent gas) concentrations. This doubling is expected to occur over the next four to six decades.

There is still considerable uncertainty as to the extent and time of the expected climate warming. In addition, our understanding of the relationships between climate, the biophysical environment and socio-economic systems is incomplete. The study results, therefore, must be treated as preliminary first estimates of the possible outcomes.

In 1987, the CCC implemented a new bilingual publication entitled **Climate Change Digest**, to disseminate summaries of individual study reports; some future issues will also include material relevant to other climate-change issues. □

Copies of the Climate Change Digest are available, free of charge, from the Climate Program Office, Canadian Climate Centre, 4905 Dufferin Street, Downsview, Ontario, M3H 5T4.

State of Canadian Wilderness

American wilderness author Roderick Nash told an international conference in 1987 that "this is a time of irreversible decision for wilderness on earth". This view was echoed in Canada by a federal task force on national parks. It advised the federal Minister of the Environment that the **possibility of dedicating wilderness lands** to conservation will have all but vanished by the year 2000.

Thus, it is critical that any analysis of the state of the environment must consider the state of Canada's wilderness. Wilderness areas maintain natural ecosystems and wildlife habitats and provide opportunities for backcountry travel. They are also scientific benchmarks against which environmental change and degradation can be measured. The continued health of Canada's environment will be reflected in the continued existence of wilderness.

As wilderness areas are increasingly lost to development, so too are the diversity of natural ecosystems and the species that inhabit them. In Canada, we have seen the loss of the Atlantic hardwood forests and almost 90% of the Carolinian forest. By industry estimates, two-thirds of the Pacific coast rainforest is gone. Currently, 181 species of wildlife and plants in Canada are under pressure — rare, threatened, endangered, or vulnerable.

How well has Canada done in protecting its wilderness lands? After a

century of establishing parks and protected areas, **only 2.3% of Canada is fully protected within reserves** that prohibit logging, mining and sport hunting. The national park system, which protects representative landscapes in various ecoregions, is only half complete. To have at least one national park in each of the 39 natural regions, 18 new national parks are required.

Existing parks and protected areas are rapidly becoming natural islands, afloat in a sea of development. Because they often do not include the total range of many species, faunal populations may eventually collapse. A 1986 study of 14 western North American national parks found that only one area — Canada's own four mountain national parks — did not experience any loss of large mammals. Further, a 1987 Canadian Parks Service report identified transboundary threats to national parks as a major management issue.

Immediate action to reverse these trends is required. This can be accomplished, in part, through programs that contribute to sustainable development as recommended by the United Nations Brundtland Commission. The Commission called for a tripling of protected areas and for strong forestry and agriculture conservation practices.

For Canada, this action must be on several fronts. The federal government should move to complete the national

park system by the year 2000. Also, the provinces should protect important wilderness areas. Old-growth forests, such as the temperate rainforest, should be treated as a non-renewable resource and preserved. Forestry practices in other areas must become more environmentally sustainable. More emphasis must be given to the protection of wildlife habitats.

The federal government's state of the environment reporting program can play an important role. It could identify ecoregions and specific terrestrial and marine areas that need protection. Also, the biennial state of the parks report now required by the National Parks Act could identify specific national parks where protective action on adjacent lands is required to prevent faunal collapse.

The next decade is critical for Canada's wilderness. The destruction of wilderness is irreversible, but public support for wilderness protection is high. Will Canada seize this opportunity to act? The 2001 State of the Environment Report will, we hope, answer yes!

Kevin McNamee
Canadian Parks and Wilderness
Society
Suite 1150, 160 Bloor St. E.
Toronto, Ontario, M4W 1B9

