

Annex A: A Case Study

The need to monitor the status of wetlands and improve wetland information was highlighted in the 2001 Report of the Commissioner of the Environment and Sustainable Development. An environmental audit of the Great Lakes and St. Lawrence River basin was undertaken to assess the state of the basin and the performance of the federal government in protecting and preserving this key ecosystem. This vast region is home to over 16 million Canadians (and 25 million Americans) and almost 160 species at risk or more than 40 per cent of all the species at risk in Canada. It holds roughly 20 per cent of the entire planet's fresh water.

Human activity is exerting tremendous pressure on this ecosystem; human settlement, agriculture and industrial development have resulted in the loss or fragmentation of vast amounts of forests, grasslands and wetlands. It is estimated that more than 70 per cent – in some areas, more than 95 percent – of the wetlands in southern Ontario and the St. Lawrence River basin have been lost.¹

The Commissioner identified critical information gaps, concluding that although the federal government has participated in restoring and protecting wetlands, it is impossible to determine overall recent trends in the basin. "While these activities are encouraging, there is not enough information on the current status of wetlands to say whether it is improving or getting worse." Information problems, moreover, make it impossible to compare the status of wetlands and related trends throughout the basin. "Less information is available on some wetlands than on others in the basin; there are important gaps in information on their size, losses or gains, and state of health. Where information has been compiled, inconsistent methods have been used. This makes it hard to compare the state of wetlands in different areas and to determine trends in their health."²

No single federal department or agency is formally responsible for wetlands. The Commissioner's report makes the following recommendation: "With advice from the Federal Wetlands Forum, the federal government should identify a lead department for monitoring, evaluating, and reporting on federal actions related to wetlands."³ By strengthening accountability for wetlands in this way, the stage would be set for coordinating mapping, monitoring and evaluation efforts at a national level, something which has been identified as a priority for many years.

Summary by V. Delaney, Delaney and Associates Inc.

¹ 2001 Report of the Commissioner of the Environment and Sustainable Development (Ottawa: Office of the Auditor General, 2001), Chapter 1, Section 5.1.2, p.185.

² *Ibid*, Chapter 1, Section 5.1.17, p. 188 and Section 5.3.20, p. 204.

³ *Ibid*, Chapter 1, Section 5.1.25, p. 189.

Annex B: Summary of Contacts

Discussions were held April 10 – 19, 2002, with the following individuals for the purposes of this report:

- Ken Cox North American Wetlands Conservation Council
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Annex C: List of Select Regional Inventories – Canada

This list is taken from I. Davidson, R. Vanderkam & M. Padilla, Review of wetland inventory information in North America (Wetlands International-Americas) at <http://www.wetlands.org/inventory&/GRoWI/welcome.html> at Appendix A.

1. Great Lakes Wetlands Conservation Action Plan 1994–2000, 1995, Ontario Ministry of Natural Resources.
2. Land Use Change on Wetlands in Southern Ontario, 1983, Environment Canada.
3. Location, Amount, Cover Type and Productivity of Wetlands of Potential Interest to Ducks Unlimited in parts of Northwestern Ontario, 1985, Ducks Unlimited.
4. National Role in Providing Fish Habitat in Canada, 1996, R Bailey.
5. Geographic Information System Wetland Database, 1995, Nova Scotia Department of Natural Resources.
6. Environmental Atlas of St Lawrence, Wetlands: Habitats on the Edge of Land and Water, 1991, Environment Canada.
7. Soil Landscapes of Canada, 1996, Agriculture Canada.
8. Ontario Wetland Map Summary, 1983, Federation of Ontario Naturalists.
9. Wetlands of the St. Lawrence River Region: 1950–1978, 1985, Environment Canada.
10. Natural Heritage Information Centre, 1997, OMNR.
11. Sensitive Ecosystems Inventory of East Vancouver Island and Gulf Islands, 1997, BC Ministry of Environment, Lands and Parks.
12. Annotated list of large prairie wetlands, 1967, Canadian Wildlife Service.
13. Wetland Distribution and Conservation in Southern Ontario, 1986, Environment Canada.
14. Fraser Lowland Wetland Inventory, 1989, Canadian Wildlife Service.
15. Wetlands of the Maritime Provinces. 1996, Canadian Wildlife Service.
16. Distribution of Wetlands in the St Lawrence Plain, 1988, Quebec Soil Survey Unit.

17. The Peatlands Areas of Nova Scotia, 1988, Nova Scotia Department of Mines and Energy.
18. Peat Resources in Newfoundland, 1993, Peat Conference Proceedings.
19. Prince Edward Island Freshwater Wetlands Inventory, 1981, CWS, Atlantic Region.
20. An Investigation of the Peat resources of New Brunswick, 1974, NB Department of Natural Resources and Energy.
21. Peatlands of Alberta, 1992, BJ Nicholson, LA Halsey & DH Vitt.
22. Agricultural Use and Extent of British Columbia Wetlands, 1989, Agriculture Canada.

Annex D: List of Major Inventories – Canada

This list is taken from P. Lynch-Steward et al., The Federal Policy on Wetland Conservation: Implementation Guide for Federal Land Managers (Ottawa: Environment Canada, 1996) Found at <http://www.cws-scf.ec.gc.ca/habitat/ramsar/docs/FPWCIG.pdf>. at Appendix 4.

PACIFIC REGION

1. Coastal Estuaries Program: Surveys of wetland location, ecological characteristics and an evaluation scheme. Ties to Pacific Estuaries Enhancement Program. Not digitized.

Agencies: Environment Canada
Province of British Columbia
Fisheries and Oceans Canada

2. Coastal Resources Management Program: A late 1970s folio of maps of integrated coastal management program includes sensitive wetland areas.

Agencies: Environment Canada
Province of British Columbia
Fisheries and Oceans Canada

3. Wetlands Inventory of the Lower Fraser Delta: Complete 1994 inventory of wetlands at 1:50 000 scale.

GIS data sets.
Agency: Canadian Wildlife Service

PRAIRIES

4. Alberta Peatlands: A map based on federal and provincial soil survey information that presents all peatlands of Alberta. Agriculture Canada. Ottawa. Scale 1:1 000 000. 1992.

Agencies: Forestry Canada
Government of Alberta
University of Alberta

5. Prairie pothole and aspen parkland wetlands: Focuses on southern Alberta and Saskatchewan. This area was a Ducks Unlimited Inc. remote sensing wetland inventory program from 1985 to 1991. Inventory scale is 1:50 000 in Canada. GIS compatible.

Agencies: Ducks Unlimited Canada
Ducks Unlimited Inc.

6. Prairie pothole waterfowl production transects: Inventory and population counts in Prairie region of Canada. Over 40 years of transect data. GIS of land use change and effects of NAWMP exist for some

transects e.g. southwest Manitoba.
Agencies: U.S. Fish and Wildlife Service

Canadian Wildlife Service

page 30

7. Northern Resources Inventory Program Manitoba (NRIP): A series of about 25 NRIP 1:250 000 maps prepared in 1976-1979 to provide detailed soil and vegetation description and mapping of all wetlands and other landscape features for much of the area of north central Manitoba and a corridor to Churchill. Not digitized.

Agency: Manitoba Department of Natural Resources

ONTARIO

8. Southern Ontario Wetland Inventory: Wetland mapping and loss evaluation led by Environment Canada in 1980-1985. A total of 125 1:50 000 maps were produced. These maps are now sold by the Federation of Ontario Naturalists under an agreement with Environment Canada. Not digitized.

Agencies: Environment Canada

Federation of Ontario Naturalists

9. Southern Ontario Wetland Evaluation Program: Over 2 400 sites have been evaluated in a Class 1-7 system, maps produced to guide Ontario Department of Revenue for Land Tax Reduction Program for wetland landowners. Summarized on 1:250 000 maps. Not digitized.

Agencies: Environment Canada

Ontario Ministry of Natural Resources

10. Ontario Peatland Inventory: During the 1980-1990 period, the Ontario Ministry of Natural Resources had a program to identify and characterize peatland and other surficial deposits, mainly in northern and central Ontario. Consists of site records mainly.

Agency: Ontario Ministry of Natural Resources

11. Northern Ontario Wetland Inventory: Ontario Ministry of Natural Resources had a program from 1980-1984 led by the Ontario Centre for Remote Sensing. Numerous prototype and operational inventory peatland maps were produced. Generally 1:250 000 scale. Digital records in original form.

Agency: Ontario Ministry of Natural Resources

12. Northern Ontario Wetland Evaluation: Initiated in 1992 to develop an evaluation scheme for wetlands north of Canadian Shield limit. Maps at 1:250 000 scale identify evaluated sites. Not digitized.

Agency: Ontario Ministry of Natural Resources

13. Hudson/James Bay Integrated Management Program: Numerous linear coastal and coastal zone

maps of wetlands and other features from the late 1970s at 1:50 000 scale were produced based on interpretation of remote sensing data. Some of this data are digitized.

Agencies: Environment Canada
Ontario Ministry of Natural Resources
University of Guelph

page 31

14. Northwestern Ontario Wetland Inventory Project: 1993-1994 Field evaluation of thematic mapper data centred on portion of Kenora area. GIS data set.

Agencies: Ontario Ministry of Natural Resources
Geomatics International Inc.

QUEBEC

15. St. Lawrence Wetlands Inventory: From 1980-1981, the Canadian Wildlife Service contracted a series of 1:20 000 scale linear maps for all shoreline areas of the Ottawa, Richelieu and St. Lawrence Rivers from the Ontario border through Matane, Quebec including the Gaspé and Magdalen Islands. Inventory in all areas; temporal change analysis up to the Quebec City region for the 1965-1980 period.

Agencies: Canadian Wildlife Service
Le Groupe Dryade Ltée.

16. Peatland Inventory Quebec: Quebec Ministry of Natural Resources, Mines Sector has published an atlas of about 110 1:250 000 scale maps of peatlands in Quebec south of 49° 50' N to 50° 00' N latitude

identifying fen and bog sites, areas of peat harvesting operations and data on peat characteristics for energy interests.

Agency: Quebec Ministry of Natural Resources

17. Peat Soil Areas, Southwest Quebec: A folio of three 1:250 000 map sheets in the Montreal-Sherbrooke region identify sites with peat soils suitable for market gardening development. Published in 1989.

Agency: Agriculture Canada

18. James Bay Ecological Land Survey: During the 1977-1982 period, over 45 1:250 000 scale maps that include landscape mapping incorporating peatland and coastal wetland complexes were produced by Environment Canada. GIS data sets were developed.

Agencies: Environment Canada
Quebec Ministry of Natural Resources
James Bay Development Corporation

ATLANTIC CANADA

19. Maritime Wetland Protection Mapping Program: From 1980-1986, maps of all the area of Prince Edward Island, Nova Scotia, and New Brunswick were produced by the Canadian Wildlife Service. These data are stored in a computerized format. Maps and ranking system by Golet System for non-forested wetlands of value to wildlife. Mapping scale is 1:50 000. In Nova Scotia and New Brunswick, integration projects with the peatland/mining sector are now underway to create integrated provincial wetland data bases and to update the inventory information.

Agencies: Canadian Wildlife Service

Government of New Brunswick

Government of Nova Scotia

Government of Prince Edward Island

page 32

20. Peatland Inventory Programs: New Brunswick and Nova Scotia: From 1980-1985, provincial mapping covered all of New Brunswick and Nova Scotia. Maps at 1:50 000 scale are tied to computer files on site descriptions and peat for energy characteristics including rare metal surveys data. These data are GIS compatible. These data are forming part of provincial integrated natural resources data bases now being developed.

Agencies: New Brunswick Department of Natural Resources and Energy

Nova Scotia Department of Natural Resources

21. Newfoundland Peatland Inventory: From 1980-1984, the province produced maps in hard copy or fiche for all peatland sites on the Island of Newfoundland at 1:50 000 scale. Data are not in computerized format. The province has also initiated a southern Labrador peatland survey in association with Environment Canada.

Agencies: Government of Newfoundland/Labrador

Canadian Wildlife Service

22. Newfoundland Coastal Wetland Inventory: Environment Canada in the 1984-1986 period led the creation of maps for oil spill impact assessment including detailed inventory of coastal wetland sites for most of insular Newfoundland. Scale 1:50 000.

Agency: Environment Canada

23. Prince Edward Island Wetland Inventory: All wetlands have been remapped effective to 1993-1994 and data are in geocoded format.

Agency: Prince Edward Island Department of Environmental Resources

NORTHERN CANADA

24. Northern Wetland Project, Northwest Passage/Beaufort: Environment Canada and Northern Oil and Gas Program (NOGAP) in the 1984-1985 period created wetland maps for a shipping impact assessment. The study includes 19 maps at 1:500 000 scale, covering all of the total map sheet areas adjacent to the Beaufort Sea and Northwest Passage regions including Lancaster Sound, mapping location of wetland complexes and providing data sheets for each complex on ecological and wildlife characteristics.

Agency: Environment Canada

25. Northern Land Use Information Map Series: From 1978-1985 Environment Canada and Indian and Northern Affairs Canada produced over 180 map sheets published at 1:250 000. These integrated land use planning maps include ecological landscape characterization of northern portions of the District of Keewatin and most of Arctic Islands south of 71° 00' N. latitude. These include wetland complexes as specific map units.

Agencies: Environment Canada
Indian and Northern Affairs Canada

page 33

CANADA

26. Wetlands of Canada: Wetland Regions and Wetland Distribution, two maps at 1:7 500 000 scale were published by the National Atlas of Canada in 1986, authored by the National Wetlands Working Group. It is a joint publication of Environment Canada and Energy, Mines and Resources Canada. Ottawa. Exists as Statistics Canada GIS data base.

Agencies: Environment Canada
National Wetlands Working Group

27. Peatland Inventory of Canada: In 1995, an updated map of peatland distribution was published as an open file data base of the Geological Survey of Canada. The map scale is 1: 6 000 000.

Agencies: Geological Survey of Canada
Agriculture and Agri-food Canada

28. National Land Cover Project, Environment Canada: The State of Environment Reporting Branch houses a national Land Cover GIS Data Base summarizing land cover for each of 5 400 ecodistricts. One class of land cover is "total wetland area" by ecodistrict. The data were synthesized from many sources in

1985. Ottawa.

Agency: Environment Canada

29. Ducks Unlimited Canada, Provincial Wetland Inventories: Wetland maps for many sectors of

southern Canada that are used to identify key wetland areas for waterfowl are prepared and housed by

provincial offices of the company. Many of these inventories are not in computerized format. Hard copy

maps exist in addition to the Prairie wetland mapping noted above (item 5).

Agency: Ducks Unlimited Canada

Source: C.D.A. Rubec, Canadian Wildlife Service, personal files.

Annex E: Definition of Terms

Assessment – the identification of the status of, and threats to, wetlands as a basis collection of more specific information through monitoring activities (Wetlands International)

Inventory – the collection and/or collation of core information for wetland management including the provision of an information base for specific assessment and monitoring activities (Wetlands International)

Monitoring – collection of specific information for management purposes in response to hypotheses derived from assessment activities, and the use of these monitoring results for implementing management (Wetlands International)
<http://www.wetlands.org/networks/Inventory/InvMon.htm>

Ramsar Convention on Wetlands – an intergovernmental treaty signed in Ramsar, Iran, 1971, that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 131 Contracting Parties to the Convention, with 1150 wetland sites totaling 96.3 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance. There are 36 Ramsar sites in Canada covering 13 million hectares.
(<http://www.ramsar.org/>)

Wetland – Under the Ramsar convention: “For the purpose of this Convention wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.” (Article 1.1) “may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying with the wetlands” (Article 2.1)

Wetland loss – the loss of wetland area, due to the conversion of wetland to non-wetland habitats, as a result of human activity (M. Moser, C. Prentice & S. Frazier, Wetlands International, “A Global Overview of Wetland Loss and Degradation” at http://www.ramsar.org/about_wetland_loss.htm.)

Wetland degradation – the impairment of wetland functions as a result of human activity; degradation can occur without loss of wetland area, through upstream impacts on hydrology and water quality, etc. (Ibid at 2.)