

# WETLANDS ON THE EDGE: COASTAL MANAGEMENT AND GREAT LAKES COASTAL WETLANDS

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## ABSTRACT

*Until recently, Ontario resisted the idea that Great Lakes coastlines might require a special management approach. Thus, inappropriate development has taken place, shoreline wetlands have been lost and shore properties damaged by flooding and erosion. A complex organizational 'ecosystem' of agencies and legislation influences shoreline management. Programs that could be used more effectively to protect coastal wetlands are those related to national wildlife areas, national marine parks, Canadian landmarks, the waterway category of provincial parks and Areas of Natural and Scientific Interest. The Shoreline Management Program of the Ontario Ministry of Natural Resources, implemented by conservation authorities, offers opportunities for coastal wetland protection. Yet these opportunities are limited by the program's exclusive focus on shore hazards and the resulting lack of a goal of coastal habitat protection. This orientation deviates from the principles of shoreline management adopted by the Canadian Council of Resource and Environment Ministers. Three complementary strategies could fill this gap. An existing effort to identify and protect 'critical unprotected coastal habitats' is outlined. The notion of a private, non-profit coastal heritage trust is advanced to provide innovative means of protecting coastal wetlands. Such trusts have been successful in nature conservation in other jurisdictions. A clear need exists for promoting habitat protection as part of a comprehensive coastal management approach. Environmental advocacy groups are the logical agents of increasing public and governmental awareness of the issue.*

## INTRODUCTION

The history of the Great Lakes is not a pretty one. Our society and culture have subjected the lakes to many abuses. The lakes' coastal wetlands are no exception. Increased public concern about the fate of the lakes offers an opportunity to reverse the two-century trend of environmental abuse. The challenge is to channel this concern effectively.

Coastal management is an approach, adopted by many countries, aimed at eliminating the abuse of coastal resources like wetlands by managing human use of coasts. Coastal management has had success, albeit qualified success, in protecting some coastal wetlands and other natural habitats (Brower and Carol 1984; Godschalk and Cousins 1985). But Canada generally rejected this approach (Needham and Nelson 1978; Harrison and Kwanena 1981; Harrison and Parkes 1983), leading Hanson (1983) to remark that "coastal zone management in Canada is dead: so why flog a dead horse?"

The Great Lakes shorelines bear great similarities to ocean coasts. They are magnets for development. And their ever-changing nature makes them hazardous: they erode; they flood; great storms occur. To manage coastal land use in the U.S., the Coastal Zone Management Act was enacted to apply to the Great Lakes and St. Lawrence River as well as ocean coasts (where states participate in the program). Significant coastal habitats along Lake Ontario and the St. Lawrence River, for example, have been identified in New York State's coastal management program (Hart *et al.* 1988).

This paper presents a picture of the current management of Ontario's Great Lakes' shores and their wetlands and suggests a path towards better protection of these wetlands. First presented is a brief profile of the diversity of coastal wetland types and inventories carried out to document their extent and values. Second, the government programs which could be used to better protect coastal wetlands are outlined. Third, the opportunities and limitations of the new Shoreline Management Program are described in some detail. Finally, several new directions are proposed to further the protection of coastal wetlands and other coastal habitats. In that discussion, the potential roles of a coastal heritage trust and a coastal environmental advocacy group are investigated.

## THE DIVERSITY OF COASTAL WETLANDS

The coastal geomorphology of the lakes, along with the wave and current regimes, largely define the variety of forms which shoreline wetlands take (Herdendorf *et al.* 1981; Jaworski and Raphael 1978; Geis 1985). River delta, restricted riverine, estuary, lagoon, inter-dunal, open shoreline and unrestricted bay wetlands count among the types noted. Marsh vegetation dominates coastal wetlands (Herdendorf 1987), but swamps, fens and, infrequently, bogs do occur (Glooschenko *et al.* in press). Much of the wetland area is concentrated south of the Precambrian Shield particularly on Lakes Ontario, Erie and St. Clair. Shoreline wetlands are relatively rare in shield areas and are

thus of greater relative value (Ritchie 1989). Wetland evaluation by the Ontario Ministry of Natural Resources (OMNR) has revealed over 55,000 ha of coastal wetlands on the lower Great Lakes and St. Lawrence River (Glooschenko *et al.* in press). This represents roughly 15 percent of all wetland habitat evaluated in southern Ontario.

Some shoreline wetlands are protected as provincial parks, conservation areas, national wildlife areas, national parks and other categories of protected areas. Smith (1987a) provides a detailed inventory of these. Other wetlands have been identified as Areas of Natural and Scientific Interest (e.g. Hanna 1984), Environmentally Significant Areas (e.g. Oldham 1983) or flagged as important by public interest groups (Campbell *et al.* 1981; Van Patter and Hilts 1985). These generally do not receive protection commensurate with their ecological importance. Smith (1987a) also gives an inventory of these sites.

#### THE ORGANIZATIONAL 'ECOSYSTEM'

One main reason the notion of coastal zone management arose was the inertia-promoting overlap of responsibilities in coastal areas (also see Francis 1987). All the regular planning and regulatory processes that apply to 'dry land' apply on coasts. An entirely different set of legal and policy jurisdictions apply to the lakes and their waters. Other statutes apply only to the shorelines. The boundaries of overlap are often indistinct. Everyone and, at the same time, no one had responsibility for shoreline management.

Table 1 presents a list of major agencies and legislation related to shore management and protection of coastal habitat. Smith (1987a) outlines each of these in some detail. The following discussion focuses on the manner in which some programs might contribute to better protection of coastal wetlands.

#### Canadian Landmarks

The Canadian Landmark program was proposed by the Canadian Parks Service and approved by the federal government in the Parks Canada Policy of 1979 (Parks Canada 1979). Yet funding has never been allocated to this program. The subsequent budget cuts to Environment Canada in 1984 and 1988 make the likelihood of a functioning Canadian Landmark program remote. The Canadian Landmark designation would allow the parks service to become involved in protecting unusual natural sites that

are generally much smaller than national parks (Parks Canada 1983). Quite flexible and innovative techniques of land acquisition and management would be possible, as would partnerships with other governments and organizations.

#### National Marine Parks

The goal of the National Marine Parks Policy is a marine park on each of the Great Lakes (Lake Huron and Georgian Bay are considered separate aquatic regions by the Canadian Parks Service) (Environment Canada 1986). Fathom Five National Marine Park is the first of its kind on the lakes and in all of Canada. What about the other lakes? Smith (1987a) suggested sites that might qualify as candidate areas such as Long Point Bay and the coasts of Lake Superior Provincial Park and Pukaskwa National Park. The designation of other marine parks on the Great Lakes should be part of the effort to restore the lakes' ecological integrity. The same principle lead to efforts to establish a marine park in the Saguenay estuary as part of the federal government's initiative to rehabilitate the St. Lawrence River.

#### National Wildlife Areas

The National Wildlife Area Program administered by the Canadian Wildlife Service under the

AGENCY	LEGISLATION
Canadian Parks Service	National Parks Act Parks Canada Policy
Canadian Wildlife Service	Canada Wildlife Act, Migratory Birds Convention Act
Fisheries & Oceans Canada	Fisheries Act, Ontario Fisheries Regulations
Ministry of Natural Resources	Provincial Parks Act, Public Lands Act Aggregates Act Mining Act Lake & Rivers Improvement Act Endangered Species Act
Ontario Heritage Foundation	Ontario Heritage Act
Conservation Authorities	Conservation Authorities Act Fill, Construction & Alteration to Waterways Regulations
Municipalities Ministry of Municipal Affairs	Planning Act

TABLE 1  
Agencies and legislation pertinent to the protection of Great Lakes coastal wetlands.

Canada Wildlife Act has been quite useful and could be more useful in protecting Great Lakes wetlands. National wildlife areas protect coastal wetlands at Long Point, Big Creek and Lake St. Clair. Smith (1987a) suggested other sites for consideration as national wildlife areas. The legislative mandate provided in the Act is quite effective and flexible. The cooperative wildlife area category in the Act allows for cooperative protection of a site through agreements between different government agencies or with voluntary organizations. This category has never been used. Since the 1984 budget cuts to Environment Canada, the national wildlife area program has essentially been 'on ice'. Funding sources for acquisition of new areas remain doubtful. Funds for management are extremely limited. The new federal environment minister should re-affirm the importance of the national wildlife area program and its use in protecting Great Lakes wetlands.

#### **Areas of Natural and Scientific Interest**

The Areas of Natural and Scientific Interest or ANSI Program complements the protection of sites within provincial parks (Ministry of Natural Resources 1987a). While many coastal wetlands have been identified as ANSIs, no particular attention appears to be given to the Great Lakes coastal zone as a unique biogeographic unit. Furthermore, fish and aquatic community representation seems under-emphasized. To remedy this, Smith (1987a) suggested a number of potential coastal ANSIs and recommended increased consideration of coastal habitat in selection procedures. ANSI identification has not been consistent across the province. Inventories and assessments are needed for the northern portion of Georgian Bay, Manitoulin Island and the North Channel where no ANSIs have been identified yet where significant coastal habitats occur.

#### **Provincial Waterway Parks**

Use of the Waterway Park category of provincial parks has been restricted to river corridors (Ministry of Natural Resources 1978). But its application to coasts as waterways would be logical and indeed would provide a means of ensuring public access to the shorelines. This would be analogous to the U.S. park category of National Lakeshore. Perhaps a waterway park for the North Channel might help preserve that area's ecological integrity. There has been discussion in North Channel communities of turning a portion of the channel into a provincial park.

#### **ROOM FOR OPTIMISM: THE SHORELINE MANAGEMENT PROGRAM**

During 1987 the Shoreline Management Review Committee examined past approaches to managing Great Lakes shorelines and sought public input on the subject. In December of 1987 the committee recommended the development of a long-term, program to manage Great Lakes' shorelines, emphasizing the control of land use (Shoreline Management Review Committee 1987). The government quickly endorsed many of the recommendations and the Shoreline Management Program of the Ministry of Natural Resources was born. The Ministry of Natural Resources is now the lead agency for shore management policy development and conservation authorities implement the policy. Where no conservation authorities exist, local Ministry of Natural Resources offices implement shore management.

When conservation authorities were established in the 1950's, they were given jurisdiction over river watersheds but not over the shorelines of the Great Lakes. Eventually, eight of the 27 coastal conservation authorities did gain jurisdiction over Great Lakes shorelines but on an *ad hoc* basis. The shorelines continued to be misused, development continued in areas subject to flooding and erosion and shoreline wetlands continued to be lost. Shore management was largely left to municipalities. And while some municipalities attempted to control shore development, these efforts were largely unsuccessful (Jessen *et al.* 1983; Kreutzwiser 1988). The decision of 1987 to extend the mandate of conservation authorities to include Great Lakes coasts was wise and long overdue.

A number of policy components exist within the program. One major thrust is the development of a policy statement on shoreline flooding and erosion hazards under section 3 of the Planning Act. Municipalities and government agencies must "have regard for" these policy statements. Conservation authorities can monitor adherence to the policy statement using their plan input and review role under the Planning Act.

Each authority is to formulate a Shoreline Management Plan. These are to consist of six major components: prevention of hazards; assessment and regulation of the construction of engineered shore protection structures; emergency response to storm and flood events; assessment of environmental effects of preventive and protective measures, particularly shoreline protection works;

providing information to the public; and monitoring of changes in shore resources (Ministry of Natural Resources 1987b).

Authorities are now able to pass Fill, Construction and Alteration to Waterways Regulations (section 28 of Conservation Authorities Act) to regulate development on hazard lands and alterations to watercourses along Great Lakes shorelines. These regulatory powers, coupled with the Planning Act policy statement, will ultimately result in the protection of some coastal wetlands which are generally classed as hazard lands.

Nevertheless, these management tools have considerable limitations. The power of policy statements under section 3 of the Planning Act has been questioned by Dahme (1989). Every conservation authority has the power to pass Fill, Construction and Alteration to Waterway Regulations, but are not required to do so. Indeed, a number of authorities have not passed any such regulations. Of the eight conservation authorities with jurisdiction over Great Lakes shores that predate 1988,

five have passed regulations (Kreutzwiser 1988).

Better consistency in implementing the regulatory mandate of conservation authorities may be achieved through reforms suggested for the conservation authority program (the 'Burgar Report' (Ministry of Natural Resources 1987c)). The number of authorities is to be reduced from 38 (27 coastal) to 23 (18 coastal). The areal extent of the jurisdictions and available resources of authorities are to be equalized. Opting out of programs by particular authorities will be disallowed.

#### WHAT IS GOOD COASTAL MANAGEMENT?

Having examined the Shoreline Management Program in some detail, we can now ask whether the program constitutes good coastal management. But what is good coastal management? A number of models have developed of what constitutes effective and efficient coastal management (Canadian Council of Environment and Resource Ministers 1978; Brower and Carol 1984; Sorensen *et al.* 1984). Table 2 illustrates the seven features that the Canadian Council of Environment and Resource Ministers (1978) identified as fundamental to good shore management.

#### Does the Shoreline Management Program measure up?

Clearly the government recognizes the importance of shore areas as evidenced by the development of this new program. A cooperative approach is being followed. Ministry of Natural Resources is the lead agency with conservation authorities as implementing agencies. The cooperation of the Ministry of Municipal Affairs and local municipalities will be developed and is built into the policy initiatives. Policy and program coordination should be achieved via the Planning Act policy statement which requires all provincial and municipal bodies to have regard for the policy statement. Policy coordination with federal agencies and in provincially-owned areas such as provincial parks must be resolved as noted by the Shoreline Management Advisory Council (1988). Shore management in provincial parks has been examined quite independently (Cain 1988).

The protection of sensitive, unique and significant areas is not explicitly part of the new program (Table 2). Having said that, many such areas may be protected. Some authorities, for example Essex Region, include the protection of environmentally significant areas as one of their major goals. Indeed, Essex Region Conservation Authority has already protected a number of coastal wetlands. But

PRINCIPLE	PART OF SHORELINE MANAGEMENT PROGRAM?	COMMENTS
Recognition of the Importance of Shore Areas	Yes	
Cooperative Approach to Management	Yes	
Policy and Program Coordination	Yes	Achieved through a Planning Act policy statement
Protection of Sensitive, Unique & Significant Areas	No	Protection will take place in some cases; but principle is not explicitly part of program
Right of Public Access	No	
Information Systems	Likely	Too early to assess
Public Awareness	Yes	Shoreline Management Advisory council has an important role

**TABLE 2**  
An assessment of the Shoreline Management Program based on the principles for shore management of the Canadian Council of Resource and Environment Ministers (1978).

emphasis varies among authorities. Without explicit mention of habitat protection as a goal, consistency will not result. The Shoreline Management Advisory Council (1988) recommended to the Minister of Natural Resources that Shoreline Management Plans developed by authorities "have due regard for the conservation of the valuable and sensitive natural areas along the shoreline". I would go further. The *Guidelines for the Preparation of Shoreline Management Plans* (Ministry of Natural Resources 1987b) should be revised to require the mapping of important coastal habitat, including wetlands, and the development of protective strategies for these habitats.

The right of public access is not a part of new shore policy. This is an extremely important issue but one beyond the scope of this paper. Citizens are being denied access to large stretches of Great Lakes shoreline by private property owners.

The conservation authorities and the Ministry of Natural Resources are conducting considerable technical background research and resource mapping. So a great deal of information on shoreline hazards and resources will become available in the next few years. It is too early to assess whether this information will be widely available to interested parties. This appears probable (Table 2).

The program appears to be raising public awareness. Yet public knowledge of the Shoreline Management Program apparently remains low (Shoreline Management Advisory Council 1988). The Shoreline Management Advisory Council, set up by the Minister of Natural Resources to solicit public input on shore issues, is a valuable means of generating public awareness.

#### **PROTECTING COASTAL NATURAL HERITAGE**

The lack of focus on protecting coastal habitat appears to be one major deviation of the Shoreline Management Program from the principles in Table 2. The likelihood of this focus changing seems remote at present. How then can the protection of coastal habitat be promoted? Three means of accomplishing this are examined below. First, a cooperative initiative is unfolding aimed at identifying and protecting critical unprotected coastal habitats on both sides of the lakes. Second, a coastal heritage trust could evolve to play an important facilitation role in habitat protection. Third, promotion of coastal habitat protection by environmental advocacy groups is imperative if anything is to change.

#### **Protecting 'Critical Unprotected Coastal Habitats'**

The idea of a cooperative effort to protect key coastal habitats developed at the University of Waterloo (Francis *et al.* 1985; Francis 1988) and led to the report *Towards the Protection of Great Lakes Natural Heritage Areas* (Smith 1987a). The Natural Heritage League, a network of governmental and private conservation organizations, has given a measure of support to the idea. Support has also been given by the Ecological Sub-Committee of the Scientific Advisory Board of the International Joint Commission. A workshop held in Windsor in 1988 examined the basis for developing such a bi-national protection effort (Francis 1988). This initiative is analogous to the Carolinian Canada initiative undertaken to protect 38 'critical unprotected natural areas' in extreme southwestern Ontario (Price 1985). But protecting 'critical unprotected coastal habitats' is not enough. Action is needed to retain as many coastal wetlands and other habitats as possible. How might this be achieved?

#### **A Great Lakes Coastal Heritage Trust**

Quite recently, Reid (1988) completed research on the potential of land or nature trusts to contribute to nature conservation in Ontario. In the United Kingdom, the U.S. and elsewhere the activities of trusts result in considerable success in habitat protection. Reid (1988) sees two main types of trusts. One is a larger, more centralized type that might have links to government. The National Trusts of Scotland and England and Wales typify this sort of trust. The other kind of trust is a small, 'grassroots', local trust with strong local membership in the area affected.

A number of specific examples exist of agencies involved in tasks analogous to what a Great Lakes coastal trust might undertake. Two are outlined here: the California Conservancy and the Maine Coastal Heritage Trust. Both focus on protecting the ecological and scenic features of coasts.

California is sometimes held up as a model of strong protection for coastal environments. A powerful coastal commission regulates land use and is backed up by a strong mandate in the state Coastal Act. One interesting ingredient to the California recipe is the Coastal Conservancy. While the conservancy is a state agency, it has no regulatory role; but relies on the strong regulatory power of the commission. The conservancy acts as a broker — resolving disputes in land use conflicts.

It also collaborates with over 50 non-profit coastal land trusts for land protection (Grenell 1988). Many wetland rehabilitation projects have been sponsored (Zentner 1988). The structure of the conservancy allows its staff to respond quickly, in extremely flexible ways to individual situations. The conservancy concept has already been successfully transplanted to Lake Tahoe (McCreary and Adams 1988).

Quite a different approach is embodied in the Maine Coastal Heritage Trust. This private, non-profit trust has a staff of nine and an annual budget of \$425,000 (U.S.). Much of this money comes from individuals, including many coastal residents. The trust plays a broker role in acquiring lands or easements — usually transferred to government or local land trusts. It also provides support services to these local trusts through training, consultation, loans and publications (Reid 1988).

What then might a Great Lakes coastal heritage trust look like? Clearly, the purpose would be to promote the protection of coastal habitat (Table 3). A focus on protecting cultural heritage as well as natural heritage would increase public appeal. The Great Lakes have a tremendous maritime history. Many coastal residents are keenly aware of this heritage. The trust's role must also go beyond land acquisition to include rehabilitation of coastal wetlands and other habitat. This role could lead to involvement in Remedial Action Plans for areas like Hamilton Harbour and the Bay of Quinte.

Of particular importance is that the trust be a non-profit, private organization to avoid the anti-govern-

ment sentiment amongst many rural landowners. Thus it would have no regulatory role. Great public concern about the Great Lakes exists and could be drawn upon. Urban dwellers, cottagers and rural residents might all support the trust.

Scale of action and organization is a key question. A larger, Great Lakes-wide trust could be preferable for purposes of fund-raising and public profile. Yet small scale and grassroots connections appear to be an important ingredient in the success of land trusts elsewhere (Reid 1988). Perhaps a lakes-wide trust with local chapters might be best.

Cooperation with conservation authorities, municipalities and landowners would be a fundamental role of the trust. This would be in land protection, habitat rehabilitation and possibly in resolving land use conflict.

#### **A Coastal Advocacy Group**

None of the foregoing is possible without a strong voice being raised in defense of coastal wetlands. Successful struggles to save coastal wetlands have centred on Rattray Marsh and Oshawa Second Marsh. Examples of coastal wetland loss and degradation also exist: Stokes Bay, Scott Point and Collingwood Shores. These examples could galvanize and inspire public support for the protection of Great Lakes coastal habitat. The Shoreline Management Program evolved because politicians responded to the outcries of coastal residents who suffered property losses. If concern about the loss of coastal habitat was expressed by environmental groups the result might be a broadening of the scope of shore management to include the protection of coastal habitats. Great Lakes United, a joint Canadian and American group, might be a logical group to take up this issue. At present, Great Lakes United generally focusses on water quality issues. Perhaps the Federation of Ontario Naturalists could share in this role.

#### **EPILOGUE**

The management of the Great Lakes' coastline has been left to chance for too long. Momentum for change has built quickly. The new Shoreline Management Program offers opportunities for coastal wetland protection but is limited in scope. A coastal heritage trust could help fill the gap and channel public support for Great Lakes protection. But environmental advocacy groups must promote protection of coastal habitat as part of shore management policy.

<p><b>PURPOSE</b></p> <ul style="list-style-type: none"> <li>Promote the protection of coastal habitat</li> <li>Promote the protection of Great Lakes cultural heritage (shipping and fisheries history)</li> <li>Habitat rehabilitation and creation</li> <li>Channel public concern about the Great Lakes</li> </ul> <p><b>STRUCTURE</b></p> <ul style="list-style-type: none"> <li>Private, non-profit organization</li> <li>One Great Lakes-wide trust with local chapters?</li> </ul> <p><b>ACTIVITIES</b></p> <ul style="list-style-type: none"> <li>Land acquisition and stewardship (e.g., easements, agreements, etc.)</li> <li>Work with conservation authorities, municipalities and private landowners</li> <li>Resolution of land use conflicts?</li> <li>A role in Remedial Action Plans</li> </ul>
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**TABLE 3**  
Possible characteristics of a Great Lakes coastal heritage trust.

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# WETLANDS: INERTIA OR MOMENTUM

Proceedings of a Conference  
held in Toronto, Ontario  
October 21-22, 1988

Edited by

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Ryerson Polytechnical Institute

and

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Federation of Ontario Naturalists

Available from

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355 Lesmill Road  
Don Mills, Ontario M3B 2W8  
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