

Assessing the Evolution of Marsh Management in Protected Areas: with special reference to Point Pelee, Rondeau and Long Point, Lake Erie, Canada*

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Abstract

There has been a growing awareness in recent years of the many ecological and other values of both protected areas and wetlands. This research was intended to provide a preliminary assessment of the state of planning and management of wetlands and aquatic ecosystems in national parks and protected areas and to make recommendations for future work. The focus was on the history of ideas and on awareness of wetland uses, planning, management and conservation with special reference to the Great Lakes and Lake Erie. Three protected areas were studied along the Canadian shore of Lake Erie: Long Point; Rondeau Provincial Park; and Point Pelee National Park. The most detailed work was done on Point Pelee due to the availability of historic documentation and the long history of planning and management for the national park, which was established in 1918.

A number of conclusions are discussed. For example, early recognition of the value of marshes to wildlife and private initiatives was crucial to the protection of these ecosystems. The ecology of the marshes has been negatively impacted by human activities both inside and outside of the protected areas, although these impacts are not fully understood. In general knowledge about marsh ecology is lacking, although interest in and work on these ecosystems has increased in recent years. Finally, research and monitoring activities have typically suffered from a lack of follow up. Recommendations include: clarification of several issues related to marsh ecology, such as the role of fire in marsh management; the development of an image of the natural state of Pelee Marsh to help guide future management; and, an outline of a research strategy on aquatic ecosystems in protected areas.

Introduction

The purpose of this research was to assess the state of planning and management of wetlands and aquatic ecosystems in national parks and protected areas, and to make recommendations for future work. The focus was on the historical development of ideas, uses, awareness, planning, management and conservation, with special reference to the Great Lakes and Lake Erie.

The study was undertaken within the broad context of the growing awareness of the many values of protected areas and aquatic ecosystems and concern over their long-term sustainability in light of human-caused stresses and impacts.

* This report arises from a poster paper at the 1998 Annual Meeting of the Parks Research Forum of Ontario.

Methods/Approach

A “post hoc” or “after the fact” descriptive-analytic assessment approach was used (see Serafin et al., 1992 for an overview of some post hoc assessment methodologies). This involved a review and analysis of published reports and data and the use of appropriate criteria and judgement to recreate, interpret and assess the situation. An analytical framework (Figure 1) was developed to guide the review and subsequent discussion.

The framework was applied to case study sites at Point Pelee National Park, Rondeau Provincial Park and the Long Point protected areas, all located along the north shore of Lake Erie. These sites have significant marsh ecosystems, with Pelee Marsh and Long Point Marshes designated under the *Convention on Wetlands of International Importance* (Ramsar Convention) and Rondeau Marsh designated as a Class I provincially significant wetland.

The most detailed work was done on Point Pelee due to the availability of historic documentation and the long history of planning and management for the national park. Where possible, comparisons were made with Rondeau and Long Point. This study was part of the work leading to an MA degree at the University of Waterloo.

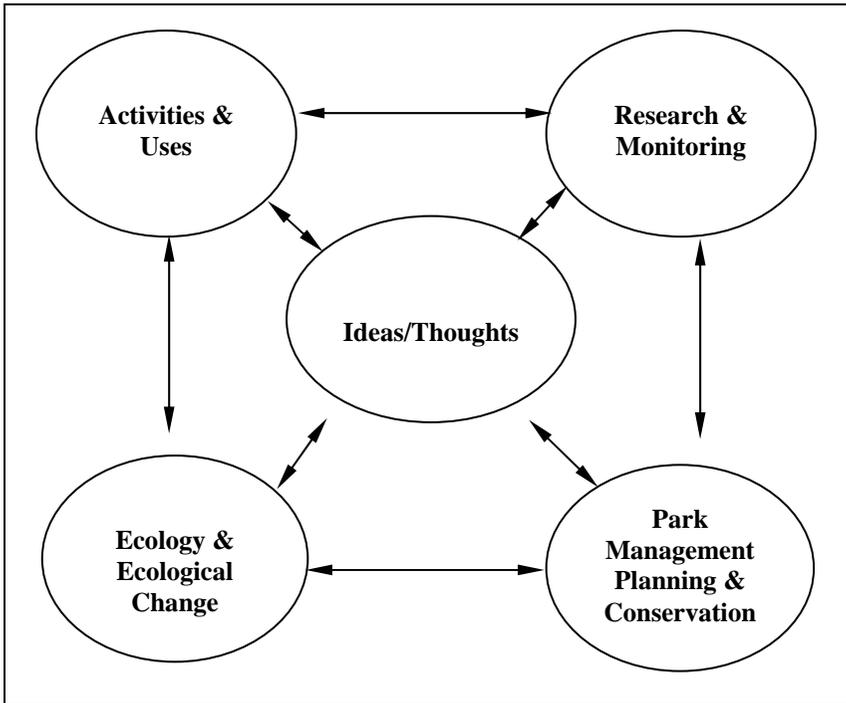


Figure 1: Analytical Framework

Overview of Research Results

The major findings are highlighted here. The analytical framework is described in Figure 1.

Ideas/Thoughts

- Early recognition of wildlife values was important to protection of these ecosystems; without this, it is highly likely that the marshes would have been lost.
- Private efforts were key to protection, as exemplified by the Long Point case (see Skibicki, 1993).
- Recreational values were also recognized as important in the early history of these areas, for example, waterfowl hunting.
- Marsh succession was long believed to be linear, with evolution to a dryland habitat inevitable; by the late 1980s/early 1990s, coastal marsh succession was viewed as cyclical, with maintenance of the 'wet' environment over the long term, rather than succession to a dry environment.
- Beginning in the 1980s, threats to the marshes have been increasingly recognized.

Activities & Uses

- All three areas have been subject to considerable landscape change.
- Drainage, especially around Point Pelee and Rondeau, has reduced the extent of the marshes and no doubt affected marsh ecology; the exact nature of these changes is not known due to the lack of historic documentation.
- A variety of uses are allowed in the different protected areas, reflecting their management objectives and purposes as noted below:
Point Pelee: passive recreational uses; hunting, as a pre-existing use, was allowed until 1988; sport fishing is still allowed – although it is contrary to park zoning – and catch-and-release is emphasized
Rondeau: passive and active hunting and fishing uses
Long Point: use varies considerably from area to area; very restrictive at Long Point National Wildlife Area, to a variety of public uses at Long Point Provincial Park

Ecology and Ecological Change

- Little appears to be known about the marsh systems in any of the study sites, although work is increasing at Point Pelee.
- Changes in marsh vegetation communities, noted in the 1970s and 80s were believed to be due to succession, the main 'threat' to the marsh.
- Water quality studies in the 1960s and 1970s found eutrophic conditions in marsh ponds; in the early 1990s, work on trophic status, heavy metals and agri-chemicals began in cooperation with the Canada Centre for Inland Waters, Environment Canada.

Research & Monitoring

- More work has been done at Point Pelee than at the other sites.
- Research accelerated in the 1970s, with studies as input into park planning; there appears to have been less emphasis on research in the 1980s, although efforts appear to be accelerating in recent years.
- Follow-up on research results and recommendations has been weak, at best.
- Work at Rondeau Provincial Park has focused on the Carolinian Forest and deer-forest interactions, to the exclusion of the marsh.

Park Management Planning & Conservation

- In the 1970s there was much debate over era versus evolutionary management at Point Pelee. Era management suggested for a section of Pelee Marsh would have required maintenance of the marsh ecosystem as it was at one point in time – actively halting succession; this approach was quickly criticized and abandoned.
- Successional control of Pelee Marsh was discussed in the 1970s and 80s; methods included water level control and dredging.
- Planning and management foci and approaches vary considerably at the different sites, in relation to the management objectives and purposes of the different protected areas. For example, at Long Point management and planning are highly restrictive at Long Point National Wildlife Area and intensive at Big Creek National Wildlife Area (Lee Brown Waterfowl Management Area) to enhance habitat for waterfowl.

Discussion & Implications

An idea or understanding can greatly influence a number of aspects of planning and management – it is important to realize this and attempt to understand the implications when making decisions.

For example:

idea/thought: early belief in inevitability of marsh succession to dryland

activities & use: all three areas have been subject to considerable landscape change

ecology & ecological change: noted changes in vegetation communities (decline in some formerly common species, increase in cattails) attributed to succession; other possible causes (eutrophication, change in hydrological regime) not investigated

research & monitoring: generally focused on providing management options for controlling succession

park management planning & conservation: 'era' management proposals, successional control techniques

There is a need for close ties between research, monitoring, planning and management.

Scientific knowledge is a key component of ecosystem management, as is linking research and monitoring data with planning and management activities (e.g., see Lee, 1993; Noss and Cooperrider, 1994). With the spread of ecosystem management and a focus on ecological integrity, more effort should be spent on understanding the ecology of the systems to be managed, including careful

consideration of what is not known and the uncertainties – what do we not even know that we do not know?.

There has been a lack of follow up on research and monitoring results, as noted from the Point Pelee case study. For example, despite work done on both water quality and vegetation in the 1970s, it was noted in the early 1990s that little was known about these aspects of marsh ecology.

Careful attention should be placed on linking results of studies on different ecosystem components, for example, interactions between water quality degradation and changes in vegetation communities.

Before undertaking active management or restoration, it is necessary to determine “to what?”. What is the goal?

If restoration or active management of any of these marsh areas is to be attempted, attention should first be directed to determining what the ‘natural state’ of the ecosystem should be. In other words, what would a marsh such as Pelee Marsh look like today if it had not been subject to anthropogenic stress? What are the natural processes responsible for maintaining the marsh over the long-term, and how have these processes been altered by human stress? Although it may not be feasible or desirable to restore the marshes to a pre-settlement or other historic state, developing such an image may help to focus research efforts, by requiring that a broad, ecosystem view be developed.

In general, there is a need for a research strategy for aquatic ecosystems in national parks and protected areas.

Some important directions might be:

- development of a schematic model to help organize and describe marsh planning and management activities;
- an historical study of ecological change in park aquatic systems, if possible including linkages to recreation and other land use policy and changes;
- development of a comprehensive, carefully designed monitoring program;
- literature review and interpretation of water quality and marsh work in other locations, for example the Everglades, USA and the Broadlands, UK;
- study of other areas of marsh ecology not addressed in this study, e.g. value of wetlands to waterfowl and other birds, fish, herptiles and other fauna;
- study of the natural functions of coastal wetlands, e.g. their role in ameliorating lake water quality; and,
- a gap analysis of wetland/aquatic ecosystem types in the Lake Erie basin.

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