Cranberry Marsh Management Zone Strategy



Lynde Shores C.A. Management Plan A Plan For Two Dynamic Coastal Wetlands



This report has been produced by the staff of The Central Lake Ontario Conservation Authority with recognition to all workshop participants who provided their time, expertise, knowledge, information and support.

Central Lake Ontario Conservation Authority 100 Whiting Avenue, Oshawa, Ontario L1H 3T3 Phone: (905) 579-0411 Fax: (905) 579-0994 Email: **Error! Bookmark not defined.** Internet: **Error! Bookmark not defined.**

WORKSHOP PARTICIPANTS AND REVIEWERS

General Public

Alfred Adamo, Mississauga Margaret Bain, Whitby John Barker, Mississauga Dennis Barry, Whitby Melissa Barton, Whitby Glenn Coady, Toronto S. & W. Daykin, Whitby Suse Eggert, Whitby Karin Fawthrop, West Hill John Foster, Oshawa Gary Frizzell, Whitby Jack Goering, Port Hope Brian Henshaw, Brooklin P. Heseltine Jean Iron, Don Mills Melissa Irwin, Whitby Lindsay Lock, Whitby Neil Macdougall, Toronto W. & D. Mohr, Pickering Jim Murdock, Whitby Robert Pepler, Whitby Ron Pittaway, Minden Glen Rae, Whitby Ken Ridge, Oshawa L. & J. Sayer, Oshawa David Shilman, Toronto Hans Van Der Zweep, Ajax Margaret Wilson, Uxbridge R. Woolger, Whitby Peter Wotherspoon, Whitby Karl Wysotski, Scarborough

Interest Group and Agency Representatives

Ducks Unlimited David McLachlin Dave West

Durham Field Naturalists Rayfield Pye

Ontario Field Naturalists Gavin Edmondstone

Pickering Naturalists Club Doug Lockrey

Provincial & Municipal Representatives

Ministry of Natural Resources Tim Rance

Town of Ajax Renrick Ashby

TABLE OF CONTENTS

WORKSHOP PARTICIPANTS AND REVIEWERS	Ι
TABLE OF CONTENTS	Π
FIGURES	III
HIOTOOKAFIIS	111
INTRODUCTION	1
BACKGROUND	1
VISION FOR LYNDE SHORES	1
DEVELOPMENT OF MANAGEMENT ZONES	2
CURRENT PUBLIC USES	4 5
INTERIM MANAGEMENT	5
STRATEGY DEVELOPMENT	7
Icentes	7
WORKPLAN AND SCHEDULE	7
NATURAL HERITAGE RESOURCE MANAGEMENT	8
Meadow Marsh - Area \dot{A}	8
Cultural Meadow - Area Á	11
Deciduous Swamp - Area \hat{A}	13
Mixed Shallow Aquatic - Area $ ilde{A}$	13
PRESENT ROADWAY - AREA Ä	19
Treed Beach - Area $Å$	19
ACQUISITION AND STEWARDSHIP AREAS	20
SOUTH PORTION OF PROPERTY EAST OF HALL'S ROAD- AREA Æ	20
PROPERTY WEST OF HALLS ROAD TO BEACH - AREA $old C$	20
Stewardship Property - Area ${\sf E}$	20
PUBLIC USE MANAGEMENT	21
SUMMARY OF PUBLIC USE REQUIREMENTS	21
FUBLIC USE KECOMMENDATIONS	23

SUMMARY OF RECOMMENDATIONS

APPENDICES

Natural Heritage Resource Management Options - Worksheets Natural Heritage Resource Management Options - Comments Received Identification Of Public Use - Worksheets Cranberry Marsh - A Chronology Cranberry Marsh Through The Years CLOCA News Release Cranberry Marsh Water Level Survey A Report On The Status Of The Fishery Of Cranberry Marsh References

FIGURES

		Page
1	Management Zones	3
2	Natural Heritage Resource Management Options	9
3	Cranberry Marsh Bathymetric Survey	16
4	Public Use Opportunities	21

PHOTOGRAPHS

		Page
1	Aerial View of Cranberry Marsh Looking North from Lake Ontario	4
2	Looking East Across Cranberry Marsh	5
3	Cranberry Marsh, 1954	13
4	Cranberry Marsh, 1989	13

Introduction

Background

The Central Lake Ontario Conservation Authority approved "The Web of Life, A Plan for Two Dynamic Coastal Wetlands" as a Management Plan for the Lynde Shores Conservation Area in March of 1999. This Plan identified the forms, functions and linkages of the two Provincially Significant Coastal Wetlands located within the Conservation Area's boundaries, evaluated the current health and sensitivities of the area and examined appropriate locations for public access and use. The Management Plan also addressed restoration and rehabilitation requirements, opportunities for recreation and resource interpretation, strategic direction for additional land acquisitions, as well as public stewardship and community partnering.

Vision for Lynde Shores

To help guide the development of the Management Plan, the following vision statement and goals were developed by the public, through their participation in the workshops, held throughout the early part of 1998.

Vision Statement

Lynde Shores Conservation Area is a dynamic natural legacy, which we will continue to restore, expand and protect.

Through education, interpretation and managed access, our community will gain respect and appreciation for the intrinsic value of our natural heritage. This respect and appreciation will be fostered through the stewardship of owners, users and the community at large.

We will achieve this through balanced and managed access for all living things. This peaceful refuge will bring the community together with nature in a way that honours the spiritual, cultural and natural treasures of this very special ecosystem.

The Management Plan Goal is to identify, protect and enhance the current and potential natural heritage attributes, functions and linkages of Lynde Shores Conservation Area in conjunction with public use.

Natural Heritage Goal:

The Natural Heritage Goal is to maintain and enhance the ecological integrity of the Lynde Shores Conservation Area. The plan will consider the interaction of the two coastal wetlands, the upland meadow and forested habitats as well as connections north to the watershed, south to Lake Ontario, and east/west along the coast.

Recreation Goal:

The Recreation Goal is to evaluate and to accommodate recreational and educational uses within the Lynde Shores Conservation Area compatible with the natural heritage goal.

Community Goal:

The Community Goal is to identify and to encourage opportunities for public and private land and water stewardship in the Lynde Creek Watershed and its east/west linkages.

Development of Management Zones

The Lynde Shores Conservation Area has been divided into management zones for the purposes of future planning. (Figure 1) Boundaries have been determined to ensure that management options are examined in an ecosystem context.

The five zones include:

Cranberry Marsh

This management zone was determined based on the area of the watershed drainage (the drainage area for Cranberry Marsh is separate from that of the Lynde Creek), nesting opportunities for upland waterfowl nesting within 250 m of the wetland boundary, wildlife corridors and areas of public use.

Lower Lynde Creek Marsh

This management zone was determined based on upland waterfowl nesting opportunities within 250 m of the wetland boundary, hydrology of the creek corridor and Lake Ontario, the fish corridor, and the width and characteristics of natural vegetation adjacent to the wetland and Creek.

Upper Lynde Creek Marsh

This management zone was determined based on the extensive and healthy habitat for area sensitive species, terrestrial wildlife corridors, nesting opportunities for upland nesting waterfowl within 250 m of the wetland boundary.

Woodlot

This management zone was determined based on its focus of human activity, interpretative opportunities and potential to rehabilitate the woodlot.

Beach Area

This management zone was determined based on its distinctive vegetation and environmental characteristics, including active shoreline processes, unique vegetation and habitat.

It was agreed that the Cranberry Marsh Management Zone would become the focus of immediate attention.





Aerial View of Cranberry Marsh Looking North from Lake Ontario (1999)

Context

Cranberry Marsh is located entirely within the Lynde Shores Conservation Area, which constitutes one of the largest contiguous areas of natural waterfront within the Greater Toronto Area. The types of habitats represented include dynamic and treed barrier beach, forests, meadows, thickets and plantation, various types of swamps and marshes, and open water.

As well as its Provincially Significant Wetland status, Cranberry Marsh has been designated as a Provincial "Area of Natural and Scientific Interest". Trapped behind a more or less permanent barrier beach and within a very small watershed of its own, its water supply is derived from surface runoff from adjacent lands and seepage through the barrier from Lake Ontario.

The wetland once supported a unique vegetation community that included 25 species of plants rare to Durham Region, and one species of nationally rare grass. The health of this community has been in a state of decline for a period of more than 15 years as documented in "Cranberry Marsh – A Chronology" (see Appendix). Although still considered to be a birder's haven the area no longer supports the same diversity of breeding birds. Persistent algae blooms throughout the summer months attest to the current state of water quality.

The Management Zone contains Cranberry Marsh in its entirety as well as lands that drain to this wetland. The Conservation Authority presently owns the majority of this land but additional properties have been included in the acquisition plan for the Conservation Area. These properties will allow for the development and enhancement of corridors and linkages to the west of the property with the Warbler Swamps and also assist in protecting environmentally sensitive lands by allowing for the location of facilities such as parking outside of the sensitive areas. Other lands that lie within the zone are targeted for future stewardship activities.



Looking East over Cranberry Marsh

Current Public Uses

Lynde Shores Conservation Area is presently used for passive recreational activities. At least 60,000 visits to the Conservation Area were recorded in 1997 and 1998. Many schools reserve the Conservation Area for outdoor interpretative programs.

Boardwalks enter the wetland at three separate points to provide the public with access to view the wetland. Each September, the Greater Toronto Raptor Watch sets up a monitoring station to count migrating hawks and eagles. The birds observed include the nationally endangered Bald Eagle and Peregrine Falcon that also use the area for rest and forage during migration.

A user survey was conducted in September 1997 to assist with identification of current uses. Those identified through the survey and the consultation process include nature interpretation, bird watching, photography, canoeing, picnicking, dog-walking, bird-feeding, fishing, Raptor-Watch, beach use and skating.

Interim Management

The Conservation Authority's approval of the Management Plan for Lynde Shores led to several interim management strategies being undertaken throughout the Conservation Area. Those that have affected the Cranberry Marsh Management Zone include:

Management Plan Direction

The public is being asked to use the authorized trails only. Trail information is displayed at the kiosk in the main parking lot outlining the sensitivities of the site and requesting the public to remain on identified trails. Interpretative signage is being developed for display at the entrances to the trails to identify sensitivities and attributes of the area. Barrier plantings to assist in trail closures will be undertaken where appropriate at the earliest opportunity

As of May 1, 1999 dogs have been banned from the entire Conservation Area.

Within the Cranberry Marsh Management Zone, fishing and boating will continue to be prohibited.

Beetle Release - 1999

On August 5th, 1999, 5000 *Galerucella* beetles were released in Cranberry Marsh to act as a bio-control for the invasive Purple Loosestrife (*Lythrum salicaria*). The beetles were released on Loosestrife plants along the east shore of Cranberry Marsh (the old "LeVay property"). The highest Loosestrife concentration of about 1000 stems was noted in the alder island within the marsh. It is expected that as the beetle populations increase, they will migrate to this area.

Purple Loosestrife is an aggressive invader of wetlands, and riparian meadows. It forms dense, monospecific stands that displace native plant species, thereby reducing the diversity of native plant communities. The tiny beetles, released in their larval stage, will overwinter in the ground and emerge next spring as adult beetles and begin to eat the young leaves on the Loosestrife plant. Each female *Galerucella* beetle is capable of producing about 500 eggs that take about one week to hatch. The larvae also feed on the new Loosestrife growth.

The Authority expects to see noticeable results in a five to seven year period, yearly monitoring practices will help to track the beetle populations. Although the beetles will never completely eradicate the plant, they will keep it under control so that native species can have the opportunity to re-populate the area.

Manual harvesting of Purple Loosestrife may be used in the future to augment this approach. Manual harvesting is appropriate for use in small, localised infestations.

Viewing Platform Closure

Due to extensive ice damage the viewing platform located on the eastern shore of Cranberry Marsh has been closed and has been removed pending confirmation as asuitable location through the strategy development process.

Monitoring of Inappropriate Sexual Use of Area

Assistance has been sought and attained from the Durham Regional Police to monitor inappropriate use of the site. A series of press releases have been issued in an attempt to raise public awareness and seek assistance in reporting information to authorities. (see Appendix)

Further research

Further research has been undertaken since the completion of the Lynde Shores Management Plan and is summarized as follows:

- A review of historical information including aerial photography, correspondence from former residents of the zone, and environmental data from various organizations has been completed. A summary of this data is included in "Cranberry Marsh – A Chronology (please see Appendix)
- A water quality-monitoring program was initiated in the fall of 1998, with seasonal sampling proposed to determine the changes of water quality in the marsh (and causes of degradation) through the year. The Region of Durham lab services have been retained to assist with chemical analysis. Results are expected by April 2000.
- Fish collection and identification was conducted in the fall of 1998 and the summer of 1999 to identify species currently utilising the marsh. This is important information to identify possible problems (example: large Carp populations causing resuspension of sediment and loss of emergent plants) as well as identifying fisheries that may be impacted by remediation activities (please see Appendix).
- A staff gauge was installed in the Marsh during the winter, and water level readings will be taken through the year. This information will be used to understand the natural water fluctuations in the Marsh in relation to seasons, Lake Ontario water levels, etc. (please see Appendix).

Strategy Development

Issues

In developing a management strategy for this zone there are several issues that need to be addressed including:

Natural Heritage Resource Planning:

- Establishing a rehabilitation plan for Cranberry Marsh based on the results of the health and sensitivities for vegetation and wildlife identified through the development of the Lynde Shores Management Plan (example- low productivity and biodiversity in vegetation in open water and mineral meadow marsh areas)
- > Establishing stewardship targets and methods to achieve these within the entire management zone
- > Identify corridors and linkages and means to protect, enhance and/or restore them

Public Use:

- > Determine compatibility of recreational and interpretative opportunities with Natural Heritage Goal
- > Determine desired extent and location of visitor facilities (example access trails and viewing platforms)
- > Determine extent of linkages with the Lake Ontario Waterfront Trail
- > Determine feasibility of providing parking accessible from Hall's Road
- > Determine means to eliminate inappropriate use of the property

Workplan and Schedule

The following outlines the 1999 workplan and schedule used in the preparation of the Cranberry Marsh Management Zone Strategy.

Tasks	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Understanding of Condition and Function (further research undertaken)												
Determine Desired Conditions and Alternative Actions Available Evaluate Alternative Management Concepts (review natural heritage options with public, seek public input regarding use requirements)						Public work- shop						
Determine Further Details of Preferred Management Concepts Determine Means of Meeting Public Use Requirements												
Approval of Strategy												
Initiate Action to Achieve Preferred Management Concept												

Natural Heritage Resource Management

The focus of management efforts is the restoration of the health and diversity of Cranberry marsh and the habitat it provides. In order to achieve this, the site has been further examined based upon its natural heritage attributes. The management zone was divided into nine functional units as shown in Figure 2 including:

- 1) Meadow Marsh
- 2) Cultural Meadow
- 3) Deciduous Swamp
- 4) Mixed Shallow Aquatic
- 5) Present Roadway
- 6) Treed Beach
- 7) Acquisition Area South Portion of Property East of Hall's Road
- 8) Acquisition Property West of Halls Road to Beach
- 9) Stewardship Property

Management Options for each of these units were formulated and taken to the public for review and discussion at a workshop held in June of 1999. Further, these options were circulated to those individuals who have indicated an interest in the future management of the Conservation Area (please see Appendix).

The present and historic conditions of each unit, management alternatives and considerations, public comments received and resource management recommendations are as follows.

Meadow Marsh - Area À

Represents the wetland/terrestrial interface; seasonal flooding, usually moist; dry in summer.

Present And Historical Conditions

This community occurs at the north end of the wetland and is rare within the Management Zone; it is an area of high productivity for meadow marsh specialists, i.e. the regionally rare Sedge Wren. Meadow marsh specialists require large areas of suitable habitat for breeding. Adding to the uniqueness of the area is the fact that it has remained undisturbed for more than forty years, and as a result, has received little impact from non-native or invasive vegetation. The meadow marsh consists of both broad and narrow-leafed sedges, which are considered to provide ideal breeding habitat for meadow marsh specialists. The meadow marsh community makes up approximately 12% of the total wetland area.

Management Alternatives and Considerations

A. Manage it and Increase Physical Size

Pros	Cons
improve and increase habitat opportunity for	potential loss of habitat for other species (this can be overcome
uncommon wildlife species and uncommon	by mitigation - alternatives elsewhere)
vegetation (niche habitat)	

B. Manage and Maintain As Is

Pros	Cons
more complex and diverse habitat opportunities,	not as productive for meadow marsh species
increase nativeness	

C. Do Nothing

Pros	Cons
meadow marsh will stay as it is and surrounding	not as productive for meadow marsh species
plantation may become a swamp	
increase habitat opportunities, more complex	it will take a very long time to evolve to diverse state - don't
structure and increase diversity	know how productive it will be



Statement of the local division of the local				
Treed beach bar; physical barrier separating Marsh from lake	AREA 7 Used for agriculture and recreation	AREA 8 Agricultural land	AREA 9 Agricultural land	INS Centrel Labe Contention
		<u></u>	Map Not To Scale	itage Resource Management Optio Marsh Management Zone Strategy ide Shores Management Plan
				Natural Heri Cranberry Lyn
				Fig. 2

Proposed Option

The Authority wishes to continue managing this unit as a meadow marsh and increase its size, resulting in increased/improved productivity. In order to accomplish this, some of the surrounding plantation would initially be removed so that the unit could expand to achieve its maximum potential. Using this management option lower quality habitat (plantation) would be converted into higher quality specialist habitat.

Resource Management

The proposed management option for of the meadow marsh was presented at the June 1999 workshop and was examined in further detail through a site investigation on August 5th, 1999. Through the workshop and subsequent mail-out process, the public offered many valuable comments, including: "How is the boundary of the meadow marsh determined - would soil type be used?" "Removing planted areas may be bad PR, considering these areas were planted by the public and corporations". In principle, the comments made by the public support this management option.

The August site investigation found that large furrows exist throughout the meadow marsh. The presence of these furrows indicates that the area has historically been planted with young trees. The limit of the present day plantations surrounding the meadow marsh have been determined by the topography of the area in conjunction with the soil conditions in and out of the meadow marsh feature. Although much of the area is flat, there appears to be a slight elevation difference between the surrounding plantation and the meadow marsh. To determine the potential geographic extent of the meadow marsh, soil core samples were taken within and adjacent to the marsh. The soils found inside and adjacent to the marsh were relatively similar heavy clay types, however the soil sampled from within the marsh area was saturated.

The plantations surrounding the marsh are approximately 16 years in age with an average height of 3 metres; trees to the meadow marsh are somewhat smaller, attaining average heights of 1.5 metres. This stunting of growth can be attributed to the undesirable conditions within the meadow marsh for growing these tree species (e.g., Tamarack and Cedars)

Management of this feature does not dictate the removal of plantation species at this time. However some undesirable species currently are occurring within the meadow marsh including the non-native European Highbush Cranberry and several specimens of Silver Maple. In order to maintain the 4 hectare meadow marsh feature, it is recommended that these species be removed.

Ongoing management of the meadow marsh will consist of an annual inspection and the harvesting of undesirable and aggressive species (which may include plantation species) that may encroach on the marsh.

Cultural Meadow - Area Á

Originating from or maintained by anthropogenic or culturally based disturbances having both tree and shrub cover less than 25% each. Cultural meadows often have a large proportion of introduced species.

Present and Historical Conditions

This community occurs outside of the wetland boundary and partially within the management zone. It consists of upland habitat composed of grasses and small trees/shrubs, presently suitable for both waterfowl and interior grassland nesting species such as, Mallard, Blue-Winged Teal, Northern Harrier and Eastern Meadowlark. Prior to 1993, this cultural meadow was in agricultural production; the Conservation Authority held a lease agreement with a local farmer to grow crops including corn and soya bean. In 1992 farming on these lands ceased, and as many as 20, 000 seedlings were planted the following spring (most of which are within the cultural meadow outside of the Cranberry Marsh Management Zone). The long grasses have flourished in the area since the lands have been rehabilitated, however, in addition to the many seedlings that are now reaching heights above the grasses, other native woody plants are now succeeding to this area. In order to retain this meadow, active management must occur in the near future. This community has also been identified as having high sensitivity to seasonal disturbance.

Management Alternatives and Considerations

A. Manage Cultural Meadow for both Waterfowl and Inland Grass Species

Pros	Cons
habitat provided for waterfowl and inland grass	periodic decrease in suitable habitat for waterfowl and inland
species	grass species due to cutting

B. Maintain Cultural Meadow for Waterfowl

Pros	Cons
maintain, increase and protect the nesting and breeding habitat for waterfowl	lose interior grass species over time
	lose plantation

C. Do Nothing

Pros	Cons
proceed into natural forest over long term and introduce other species	lose habitat over time

Proposed Option

The Authority proposes to continue managing the cultural meadow for waterfowl and interior grassland species production. In order to accomplish this management objective, it will be necessary to mow the area every five to seven years in order to sustain the habitat requirements of the species that nest here. The mowing would occur on a rotational basis, post breeding season, so that that meadow would be subject to various stages of succession.

Resource Management

The cultural meadow is an existing grassland that presently provides nesting habitat for waterfowl and grassland species. Prior to 1992, the area now occupied by the cultural meadow was in crop production. Furrows within the fields still exist. The soil type is heavy clay, which provides ideal conditions for the heavy growth of goldenrod and asters in the area. It has been decided through the public process that the cultural meadow be managed in the future for waterfowl nesting and interior grassland nesting species. Public comments in favour of this management option include: *"The top portion (N) with the locusts could be united with the existing woodland area, some control and cutting should be investigated", "If the shrubs are allowed to grow, you will lose grassland nesting species such as waterfowl" and <i>"I do hope mowing is not the only labour to be undertaken. Extreme care is needed in timely harvesting"*

In order to manage this feature the following strategy is recommended for implementation.

A complete mowing of the cultural meadow will take place in the fall after frost. Cyclic mowing should occur every five years. A post-frost mowing will ensure that most species that would utilise this area during the growing season have had opportunity to do so. The young plantation that exists in the north-west will remain and the Pine and Spruce saplings will act as a nurse crop for the young red oaks emerging in the area. Long term management (+60 yrs.) of the plantation will result in an Oak Savannah-type ecosystem.

The Authority proposes for the long-term management of the area, that the establishment of warm season native grasses be further researched, and opportunities for partnerships with grassland managers be recognised.

Deciduous Swamp - Area Â

Refers to the treed wetland surrounding the mixed shallow aquatic community. The swamp is defined as having deciduous tree cover greater than 25%, hydrophitic shrub and non-woody species and standing water or vernal pools greater than 20% of ground coverage.

Present and Historical Conditions

This unit occurs outside of the shallow mixed aquatic community and forms part of the wetland. The swamp community is approaching a mid-successional stage, composed largely of Green Ash and Silver Maple. The wildlife habitat offered by the swamp is quite diverse. The area is a seasonal refugia for owls. Although deer are known to frequent the area they are not known to yard in this location. Historical air photos show, that, prior to the development of the deciduous swamp that envelopes the open water, the area was farmed right to the edge of the open water. This unit is in good health at present and provides a good buffer zone to the shallow mixed aquatic community.

Proposed Option

The Authority proposes that no active management of this unit is required at this time.

Resource Management

The deciduous swamp provides diverse habitat for many species within the Cranberry Marsh wetland. Many species associated with the wetland will use the swamp during some stage in their life cycle. Through the public process, it has been determined that "no active management of the area is required at this time." Public comments concerning this area include: "successful mixed planting and serves many nesting species"; "concern regarding unofficial trails off of the west viewing platforms and the need to address this." and "further winter management, cutting-thinning, will soon be necessary."

The unofficial trail system that runs through the swamp via the designated platform trails has to date been closed off using fencing and is further being addressed through the public use component of the strategy.

Long term management of the swamp may require some active management to occur. The unit will be re-assessed at such time the adjacent mixed shallow aquatic unit succeeds back to a healthy vegetated marsh unit. Impacts from the succession of the mixed shallow aquatic unit may have a direct correlation with the health and productivity of the surrounding swamp.

Mixed Shallow Aquatic - Area \tilde{A}

Defined by standing water up to 2 metres in depth and, greater than 25% vegetation composed mainly of submerged or floating-leafed species.

Present and Historical Conditions

This unit occurs in the centre of the wetland as shallow open water. This unit has been in a state of decline for a period of more than 15 years, as documented in "Cranberry Marsh, A Chronology" (please see Appendix). The decline is characterised by a loss of vegetation.

In 1954, the first available aerial photography indicated that Area 4 was completely vegetated.



Cranberry Marsh, 1954

In 1966, Dr. Speirs, a University of Toronto zoologist noted that 90% of the marsh was vegetated, and 1967 aerial photography showed approximately 66% vegetation cover. In 1975, documentation continues to show significant vegetation in this area, and in 1982 the selection of Cranberry Marsh as the top candidate for a Trumpeter Swan reintroduction program again indicated good health.

The decline is documented as occurring between 1983 and 1987. The 1989 aerial photography shows the open water state that Area 4 is currently displaying.



Cranberry Marsh, 1989

The chronology of events also indicates that starting in the early 1900's, the marsh water levels were regulated first by the Lowes family, and later by the LeVay family. In 1983, water level regulation ceased. It appears that the water level regulation supported the vegetation cover in Area 4.

Management Alternatives and Considerations

 \checkmark

A. Manage/Harvest Invasive Species, Drain Marsh for a Growing Season and Manage Water Levels

Pros	Cons
increase vegetation diversity	temporary/seasonal loss of waterfowl habitat
improve fish habitat	potential for further invasive species
improve waterfowl and shorebird productivity	temporary destruction of fish habitat
increase water quality/clarity	Potential destruction of herptiles
provides temporary mud flats for migrants	disrupts natural process of marsh succession
	potential increase sediment into Lake Ontario
	possibility of changing species composition

B. Do Nothing

Pros	Cons	
Maintain natural processes	continue to loose wetland attributes	
	decrease vegetation	
	increase open water	
	does not accomplish diversity	

Proposed Option

The management plan for the Lynde Shores Conservation Area recommends management of Cranberry Marsh based on the high sensitivity – low health rating of Area 4. The public response to previous questionnaires and workshops also supported the management of this area.

Past management suggestions from Dr. Speirs (1971), Ducks Unlimited (1988), and Associate Professor T. Nudds, University of Guelph Dept. of Zoology (1989) all contain recommendations for water level regulation.

The water level regulation would involve:

- > Draining Area 4 for one summer to activate the seed bed stored in the sediment
- > Reflooding the area every fall to protect the vegetation from winter conditions
- Lowering the water level every spring to create mud flats and encourage vegetation growth, but maintain some open water area

The management of this area will also require harvesting of invasive plant species that will have opportunity to spread throughout the area as seed beds are activated. Other "cons" as noted in item A above, will require further consideration and mitigative measures.

Resource Management

The public responded favourably to the proposed management option and presented several comments for consideration in the development of the management strategy. These comments include:

- ➢ Water level should be "normal" for migration seasons
- Migrating ducks/shorebirds would prefer mudflats for stop-overs
- Consider dredging a channel between the barrier beach and the alder thicket to deter predators from the thicket and to build-up the barrier beach
- > Consider dredging areas to create deeper pools and islands
- > Utilize organisations that have experience with marsh management

A significant amount of data has been collected to assist with developing the management plan for the open water area. The *vegetation analysis* completed early in the management plan process determined that this area was highly sensitive, and in poor health. This work set the course for active management of this area to improve the health of the open water area.

Fisheries collection determined that the open water aquatic area provides habitat for two fish species; carp and brown

bullhead. The appended document entitled "A Report on the Status of the Fishery of Cranberry Marsh (CLOCA, August 1999), recommends creating deeper pool areas to accommodate brown bullhead, and placement of stumps or rock structures. The report also recommends removing carp from the marsh, and designing outlet structures to prevent fish passage.

A survey of the *bathymetry* of the marsh, and *water level monitoring* indicates the current fluctuation in water levels through the various seasons, and variety of water depths in the marsh. This information is also used to forecast the appearance of the marsh under low water (drained) conditions (see Figure 3).

Finally, *water quality sampling* indicates the health of the water in the marsh and also provides insight into the processes occurring within the marsh. The sampling of water flowing into the marsh in rain events will also be used to target private land stewardship issues for the contributing watershed.

Further, CLOCA staff visited project sites of other management agencies and met with their staff to discuss features of the management plan.

During the management plan process, an investigation was conducted on the Cranberry Marsh to begin to explore the reasons for poor general health and restricted aquatic vegetation, and to identify opportunities to improve these characteristics. In a report by Ducks Unlimited (1991) they noted "...historical evidence indicates that Cranberry Marsh has existed for long periods of time dominated by both aquatic emergent and submergent plant communities. Those communities once attracted and supported a rich and diverse avifauna. The die back of aquatic plants presently limits the site's attractiveness to wildlife."

The same report also makes a recommendation that "...exposing the marsh soils in spring and summer will re-establish the aquatic plant communities, encouraging wildlife to recolonize the improved habitat once the marsh is reflooded."

The concept of draining the marsh and allowing aquatic vegetation to establish would appear to be of benefit to vegetation and wildlife in the area. In terms of water quality, the potential for nutrient uptake in the new plant material will be beneficial in reducing nutrients in the marsh. Additionally, the flushing of water and refilling with fresh water will give the water quality a new start.

Based on public input, scientific research, and input from various experts, the following management plan is proposed:

Water Level Regulation

Construct an outlet control structure that will allow for seasonal raising and lowering of the water level in the marsh. In the first year of water level regulation, the Marsh will be drained as much as possible during the spring thaw. This initial draw down will create a diversity of ground conditions throughout the marsh, allowing some areas to consolidate and dry, and other pockets to remain wet. This variety of conditions will allow for a variety of plant species to grow.

The Marsh will remain in the fully drained state through the first summer to fully activate the seedbed contained in the sediment. Near the end of the growing season (August/September), an evaluation of the new vegetation will be made, and a fall reflooding program determined. The reflooding may target drowning of undesirable vegetation species, or conversely, the insulation of desirable plants. As a rule of thumb, aquatic plants can withstand flooding up to one third of their height.

After desirable plant life is established an annual program of lowering water levels during the spring thaw and elevating water levels in the fall will be conducted. It is anticipated that this water level cycle will result in creation of diverse habitat through vegetation growth, and creation of mudflats and isolated pools of water. Regulating water levels poses several problems. These problems and the proposed solutions are described below:

Reflooding

The Cranberry Marsh open water area is approximately 18 hectares in size, and holds approximately 100,000 cubic metres of water at the current water depth. Although the Marsh could refill naturally through the fall (based on normal runoff characteristics and annual precipitation over the 126.5 hectare drainage area), this may prove to be an unreliable technique for refilling the Marsh. It is recommended that a high volume portable pump (tractor mounted irrigation pump) be made available in the event that natural refilling of the marsh does not occur.



1

-

Cranberry Marsh Bathymetric Survey

NOTES:

All elevations shown are geodetic derived from control monument W0056, described as follows: located in the east face of south bridge abutment carrying Victoria Street West over Lynde Creek, 1.4 km west of Gordon Street. Tablet set 0.74m south of northeast comer of the abutment, 21cm below top of concrete, 15cm above grade.

LEGEND

Surveyed Bathymetric Elevation (Aug. 98) Surveyed Barrier Beach Elevation (Aug. 99)



Fisheries

The recommendation to provide deeper pool areas as habitat for brown bullhead will require an evaluation after draining the Marsh. It is anticipated that the draining and consolidation of the Marsh sediments will create a series of pools. It is therefore proposed to evaluate the brown bullhead habitat in the spring and fall of the first year after draining and construct physical works as required in the following years.

The second recommendation to remove carp from the Marsh will be a difficult and on-going task. The opportunities for carp to enter the marsh should be minimized by making the water level regulating outlet impassable for larger fish, and, where pumping is required, the discharge water should be filtered to minimize the pumping of carp or carp eggs.

High Lake Levels / Beach Build-Up

Given the average annual Lake Ontario water level fluctuations of 74.5 metres in December/January to 75.0 metres in June, it is probable that the lake may occasionally interfere with Marsh levels. Obviously, little can be done to overcome this problem, other than waiting for lake levels to fall back to normal. Also, during high water levels or during storm events, the lake will deposit beach materials against the proposed water level regulating outlet. It is recommended that Marsh water levels and the outlet condition be monitored monthly, and clean-out of beach material conducted on an as needed basis. This clean out could be performed manually in most instances, in a similar manner to the work of the Lowes family during 1939 to 1945 (refer to Cranberry Marsh – A Chronology contained in the Appendices).

The outlet structure will be constructed of steel sheet piling placed on the inside of the barrier beach. The sheet piling will have a depressed mid-section to accommodate stop logs. The bottom of the stop log channel will have a crest elevation of approximately 74.9 metres to allow complete draining of the marsh, and control of water level through the addition of stop logs. The structure will be placed on the western beach bar to allow access for construction and maintenance with a minimum of disturbance.

A small channel will be excavated on the Lake Ontario side of the outlet to allow discharge of Marsh water to the Lake. The excavated beach material will be used to shore up the sheet piling, with surplus material spread on the beach.

Approvals

Prior to construction of the water level regulating outlet, approvals will be required from several agencies. The Canadian Department of Fisheries and Oceans (DFO) is required to review the impact of the project as prescribed by the Canadian Environmental Assessment Act. The review will be limited to the impact of the project in areas of Federal responsibility including native interests, navigable waters, migratory birds and transboundary waters in addition to fish habitat. Fisheries and Oceans and Environment Canada (Canadian Wildlife Service) have already been contacted.

At the provincial level, the proposed management plan will be circulated to the Ministries of Natural Resources (MNR) and Environment (MOE). Through previous communication these agencies have stated an interest in reviewing the management strategy. It is anticipated that permits/authorization will be required from MNR (Lakes and Rivers Improvement Act) and DFO (Fisheries Act) prior to construction.

Finally, the project should continue to be planned and designed in accordance with the requirements of the Conservation Authority's "Class Environmental Assessment for Remedial Flood and Erosion Control Structures" to comply with the requirements of the provincial Environmental Assessment Act.

Partnerships

The Conservation Authority has investigated potential partnerships to assist with implementing the management strategy for the open water aquatic area. Any partnership requires the following features:

- > Partner must be able to commit to long term, and show organizational stability
- > Partner must be able to provide expertise in marsh management and/or be willing to provide financial support
- > Partner must support the proposed management strategy

Present Roadway - Area A

The road located within the property presently acts as an intrusion/separator within the area. This road provides access to private properties located within the Conservation Area. These properties have been identified for acquisition. At such time as acquisition of private lands is complete the health and function of the area will need to be re-evaluated.

This management recommendation was taken to the public and received little comment. One noted "*If the roadway is completely blocked off to traffic it may not matter if it remains but it definitely should not be maintained.*" This will be taken into consideration as such a time as acquisition is complete.

Treed Beach - Area Å

Defined as having between 25% and 60% tree cover, a shoreline area with high levels of disturbance from periodic high water levels and related physical effects such as ice scour, erosion and deposition.

Present and Historical Conditions

The beach is the interface between the wetland and the north shore of Lake Ontario. The beach can be further sub-divided into two units, Lake Ontario Sand Beach and the Treed Barrier Beach that separates the mixed shallow aquatic community from the lake. Consisting largely of Willow and Poplar, the beach provides resting and foraging opportunities for migratory shorebirds and has some corridor function for small mammal travel. Historical records (see Cranberry Marsh, A Chronology as contained in the Appendices) indicate that the beach was breached in two places for a number of years between 1939 and the mid-1950's. Channels were dug through the beach to help maintain water levels within the marsh. Since that time breaches have occurred due to both natural and man-made causes. A breach in the late summer of 1991 caused the marsh to drain almost completely. During the winter of 1998/99 the beach was breached in two locations. Today, the beach exhibits good health and the present stability of the beach can be attributed to the low lake levels.

Management Alternatives and Considerations

A. Manage to Protect Physical Integrity

Pros	Cons
Maintain coastal marsh feature	None
Allows for water level management in the marsh	

B. Do Nothing

Pros	Cons
None	Beach made erode over time and impact marsh feature

Proposed Option

The Conservation Authority wishes to protect the physical integrity of this unique feature.

Resource Management

CLOCA's preferred management option was agreed upon unanimously by workshop participants. Many comments were made indicating that Lake Ontario water levels dictate what happens to this beach, and that the "leave it alone" approach is preferred. "Hard" or "soft" engineered erosion control structures, either on the beach or offshore are not necessary to protect the integrity of this natural feature, and are not considered as an option. The only exception to this, would be any areas immediately adjacent to the proposed control structure to regulate marsh water levels, which may require bioengineering to increase the stability of the beach.

Acquisition and Stewardship Areas

South Portion of Property East of Hall's Road- Area Æ

The parcel to the east of Hall's Road is a total of 60 acres, the southern portion of which lies within the management zone. The north-east portion of the property contains the west branch of the Lynde Creek and portions of the Lynde Shores Marsh. The south-western portion is located within the regional floodline of the Lynde Creek. Acquisition of this parcel would secure the wetland boundaries and hazard lands within public ownership.

Within the management zone, resource considerations include the provision of supporting upland habitat and the development of buffer areas around the Cranberry Marsh.

Until such time as acquisition is possible, contact will be made with present owners to inform them of how management of their properties may affect the health of the marsh. There have been no concerns related to present practices identified by the data collected to date.

The public has agreed with the direction proposed for this property.

Property West of Halls Road to Beach - Area Ç

The parcel to the west of Hall's Road is a total of 106 acres, the eastern portion of which lies within the management zone. The majority of this property is presently in agricultural use, with small forested portions. Together with parcels to the west, these lands provide a potential east-west linkage between the Provincially Significant Carruthers Creek Wetland, Cranberry Marsh, and Lynde Shores Marsh, and a potential 1800 meters of waterfront open space on the Lake Ontario shoreline. Potential exists to provide public access to the Lake Ontario Waterfront Trail, which is proposed to be routed along Hall's Road in this area.

Within the management zone resource considerations include the development of further connections and linkages with the wetlands to the west. Initial indications are that species such as white-tailed deer, red fox and coyote are presently travelling along the beach bluff, and that insufficient vegetative cover is the factor deterring further use of this parcel as a corridor or connector.

Until such time as acquisition is possible, contact will be made with present owners to inform them of how management of their properties may affect the health of the marsh. There have been no concerns related to present practices identified by the data collected to date.

The public has agreed with the direction proposed for this property.

Stewardship Property - Area È

There are several parcels of privately owned lands within the management zone that are not presently under consideration for acquisition. Because of their location within the drainage basin for Cranberry Marsh there is the potential for management activities to be undertaken on these properties to directly or indirectly affect the future health of Cranberry Marsh. It is proposed that the Conservation Authority continue its water quality monitoring program in the marsh to aid in determining the effects of run-off to the marsh. Once effects are identified, the Authority will establish a landowner contact program. The Authority will consider enlisting the help of other agencies and volunteers that may be able to offer monetary or in-kind contributions to assist landowners in becoming good stewards of their land..

Contact will be made with present owners to inform them of how management of their properties may affect the health of the marsh. There have been no concerns related to present practices identified by the data collected to date.

The public has agreed with the direction proposed for this property

Public Use Management

In keeping with the direction to provide opportunities for public use compatible with the Natural Heritage Goals of the property, the Conservation Authority has undertaken a survey to determine the requirements for access of users including the desired extent and location of visitor facilities (example access trails and viewing platforms). A map was produced which defined compatibility of recreational and interpretative opportunities with natural heritage goal. Respondents attending the June 1999 workshop and circulated questionnaires were asked to indicate their preferences for locations and facilities (please see Appendix for questionnaires used).

A summary of the responses received and public use management recommendations are as follows.

Summary of Public Use Requirements

The survey indicated that nine individual access points or public use nodes have been identified on the property. A summary of each of these follows:

Location	# of Responses	Activities to be undertaken	Priority of Responses	Ranking of Importance of this location	Facilities requested
Halls Road South Access (existing)	29	bird watching ; (includes hawk watching and Raptor Watch) nature observation	majority ranked as first or second choice	average 10	parking; repair of platform; higher/wider platform; trail maintenance ; feeders appreciated
Halls Road North Access (existing)	20	bird-watching	majority ranked as first or second choice	average 10	parking; trail maintenance
Levay's Lane North Access (existing)	15	bird watching; nature observation; hawk watching	majority ranked as third choice	ranged from 3 to 10	existing trail and platform; benches
Hall's Road Beach Access (new)	10	nature appreciation; bird watching; walking	majority ranked as third or fourth choice	ranged from 1 to 10	walking trail to lake
Levay's Lane South Access (tower which was damaged)	10	bird watching; nature observation; photography	majority ranked as third choice	ranged from 5 to 10	platform; important to have an eastern view, shorter path ideal for those who have difficulty walking
Access to Meadow Marsh (new)	8	botany; bird watching; photography ; nature observation	majority ranked as fourth choice	ranged from 8 to 10	narrow trail ; trail around meadow marsh; trail from road; benches; no access required (listening to birds from Hall's Road is acceptable)
Eastern Beach Access (existing)	7	bird watching; walking; nature appreciation	majority ranked first or second choice	average 10	trail; stairs to lake; tower to view over lake
Access West of Birdfeeder Trail (lands to be acquired)	7	nature observation ; bird watching; photography	ranked from first to third choice	ranged from 5 to 10	Trail (preferably winding so that other walkers are not always in view)
Beachfront (new)	4	bird watching; walking	ranked from first to fourth choice	ranged from 1 to 6	trail

The facilities requested were compared with those presently on site, and relative to the natural heritage attributes of the site. The following list provides a summary of the recommendations concerning future public use. These recommendations are also summarised in Figure 4.



Public Use Recommendations

The results of user surveys and observations of present public use of the site have been analysed. Although it will not be possible to meet all expectations due to resource concerns, the following proposed actions will address the majority of users:

Parking

The Lynde Shores Management Plan identifies that portions of the lands to be acquired adjacent to Hall's Road will be used to provide parking facilities for the Conservation Area in the long-term. There presently is however a large demand for parking to access the viewing stations located on the western boundary of the marsh. Until such time as acquisition occurs it is proposed that the Conservation Authority work with the Town to establish an interim 15 to 20 vehicle parking lot on the eastern side of Hall's Road. This parking lot would be equipped with the "pay and display" ticketing consistent with the main parking lot of the Conservation Area and revenues would be directed to fund the improvements.

Western Beach Access

Users have identified that access to the beach of Lake Ontario is required from the Hall's Road entrances. It is apparent that a large number of users are developing their own trails to gain this access presently. It is recommended that a marked trail be developed to direct this access from the south viewing platform trail to the beachfront.

Eastern Platform Replacement

As noted in the section regarding interim management, the viewing platform that was located on the eastern shore of Cranberry Marsh was recently removed due to ice damage. It is recommended that this platform be replaced with a raised earthen viewing mound. This design is very effective in providing viewing access and has been used by various other management agencies due to its efficiency and relatively low costs to maintain.

Eastern Beach Access

The present southern extent of the Le Vay's Lane trail leads users to the Lake Ontario shoreline on the eastern shore of the Cranberry Marsh. The shoreline at this location is relatively steep and eroding. It is proposed that safe access be provided to the beach.

Access to Sensitive Areas

In keeping with the Natural Heritage Goals, access to sensitive areas will not be encouraged. There have been requests for permission for individuals to enter specific areas such as the meadow marsh for scientific or nature appreciation pursuits. It is therefore proposed that it be Conservation Authority policy that individuals may apply for a permit to access specified areas for scientific or nature appreciation purposes on the understanding that information from these activities be shared with the Conservation Authority.

Access West of Birdfeeder Trail

It is noted that there is a need for further access to be provided to lands west of the present bird feeder trail. At such time as acquisition of additional lands in this area is accomplished these requests can be further examined.

Waterfront Trail

There is no immediate action recommended specifically to deal with the proposed linkages to the Lake Ontario Waterfront Trail. Further actions may be required once the proposed trail is in place.

Signage

There is a need for additional interpretative signage throughout the site. Signage will be upgraded to include information regarding the natural heritage attributes of the property including its history and archaeological attributes, as well as the restrictions of use.

Existing Platforms and Marsh Viewing Tower

The existing facilities are meeting user needs and will remain in their present locations. Their use and ability to accommodate users will continue to be monitored over time.

Interpretative Programs

Interpretative programs will continue to be offered in partnerships with local interest groups. On site programming such as bird watching and bird banding will be offered as special events throughout the year.

Summary of Recommendations

Natural Heritage Resource Management:

Meadow Marsh

♦ removal of undesirable species including European Highbush Cranberry and Silver Maple ♦ annual inspection and harvesting of undesirable and aggressive species (which may include plantation species) that may encroach on the marsh **Cultural Meadow**

- complete mowing of the cultural meadow to take place in the fall after frost cyclic mowing to occur every five years
- young plantation in the north-west will remain in the long-term the establishment of warm season native grasses be

further researched \blacklozenge opportunities for partnerships with grassland managers be examined

Deciduous Swamp

♦ in the long term may require some active management ♦ this will be re-assessed at such time the adjacent mixed shallow aquatic unit succeeds back to a healthy vegetated marsh unit

Mixed Shallow Aquatic

• construct an outlet control structure that will allow for seasonal raising and lowering of the water level in the Marsh

♦ in the first year the Marsh will be drained as much as possible during the spring will remain in the fully drained state through the first summer and a fall reflooding program then determined based upon the results of vegetation surveys ♦ an annual program of altering water levels to be established ♦ a high volume portable pump (tractor mounted irrigation pump) be made available in the event that natural refilling of the marsh does not occur. ♦ continue to evaluate the brown bullhead habitat in spring and fall of the first year. ♦ minimize the opportunities for carp to enter the marsh ♦ water levels and the outlet condition be monitored monthly ♦ clean-out of beach material conducted on an as needed basis.

Present Roadway

• At such time as acquisition of private lands is complete the health and function of the area will need to be re-evaluated **Treed Beach**

♦ no recommended action ♦ in future areas immediately adjacent to the proposed control structure may require bioengineering to increase beach stability

Acquisition and Stewardship Properties

• Contact will be made with present owners to inform them of how management of their properties may effect the health of the Marsh

Public Use

Parking

♦ a small interim parking lot be established on the eastern side of Hall's Road ♦ equip with "pay and display" ticketing Western Beach Access

• a marked trail be developed to direct access from the south viewing platform trail on Hall's Road to the beachfront

Eastern Platform Replacement

• the eastern platform be replaced with a raised earthen viewing mound

Eastern Beach Access

♦ safe access be provided to the beach

Access to Sensitive Areas ♦ individuals may apply for a permit to access specified areas for scientific or nature appreciation purposes

Access West of Birdfeeder Trail

• at such time as acquisition of additional lands in this area is accomplished this be further examined

Waterfront Trail

♦ no immediate action recommended ♦ further action may be required once the proposed trail is in place **Signage**

• to be added and upgraded to include information regarding, the natural heritage attributes of the property including its history and archaeological attributes, as well as the restrictions of use

Existing Platforms and Marsh Viewing Tower

♦ existing facilities to remain in their present locations ♦ continue to monitor over time

Interpretative Programs

♦ will continue to be offered in partnerships with local interest groups ♦ on site programming such as bird watching and bird banding be offered as special events throughout the year

It is recommended that action begin, pending available funding, immediately following approval of this strategy.

Appendices

Central Lake Ontario Conservation Authority

Community Workshop #1:

Cranberry Marsh Management Zone Lynde Shores Conservation Area

Natural Heritage Resource Management Options

WORKSHEETS

June 24, 1999

Participant Name:

Date:

Natural Heritage Resource Management Options - Checklist

Meadow Marsh - Area ① Represents the wetland/terrestrial interface; seasonal flooding, usually moist; dry in summer

A. Manage it and Increase Physical Size

Do you agree with CLOCA's preferred management options?

Comments:

Cultural Meadow - Area ② Originating from or maintained by anthropogenic or culturally based disturbances having both tree and shrub cover less than 25% each. Cultural meadows often have a large proportion of introduced species.

A. Manage Cultural Meadow for both Waterfowl and Inland Grass Species

Do you agree with CLOCA's preferred management options?

Comments:

ø

Jeciduous Swamp - Area ③ Refers to the treed wetland surrounding the mixed shallow aquatic community. The swamp is defined as having deciduous tree cover greater than 25%, hydrophitic hrub and non-woody species and standing water or vernal pools greater than 20% of ground coverage.

he Authority proposes that no active management of this unit is required at this time.

Do you agree with CLOCA's preferred management options?

Comments:

Mixed Shallow Aquatic - Area ④ Defined by standing water up to 2 metres in depth and which there is greater than 25% vegetation composed mainly of submerged or floating-leafed species.

A. Manage/Harvest Invasive Species, Drain Marsh for a Growing Season and Manage Water Levels

Do you agree with CLOCA's preferred management options?

Comments:

Present Roadway - Area (5) The road located within the property presently acts as an intrusion/separator within the area. This road provides access to private properties located within the Conservation Area. These properties have been identified for acquisition. At such time as acquisition of private lands is complete the health and function of the area will need to be re-evaluated.

Do you agree with CLOCA's preferred management options?

Comments:

Treed Beach - Area ⁽⁶⁾ Having between 25% and 60% tree cover, a shoreline area with high levels of disturbance from periodic high water levels and related physical effects such as ice scour, erosion and deposition.

A. Manage to Protect Physical Integrity

Do you agree with CLOCA's preferred management options?

Comments:

Acquisition and Stewardship Areas

outh Portion of Property East of Hall's Road - Area ⑦ Until such time as acquisition is possible, stewardship activities are proposed for these properties.

Do you agree with CLOCA's preferred management options?

Comments:

Property West of Halls Road to Beach - Area ⁽⁸⁾ Until such time as acquisition is possible, stewardship activities are proposed for these properties.

Do you agree with CLOCA's preferred management options?

Comments:

Stewardship Property - Area (9) It is proposed that the Conservation Authority continue its water quality monitoring program in the marsh to aid in determining the effects of run-off to the marsh. Once effects are determined, the Authority will establish a landowner contact program. The Authority will consider enlisting the help of other agencies and volunteers that may be able to offer monetary or in-kind contributions to assist landowners in becoming good stewards of their land.

Do you agree with CLOCA's preferred management options?

Comments:

NOTES:

Please leave your completed worksheets in the folder beside the guest book at the conclusion of the workshop or mail to the Authority at 100 Whiting Ave., Oshawa, ON L1H 3T3

s:\lyndesho\cmarsh\wkshp#1.doc

Natural Heritage Resource Management Options – Comments Received

Meadow Marsh - Area ①

Do you agree with CLOCA's preferred management options? - Unanimous agreement

Comments from the workshop:

- basically yes I agree, but word "manage" bothers me
- would like to know how the boundary of the meadow marsh would be determined would soil type be used?
- removing planted areas already planted by the public or donated by corporations, may be bad for public relations, let
- nature do it if management includes the removal of vegetation does this include soils?
- if there is to be a wooded corridor connecting the existing woodlots at the north end of the LSCA to Warbler Swamp, then remove trees that aren't doing well and replace with other species to create a swamp
- clearing of planted trees from suitable soil areas
- signage to inform visitors "what is being done here"
- "authority wishes to continue managing this unit" implies management is ongoing
- refers to "Marsh Wren" should be "Sedge Wren" (2 x)
- do you still have staff who know meadow marsh species well enough to monitor?
- agree with removing plantation that is not currently doing well. Beyond that it should be left as is since it has stayed the same for the last 40 years.
- The plant life will probably adjust itself to the wetness of the soil which in turn is controlled by the water level in area #4 (open water area). I would say okay as is at the present time.
- A good part of this area seems to be elevated enough to support the cedars and larch-tamarack now present. I would like to see some spruce (excellent for nesting songbirds) and some deciduous trees added to form a mixed planting as you have in area #3.

Further Comments:

- agree, but monitoring and management implies ongoing frequent presence of people who know the area
- plantation will be a dead area very soon too dense, also full of trees not native to Southern Ontario
- please note comment re planting spruce and some deciduous trees and allow nature to do some of the managing
- plant trees that produce food for birds
- nesting boxes need repair
- this area might attract sedge wrens not marsh wrens but I don't believe they are there now
- increasing physical size of meadow marsh may help attract them as well as Virginia Rail. King Rail has nested in this marsh in the past as well. A large enough wet meadow might be a migrational refugia for Yellow Rail too.
- give this initiative high priority
- no spruce in this area it's not a spruce bog!
- I agree that the opportunity for expanding this area is important. Rather than adding spruce or large trees as one comment suggests, perhaps lower story coniferous and/or deciduous shrubs should be introduced - those that don't mind damp feet! regarding Marsh Wren - should be Sedge Wren.
- if the trees are removed, the water table should rise, thus improving the habitat for the "meadow marsh" community
- remove the plantation within the meadow marsh area
- also suggest remove a portion of the plantation to create a wider meadow transition area to the plantation area
- prepare a management regime to prevent succession and overgrowth of the area by native trees and shrubs and maintain graminoid meadow
Cultural Meadow - Area 2

Do you agree with CLOCA's preferred management options? - Unanimous agreement

Comments from the Workshop:

- the method of management options will be looked into in great detail right now we are just deciding on a direction and will look into the feasibility later
- a managed meadow is an excellent option but I would like to see a tree-shrub barrier added to the existing alders etc. along the south shoreline so that migrating waterfowl are not disturbed by observers
- the top portion (N) with the planting of locusts could be united with the existing wooded area. Some control cutting and addition of other species should be considered (too many locusts).
- it seems there should be a way to increase the quality of habitat not just maintain or decrease it •
- need a diversity of species waterfowl and sparrows etc. •
- investigate best method of achieving this •
- signage what and why is happening here
- if the shrubs are allowed to grow you will lose the grassland nesting species such as waterfowl •
- federal money available for grassland management explore possibility •
- I do hope mowing is not the only labour to be undertaken. Extreme care is needed in timely harvesting •
- concern plan should have shorter cut cycles (i.e. 2 years), and that there should be an expert participation in • implementation
- removing the cutting as hay is a poor idea as nesting species use last years growth for nests •
- concern if cutting the grass is a successful method •
- I don't understand why there would be a periodic decrease in suitable habitat as mentioned. If you're managing to maintain the cultural meadow you will also be keeping the waterfowl and inland grass species

Further Comments:

- agree if done properly
- grassland bird species are in trouble in Southern Ontario because of early having before young are flying. It's important to maintain this habitat. Management is necessary to achieve this.
- there are lots of places managing wetlands for waterfowl very few if any are doing anything for grassland species -.
- meadowlarks, savannah sparrows, vesper sparrows, bobolinks, grasshopper sparrows
- eliminate weeds from existing areas and plant more wildflowers •
- mowing should be timed to take into consideration those species that double or late clutch
- it would be excellent if the section of this meadow closest to the marsh could have a spartina grass component
- definitely this area needs taking in hand. All that Queen Anne's lace, asters and golden rod are just too much! Also agree • that the top portion with locusts might gradually be integrated into existing wood, and that other Carolinian species be
- added for greater diversity.
- it seems to me that the portion east of the road doesn't contain much "grass" at all. Will it be seeded? •
- has anyone suggested nesting boxes in these field areas?
- if mown, cutting, should be left in situ. A controlled burn may be more effective, but may be politically unfeasible.
- maintain large enough area, including entire area between Cranberry and Lynde Shores marsh
- consider establishment of warm season native grass species.
- consider management as necessary for the continued existence of the grassland area
- Rationale: Establishment of small tracts of grassland forces grassland dependant sp. (i.e., ducks, passerines, pheasants, harriers etc.) to next in areas that are more easily searched by predators (i.e., racoons, opossums, striped skunks, coyotes, red fox etc.) Larger, contiguous blocks of heavy grass cover that does not lodge as a result of snow pack provides superior successful nesting opportunities for grassland dependent species.

Deciduous Swamp - Area ③

Do you agree with CLOCA's preferred management options? - Majority in agreement 1 response: no active management required

Comments from the Workshop:

- this is a very successful mixed planting and serves many nesting species
- further winter management cutting-thinning will soon be necessary
- good buffer zone
- yes, if the owls and Kingfishers will continue to use it even during its succession
- are there too many trees in here?
- "nesting area for belted Kingfisher" Kingfishers don't nest in woods (2x)
- limit public abuse/litter
- concern regarding unofficial trails off of the west viewing platform and the need to address this

Further Comments:

- yes, with reservation
- I think there are too many spruce trees. Again when they grow thicker and taller it won't be good habitat for very many species. It already seems too grown up.
- concern regarding unofficial trails in Hall's Road area; limit all access to two existing trails.
- status of the two platforms
- agree with comments regarding winter management, litter, unofficial trails
- limit access to nature trail only
- improve fence construction to block trails from questionable individuals
- I agree with no active management of this area
- vigorously prevent use of this area by homosexuals for indiscreet sexual encounters
- owls will be adversely affected by the aforementioned unofficial trails
- regarding the comment on limiting public abuse/litter how would this be managed?
- regarding comment Kingfishers don't nest in woods but they do use the area
- much of ash swamp close in elevation to average high water mark in marsh
- if water levels in marsh increase (i.e., to control aquatic vegetation overgrowth), swamp area my be impacted

Mixed Shallow Aquatic - Area ④

Do you agree with CLOCA's preferred management options? - Unanimous agreement

Comments from the Workshop:

- I agree that draining from time to time is a good way to control undesirable species. Level should be "normal" if possible for migration seasons.
- it appears to me that this wet area is a valuable stopover resting area for ducks and shorebirds. I believe that they would rather rest on mudflats than grassy flats, because of predators.
- the south portion contains an island of alders and cattails that are more or less connected to the beach strip #6. To help control predators, I would like to see a channel dug along the #4 - 6 line so that a true island is formed. The dug soil would enhance the physical strength of the narrow beach strip.
- it seems like a reasonable plan, the objects are sound. Why do you think this plan will accomplish those objects? .
- drawing down from time to time improves health of marsh enormously
- consideration of dredging out some areas to make deeper pools and using dredge materials to form islands which will vegetate themselves and diversity habitat
- tern rafts?
- utilise experiences from other organisations that have done same successfully
- draw down is absolutely essential
- spelling error Dr. Speirs (2x)

- eutrophic conditions the water is clear but contains little oxygen and supports the draw down
- what does invasive species include? Animals, plants and fish? •
- will draining the marsh affect the fish and other species?
- comment made that after the last draw down of the marsh, the fish population increased
- agree that water levels should be managed even if it causes a decrease in amount of habitat for waterfowl, herptiles and fish it should increase the quality of that habitat which often results in higher densities of the species in question - must be careful to prevent take-over by invasive species
- harvesting invasive species may be a waste of resources use them to purchase land, nature will balance itself

Further Comments:

- yes, agree if purposeful drawdown is undertaken
- it is vital to lower and raise the water level in the Marsh. it needs a good flush. The marsh was at its best after the barrier beach was breached about 5 or 6 years ago. The shore birding and diversity of species during the low water level was excellent. this is your chance to do this right and create the best shorebird habitat on Lake Ontario
- regarding harvesting of invasive species how and by whom? •
- manage for shorebirds e.g. sandpipers, plovers, curlews •
- no tern rafts please .
- manage for shorebirds and viewing, shorebird habitat is very limited in Durham Region
- excellent, start soon •
- begin draw down in 2000, it is absolutely essential must mitigate against invasive alien species like purple loosestrife. • Some spartina grass might be useful addition.
- regarding comment against harvesting invasive species if only this was true, it is not .
- clearly healthy marshes are mostly vegetation covered, but the need for some open water and perhaps some deeper pools • would seem to invite diversity. Would active management - i.e., draining - become a 'regular' thing, like the mowing of the grassland, or would such actions only be taken as need arises?
- when the marsh was last drawn down (early 90s), the resulting exposed mud was a boon for feeding shorebirds •
- do not feel we have the technical expertise to give a definite opinion. Would worry about the effect of drainage on aquatic • species
- invasive sp. harvesting may not be best option
- species specific management plans may need to be developed for all invasive sp. i.e., purple loosestrife, flowering rush, European frogbit, mute swans, common carp etc.
- need to co-ordinate plans so that objectives don't compromise marsh objectives
- water level management regime to be developed as a result of analysis of topographic surveying of the marsh bottom and surrounding upland areas (beach, swamp, meadow, fields, etc.)
- water level management is a time proven technique utilising natural wetland ecology to restore lost vegetation • communities
- permitting and design process lengthy and difficult
- why was 1991 drawdown ineffective? Provide results of 1991 drawdown.

Present Roadway - Area (5)

Do you agree with CLOCA's preferred management options? - Majority in agreement - 1 undecided

Comments from the Workshop:

- I believe that not much can be done with this road
- hopefully, some day the private properties can be purchased by CLOCA. Perhaps they could be used as study and observation centres but if developed too much they will have an adverse effect on wildlife because of overuse.
- do the landowners pay for maintenance of this road?
- if acquisition of lands is possible, studies will have to be done to determine if the roadway is in fact an intrusion or separator for wildlife. If the road is completely blocked off from traffic it may not matter if it remains but it definitely shouldn't be maintained after that
- can road improvements be contained or controlled to stop further "improvements" Further Comments:

- great idea to acquire the properties. The road could still be used as a walking trail. People need access to viewing platforms and to see the Lake. There should be a way for people to see the species in the different habitat zones.
- if "intrusion/separator" refers only to auto traffic is it a real problem? If walking is an intrusion I don't see what difference there would be if a new pathway were created.
- when the road is no longer needed it should be replaced by a path for birding
- buy residences eliminate road
- more nature trails
- totally agree with acquisition aim would make excellent visitor centre but hopefully such temptation could be resisted
- stop maintaining road upon acquisition
- may need to have access for management in future
- could be located, also used for trail system
- the road needs to be accessible by the public it is not fair to limit its use to just a few who own property at the lake

Treed Beach - Area 6

Do you agree with CLOCA's preferred management options? - Unanimous agreement

Comments from the Workshop:

- if maintained as is, it protects the marsh area and the large willows provide roosting for some types of herons and migrating birds
- why is the breaching that occurred 5 years ago not mentioned?
- perhaps concrete rubble could be added to the lakeside of the strip and the "Crombie Trail" extended straight along the lake at this point. It seems to me that this would make more sense and have less environmental impact than its current direction around the entire area. The only barrier is Lynde Creek which is usually only ankle deep as it enters Lake Ontario.
- many of the large willows stabilising the beach are now old or fallen will more be planted?
- hopefully this beach will not be "hard" or "soft" engineered
- it's important that the beach be maintained as a dynamic beach and not a static beach no erosion engineering no plan to place erosion control have been suggested
- managing a barrier beach is difficult to impossible to do, lake levels will determine what happens to the beach, "leave it alone" is probably all that can be done
- sluiceway may need fish ladder for seasonal migrants
- no action to destroy beach

Further Comments:

- at present very few people wander along the barrier beach. With the future increase in population I think you will have to restrict access in order to protect the wildlife on the marsh side from disturbance
- simply for the records I believe there should be referral to the most recent breach some 5+ years ago. People talk vividly about what happened as a result of the breach obviously made by a front end loader
- regarding the breach 5 years ago we saw this event and noted water quality afterward was good why did it deteriorate so quickly?
- construct a bridge for walking only
- regarding comment "leave it alone"; this says it all
- I think minimal management is the key. As one comment indicates, if we try to fight the lake we'll lose! Any aggressive management may create more problems than it solves.
- I agree that lake water levels over time will be the ultimate determinant of the beach integrity
- C.A. may not be able to manage beach erosion and replenishment
- access may be controlled
- tree management may be required under certain circumstances
- may need to manage cormorant use of trees (see Second Marsh use of trees on barrier beach as an example)
- management proposals not described. Protect marsh from inland side as needed and allow natural beach dynamics to continue.

Acquisition and Stewardship Areas

South Portion of Property East of Hall's Road - Area 🕖

Do you agree with CLOCA's preferred management options? - Unanimous agreement

Comments from the Workshop:

- I hope that it can be acquired. A management option is to ensure that harmful agricultural chemicals are not used here.
- CLOCA should easily be able to afford current agricultural rental rates and could either directly or indirectly farm this area and thus have controls over chemicals used (if owner is willing)

in the second

Further Comments:

- this will be wonderful .
- regarding comment on farming do not agree with this
- plant trees that produce food for birds, e.g. fruit trees, cherry, pear, apple, wild grapes
- driving range is an affront get rid of it pronto
- regarding comment on harmful agricultural chemicals, strongly suggest proactive contact to ensure that chemicals are not • used
- Ducks Unlimited supports stewardship on these, lands .
- recommend that the C.A. actively acquire key properties as they become available and before they are re-zoned, and to . proactively comment on proposed re-zoning s to these lands
- identify ecological values of these lands and develop a vision, goal and objective for the acquisition of these lands
- corridor is important •

Property West of Halls Road to Beach - Area ⑧

Do you agree with CLOCA's preferred management options? - Unanimous agreement

Comments from the Workshop:

- it appears that this is already rented for agricultural production and the same as #7 applies .
- if a corridor from the north end of LSCA is not possible there should at least be a wooded corridor from the treed swamp • at Cranberry across the fields west of Halls Road. Even a continuous hedgerow would be better than nothing.

Further Comments:

- what about the area right on Lake Ontario atop the cliffs west of Hall's Road? It would be a tragedy to have a housing or other development on that land. I hope it will be part of the Cranberry Marsh Management area in perpetuity
- agree with comment re corridor
- plant trees cedars at road and fruit trees for interior
- an overlook point with a good view of Lake Ontario just west of Hall's Road (unobstructed view) would be highly desirable for monitoring lakefront bird migration
- acquire when possible, advise current owners/renters of area sensitivity and promote sympathy to CLOCA project
- use of agricultural fertilisers has no doubt contributed to the eutrophication of the marsh
- feel that a wildlife corridor across this property is necessary 0

Stewardship Property - Area 9

Do you agree with CLOCA's preferred management options? - Unanimous agreement

Comments from the Workshop:

- why wait until "run-off monitoring" is concluded?
- begin landowner contact program now
- would probably require more than volunteer help
- same as 7 and 8 rent it if you can

Further Comments:

- if not slated for acquisition are they protected from development?
- regarding renting 99 year lease if available or rent to own
- yes, begin landowner stewardship contact now •
- why wait, begin landowner contact program now •
- I agree that the landowner contact program should begin now •

Notes From the Workshop:

- The Authority should be realistic in its approach and deal with matters on a present basis if acquisitions are immanent and/or probable then plans need to reflect that reality - at the same time one can't implement plans in areas where it's only wishful thinking.
- In area #4 I would like to see a number of mud-flat islands constructed. The birds feel more comfortable on islands and are safe from foxes and other land-based predators. It seems to me that this could be done in the winter when lightly frozen with an ordinary backhoe. (It also increases water depth.)
- Since climatic zone maps show that Lynde Shores is at the very edge of the Carolinian growing zone I believe that an effort should be made to grow Carolinian species of trees. Examples Hickories, Sycamores, Tulip trees, Paw Paws, Cucumber Magnolia, Sweet gum etc.
- How about a small tree nursery at your head office?

Further Notes:

- I agree with all the above notes
- If this management plan is implemented, Cranberry Marsh will benefit greatly. The integrity of the area and its wildlife will be secured. The diversity and health of all the species will be improved.
- People must be able to view the wildlife; good controlled trails and viewing platforms are essential.
- I look forward to the changes proposed especially the lowering of the water level and clearing out some/all of the plantation.
- I surely hope that many participants and others bother to submit their comments so very necessary in establishing/helping CLOCA to establish policy and procedure.
- Agree with comment re mudflats.
- Agree with comment re mudflats.
- Agree with comment re hickories and sycamores.
- Disagree with comment re nursery buy from local nursery.
- Black oak, white oak, sassafras and tulip trees might be practical (as would sycamore). Paw Paw and Cucumber and Magnolia might be wishful thinking.
- Avoid locusts and Norway maple like the plague.
- Large mudflat areas should be of the very highest priority.
- I really like being consulted although I was not able to attend the workshop. Thank you for continuing to include me!
- CLOCA's preferred "management" options sound reasonable but with consideration of the various comments.
- I have enjoyed Lynde Shores C.A. and Cranberry Marsh for over 20 years. I'd hate to see it change. Maintain the integrity of the area but don't change too much.

Central Lake Ontario Conservation Authority

Community Workshop #1:

Cranberry Marsh Management Zone Lynde Shores Conservation Area

Identification of Public Use Requirements

WORKSHEETS

June 24, 1999



Identification of Public Use Requirements

Participant Name: _____

mage Date: _____

First Priority - Yellow



Second Priority - Red



Identification of Public Use Requirements (continued)

Chird Priority - Blue

	What is your primary interest in visiting this property (e.g. Bird watching, photography)
1	
	Please indicate on the map provided the location you wish to access to undertake this activity
ļ	
1	
	How would you like to access this location (please show on map or describe below)
1	
10	How important is it to you that access be provided to this location? Please rate on a scale of 1-10.
4	
	somewhat extremely
1	What type of facility do you require to undertake this activity (e.g. Trail, platform)
	Fourth Priority - Green
	What is your primary interest in visiting this property (e.g. Bird watching, photography)

Please indicate on the map provided the location you wish to access to undertake this activity

How would you like to access this location (please show on map or describe below)

How important is it to you that access be provided to this location? Please rate on a scale of 1-10.

important important What type of facility do you require to undertake this activity (e.g. Trail, platform)

s:\lyndesho\cmarsh\wkshp1.doc

(iii) Miller of Friday and Active before the Astronomy.

Cranberry Marsh - A Chronology

Date Event of Observation		Observer	Marsh Status			
1600's through 1 700's	Iroquoian settlement followed by settlement of the Mississauga culture.	Marsh for Life	Iroquoian pottery fragments have been found in the area. The Mississauaga's were dependent upon the abundant hunting and fishing in the area.			
1790	First homesteaders arrive (Jabez Lynde) in the area, mainly Loyalists and Quakers from the U.S.	Ontario Archives	No effects to the Marsh are mentioned.			
1791 and 1795	Mapping produced suggesting that Cranberry Marsh was once the mouth of the Lynde	Ontario Archives	Cannot be proven due to lack of mapping between 1795 and 1860.			
oost 1812	Dehart Family clears the land surrounding Cranberry Marsh	Ontario Archives	First evidence of direct human intervention of the Marsh.			
1921 - 1966	A hunting cabin for the "Lakeshore Gun Club" was erected in the area	Whitby Archives	"Pheasants, waterfowl, rabbits muskrats and foxes were plentiful in the Marshes at the time and provided good hunting."			
1924	Land purchase by J.W. Lowes, wild cranberries grown within Cranberry Marsh by Property owners, The Lowes Family	Cranberry Marsh Report	Mr. Lowes purchased 189.55 acres in lots 34 & 35 B.F.C. for \$10,000. Marsh was described as "dry", but had to have been subject to some form of flooding to accommodate cranberry growth.			
1933	Plan of subdivision for a project was submitted that stretched from Lynde Creek to Cranberry Marsh (Eastbourne Estates)	Ontario Archives	Approximately a dozen summer cottages (including one on Cranberry Marsh) were erected in the area, which became a popular resort complete with concession stands and pavilions.			
1939 - 1945	Dug channel maintained by Lowes family	J. David Lowes	It is unknown when the channel first appeared but a small channel was dug each year on the east side of the Lowes' property boundary to maintain water levels in the marsh, the farming operation ceased in 1945 and the channel was no longer maintained.			
1943	Eastbourne Estates - land purchase	Cranberry Marsh Report	10 years after first plan of subdivision, Eastbourne Estates purchases lands in lots 32 & 33 B.F.C. from Charles R. Puckerin for \$10,600.			
1944-1945	Wild cranberries were gradually destroyed by high water levels	J. David Lowes	Water levels were reported to have risen since the 1930's, destroying wild cranberries.			
1954	First aerial photos of the area	CLOCA	The first aerial photos purchased for the CLOCA watershed were taken in 1954. The entire marsh appeared to be vegetated.			
1954	Hurricane Hazel	Ontario Archives	Floodwaters broke through the barrier beach, which was repaired by a cofferdam.			
1954	Beaver Damage	Ontario Archives	Beavers were removed from the Marsh by Dept. of Lands and Forests.			
mid 1950's	Land acquisition by the LeVay family	CLOCA Files	Property purchased by the LeVay family, all of whom were active wildlife observers, maintained a second sluice that would drain the marsh during very high flows.			

1

1959	Fishing in ditches along Halls Road for brown bullhead	R. Gunter	Higher (seasonal) water levels than today.
1964	Survey conducted by the Dept. of Energy and Resources Management	CLOCA Files	Recommendation that CLOCA acquire the marsh, noted 232 different kinds of birds since 1947, recorded by a single family, nesting of 58 species, 73 types of waterfowl and shorebirds.
1966	Hunting prohibited within the marshes by a Town Bylaw	Whitby Archives and Bylaws	Lakeshore Gun Club was discontinued.
1966	Ideas expressed for Cranberry as a Nature Reserve	Dr. Murray Speirs, Dept. of Zoology, U of T	Noted that Cranberry is fed by ground water and run-off, 90% of marsh covered with emergent vegetation, open water sections shallow, willow-alder carr, large number of tree stumps in open areas of the marsh.
1967	Aerial photography	CLOCA	Approximately one third of the marsh appeared to be open water. Many flourishing emergents and shrubs were visible.
1969	International Biological Programme (IBP) survey conducted by Mr. Ron Tozer	Dr. Murray Speirs, Dept. of Zoology, U of T	One of the few remaining Typha (Cattail) Marshes, outstanding area for breeding/migrating waterfowl, number and variety of waterfowl exceed anywhere on the north shore due to shrub and small tree cover, combined with human absence.
1970	CLOCA Wetlands Policy	Authority Resolution NO. 54, July 28, 1970	Afforded protection and conservation improvements by CLOCA to wetland areas.
1971	Land Acquisition	CLOCA Files	Central Lake Ontario Conservation Authority commenced land acquisition within the Area.
1971	Management Suggestions	Dr. Murray Speirs, Dept. of Zoology, U of T	Provided CLOCA with management suggestions for Cranberry Marsh including controlling water levels with additional drawdowns in some years.
1975	CLOCA Vegetation Inventory	S.M. McKay (CLOCA)	Aquatic vegetation was very prolific in the Marsh, pondweeds and coontails dominated.
1975	Aerial photography	CLOCA	The marsh was in an open water state, with emergents visible around the perimeter and within the alder thicket in the south centre of the marsh.
1978	Buffer Strips	CLOCA Files	CLOCA became aware of a lack of buffer between Agricultural Lands and the Marsh. Plantings commence to re-establish a buffer.
1982	Trumpeter Swans	H. Lumsden, (OMNR)	Cranberry Marsh was chosen as the top candidate for the reintroduction of Trumpeter Swans to Ontario because of the excellent habitat suitability requirements of the marsh.
1983	Wildlife Observations	H. Lumsden, (OMNR)	Est. 35 duck broods in Marsh, nesting pair of Pied-billed Grebes, approx. 15 Black Tern nests, 42 Mute Swans, and submergent pondweeds formed dense beds and blossomed profusely.
1983 - 1987	Loss in Marsh productivity	H. Lumsden (OMNR)	Mr. Lumsden commented on the significant productivity decline in the marsh over this period by comparing nesting information from 1983 - 1987.
1983	Wetland Evaluation	OMNR	Wetland classed as "Provincially Significant".
1983	Sluiceway maintenance	CLOCA Files	CLOCA requested that the sluice be sealed off which was completed in April by the LeVay family. CLOCA expresses concern over the passage of carp through this sluice.

	and the second					
85 - 1987	Snapping Turtle trapping and relocation program	H. Lumsden (OMNR)	In total, over the 3-year period, 114 turtles were removed from the marsh; it was thought that they were the cause of Trumpeter Swap evonet fatalities.			
1987	Wildlife Observations	H. Lumsden, (OMNR)	Est. 15 duck broods in Marsh, no Pied-billed Grebes, no Black Tern nests, no Mute Swans, and "submergent pondweeds were sparse, unthrifty and disappeared in July, with no blossoms."			
1988	Harry Lumsden's speech to CLOCA Board of Directors	H. Lumsden (OMNR)	Mr. Lumsden spoke of the declining productivity in the marsh.			
1988	Wildlife Habitat Assessment	Ducks Unlimited	DU provided a detailed Wildlife Habitat Assessment and discussion of Development Alternatives.			
1989	Letter from Thomas D. Nudds supporting the draining of Cranberry Marsh	Thomas D. Nudds, University of Guelph - Dept. of Zoology	Graduate Student's article attached " Conflicts of Values in Multiple Use Marsh Management".			
1989	Lake Ontario Shoreline aerial photography	CLOCA	Few emergent plant communities existed around the perimeter of the marsh. The marsh was generally open water with the exception of the alder thicket in the south centre.			
1990	Life Science Area of Natural and Scientific Interest (ANSI) Inventory	OMNR	The area was surveyed over 5 field days from June 22 to September 15 by Ian McDonald and was given Provincial Life Science ANSI designation.			
1990	Public Information Session	CLOCA	CLOCA holds a public information session on a proposal to undertake active management of Cranberry Marsh.			
1 991	Aerial photography - summer flown	CLOCA	Few emergent plant communities exist around the perimeter of the marsh. The marsh is generally under water with the exception of the alder thicket in the south centre.			
1991	Cranberry Marsh experiences a complete drawdown.	CLOCA Files	Photographs showing a drained Cranberry Marsh were taken in the fall of 1991, show vegetative growth on the marsh bed.			
1995	Aerial photography	CLOCA	Colour digital photography for the area showed little to no emergent vegetation in the marsh.			
1997 - 1999	Lynde Shores Management Plan	CLOCA	A Management Plan process for the Conservation Area was undertaken late 1997, the project was completed in 1999, identifying Management Zones and varying degrees of sensitivities and health.			
1997	Aerial photography	CLOCA	Digital infrared photography for the area clearly delineates overland drainage patterns. The marsh is in an open water state.			
1997-1998	Small mammal data collection	M. Barton	Melissa Barton, a Trent University Student collected small mammal data around Cranberry Marsh for her Thesis entitled "Distributions of Small and Medium-sized Mammals within and Outside 120 metre 'Adjacent Lands' Surrounding Three Wetlands on the North Shore of Lake Ontario".			
1999	Staff gauge installation	CLOCA	A staff gauge was installed in Cranberry Marsh to monitor marsh levels.			
1999	Natural breach of barrier beach	CLOCA	Photographs taken of breach in barrier beach, the area of the breach appears to be in the vicinity of the dug channel that the Lowes family maintained through 1945.			
1999	Water Quality Analysis	CLOCA	As part of a planned monitoring programme, chemical water quality sampling began early in 1999.			
1999	Fisheries studies commence	CLOCA	A determination of species found in Cranberry Marsh is scheduled to begin in the Spring.			



Cranberry Marsh Through The Years















Points Of Time



Cranberry Marsh, July 1987





Barrier Beach, Feb. 1999

Cranberry Marsh Drained, Sept. 1991



Alder Thicket - Cranberry Marsh, Feb. 1999







100 Whiting Avenue, Oshawa, ON, L1H 3T3 (905) 579-0411, fax (905) 579-0994

Release Date: August 6, 1999

Inappropriate Sexual Activity Will Not Be Tolerated At Lynde Shores Conservation Area

.

The Central Lake Ontario Conservation Authority is issuing a warning that inappropriate sexual activity will not be tolerated and any persons caught will be prosecuted. Young families, school groups and individuals wishing to enjoy the natural environment use this area and they should not be subjected to this type of activity.

The problem of inappropriate sexual activity is not new at Lynde Shores and the Authority has been trying to address the problem with a number of management techniques. To date the Authority has made the parking lot more visible by removing a berm, defined the authorized trail system and fenced off the unauthorized trails that have been used for these activities. "We are working with the Durham Regional Police to assist us in bringing this problem to an end," states Sandra Hanson, Director of Corporate Services. "With the completion of the Lynde Shores Management Plan we have been able to define an official trail system for the public to use and anyone found off the official trails will be subject to a fine of up to \$1,000."

Anyone encountering this type of activity are asked to contact the Durham Region Police or the Conservation Authority at (905) 579-0411 with details of the time and location."

For more information please contact Sandra Hanson at the Authority office (905) 579-0411.

S:/new99/lyscaug6.doc

What we do on the land is mirrored in the water.



Cranberry Marsh Water Level Survey

Date	Marsh Water Level		Recorder	Comments	Lake Ont Level (m)	
	Staff Gauge Geodetic Elevation					
August 21, 1998	n/a	7576	Abe K	bathymetry survey	74 86	
March 12, 1999	0.10	75.72	Abe K	staff gauge surveyed breach on west beach area 0.15m ice cover	74.67	
April/22/1999	0.10	7572	Perry S	no significant spring runoff	7470	
June 3, 1 9 99	0.08	75.70	Perry S	recent heavy rains	74.87	
June 24, 1999	0.04	75,66	· Perry S	extended dry weather	74.76	
August 20, 1999	-0.15	75.47	Perry S	unauthorized ditching on beach controlling water level	74.71	

Notes:staff gauge datum is 75.62 metresLake Ontario water levels based on Environment Canada readings at Toronto (416)-868-6026

Õ

.

Table of Contents

Item	¥		Page
Table of Contents		 	i
List of Figures		 	ii
List of Tables	······	 	ü
List of Appendices	<u></u>	 <u></u>	ii
Introduction		 	ł
Methodology			2
Minnow Trap Survey		 	2
Siene Net Survey		 	5
Results		 	6
General Marsh Conditions		 	6
Minnow Trap Survey			6
Siene Net Survey		 	6
Discussion		 	8
Recommendations		 	10
References	X	 	H

List of Figures

Item	Page
Figure 1 - Locations of Aquatic Study Sampling Sites within Cranberry Marsh	3
Figure 2 - Terms Associated with Cranberry Marsh Aquatic Studies	4

List of Tables

Item	Page
Table 1 - Summary of Fish Catches from Cranberry Marsh Conducted on August 8: 0 and 11	7
on August 8, 9 and 11	

Page

List of Appendices

Item	Page
Appendix 1 - Field Collection Records from August 8, 9 and 11, 1999	Al
Appendix 2 - Field Collection Records from October 2, 1998	A16

Introduction

Cranberry Marsh is located on the north shore of Lake Ontario within Lots 33 and 34, Broken Front Concession, Town of Whitby. The Marsh is completely within Lynde Shores Conservation Area owned by the Central Lake Ontario Conservation Authority.

The marsh and the very small watershed (126.5 ha.) have been greatly manipulated by man over the last 150 years. The marsh is completely cut off from Lake Ontario by a barrier beach and water levels appear to be dictated by surficial run-off and Lake Ontario levels. Throughout most of the recorded history of the marsh, man has controlled the water level within the marsh through the use of sluiceways. During the early 1900's the marsh was managed for the production of cranberries (Ontario Archives, circa 1900). In 1959, there are reports that angling for brown bullhead (Ameiurus nebulosus) was possible in the ditches running along Hall's Road that emptied into Cranberry Marsh (J. McColl, pers. comm). The land surrounding the marsh was cleared for agricultural purposes, but has since been managed to facilitate revegetation since being purchased by the Authority in 1971. In 1983, the maintenance of the sluiceway was discontinued as there was grave concern that carp (Cyprinis carpio) may traverse this structure, gain access to the marsh and disrupt or destroy aquatic vegetation. Since the closing of the sluiceway, the reported diverse vegetative habitat (emergent vegetation) within the marsh proper has, over time, been lost. In 1988 it was suggested that the marsh be drained and water levels again be controlled to promote a more healthy and diverse marsh system (Lumsden, 1988). A consensus for this proposal could not be gained and no action was taken at that time.

In 1997, a public process through which management options could be explored was instated which became the Lynde Shores Management Plan (CLOCA, 1999). The first "Management Zone" that was identified as requiring immediate attention in this document was Cranberry Marsh. Draining the marsh for a period of time was also identified as the preferred management option. To accommodate this management tool the Authority started to conduct fisheries and water quality studies and assessments within the marsh.

1.

Methodology

Fisheries field investigations were carried out on August 8, 9 and 11, 1999. Two fish capture techniques were employed to capture fishes within the marsh. The first being the passive use of minnow traps which can be used as a quantitative measure for fish populations by incorporating a catch per unit effort, or the number of species captured divided by the time for capture. Active, qualitative seine netting was also used to supplement quantitative data, and to capture species that are not commonly captured in a minnow trap. All species were identified in the field and released at their point of capture. All field collection records are included in Appendix 1

Minnow Trap Survey

A total of six minnow traps were set in areas of the marsh where sufficient depth and cover (structure) would facilitate capture (Figure 1). Terms associated with site are illustrated in Figure 2. All minnow traps were baited with 45 grams of "Kibbles and Bits" dog food, and were set for a 21 hour duration. A description of each station is provided below;

- MN01 set at the outflow channel in the "western lobe" at a depth of 500 mm over a muck and branch substrate.
- MN02 set south of the north Halls Road Platform at a depth of 240 mm over a muck substrate.
- MN03 set off the west end of the Meadow Marsh at a depth of 150 mm over a muck substrate.
- MN04 set off the raised lookout platform depth of 150 mm over a muck and branch substrate.
- MN05 set at a stump close to the middle of the marsh 500 mm over a vegetated muck substrate.
- MN06 set in the "eastern lobe" on the old LeVay Property at a depth of 250 mm over a muck and branch substrate.





Seine Net Survey

A total of eight seine hauls were conducted on August 11, 1999. Due to the extremely shallow conditions of the marsh (average depth on August. 11, 1999 was 306 mm), most seines were confined to the deeper portions of the north end of the marsh (Figure 1). A standard 500 um, 9.1 metre long beach seine was dragged along a section of the marsh with the lead line in contact with, and usually penetrating the bottom substrate. The net was dragged in an encircling maneuver until the net came into contact with itself, at which point the lead lines were hauled. All captured fish were then identified, a total length of the specimen was taken, and then the specimen was immediately released. A description of each site is provided below;

- SN01 taken in the middle portion of the march by a stump over a muck substrate at an average depth of 300 mm.
- SN02 taken at the outflow channel on the "western lobe" of the marsh over a muck and branch substrate at an average depth of 500 mm.
- SN03 taken immediately to the west of SN02 over a muck and branch substrate at an average depth of 500 mm.
- SN04 taken north of the south Halls Road Platform by a stump over a muck and branch substrate at an average depth of 50 mm.
- SN05 taken in the middle portion of the marsh over a muck substrate at an average depth of 300 mm.
- SN06 taken in the middle portion of the marsh over a vegetated muck substrate at an average depth of 300 mm.
- SN07 taken off the Eastbourne Beach Road Access over a vegetated muck substrate at an average depth of 400 mm.
- SN08 taken immediately to the south of the Eastbourne Beach Access over a muck substrate at an average depth of 150 mm.

Results

General Marsh Conditions

Despite heavy wind and rain, low water levels were observed throughout the study period with an average depth of 306 mm. The outlet to Lake Ontario was not running and the water level was 408 mm below the outlet.

A "trough" was observed (Figure 2) on the bottom end of the western lobe of the marsh by the outlet channel. A "hump" in the substrate at a depth of approximately 30 mm was observed 7000 mm north of the barrier beach, which dropped to a depth of approximately 500 mm when 4000 mm offshore. This "trough" was not noted during soundings in 1998.

The marsh at the eastern lobe and the north end of the marsh were covered in floating mats of duckweed (*Lemna* spp.) and the submergent Eurasian Watermilfoil (*Myriophyllum spicatum*) was observed in the deeper portions of the marsh at depths exceeding 200 mm.

As investigators were canoeing through the marsh, carp were observed moving away from the canoe, their dorsal fins causing a disturbance on the surface of the marsh.

August 8, 9 and 11 were overcast with air temperatures of 23.0° C, 25.0°C and 23.0°C, respectively. Water Temperatures for all three days were consistently 22.0°C at every station.

Minnow Trap Survey

The results of the minnow trap survey are summarized in Table 1. No fish species were captured in any minnow trap, making the total catch per unit effort, 0. Investigators did observe large specimens of whirligig beetles (*Gyrinus* spp.) captured within the minnow traps. These beetles were not observed on the surface of the marsh during the study.

Seine Net Survey

The results of the seine net survey are summarized in Table 1. The brown bullhead was the only fish specie captured during the survey, and only in areas where depths exceeded 300 mm in association with submergent vegetation. A total of 5 specimens were collected with total lengths ranging from 209 mm to 230 mm with an average total length of 217.8 mm. Investigators noted large numbers of backswimmers (*Notonecta* spp.) and midge larvae (*Chironomine* spp.) were captured in every seine haul. Snails (*Lynnaea* spp.) were also captured, but not in abundance.

6.

Table 1 - Summary of Fish Catches from Cranberry Marsh Conducted on August 8, 9 and 11, 1999

Gear	Date of	Type of Gear	Depth of Set	Duration (hours)	Species Captured (common and scientific names)	# of Fish Captured	Avg. Total Length	Catch per Unit Effort
ID Code		Adaman Trees	500 mm	21	no catch	0	n/a	n/a
MN01	August 9, 1999		- 300 mm	21	no catch	0	n/a	r√a
MN02	August 9, 1999	Minnow Trap	240 mm	21		0	n/a	n/a
MN03	August 9, 1999	Minnow Trap	<u>150 mm</u>	21	no catch	0	n/a	n/a
MNI04	August 9, 1999	Minnow Trap	150 mm	21	no catch	0	1/4	n/2
MINOS	August 9 1999	Minnow Trap	500 mm	21	no catch	0	n/a	iva na
MINUS	August 0, 1000	Minnow Tran	250 mm	21	no catch	0	n/a	n/a
MNUG	August 9, 1999	Number of the	200 mm	0/2	ino catch	0	n/a	n/a
SN01	August 11, 1999	Seine Net	300 mm	11/4	no catch	0	n/a	n/a
SN02	August 11, 1999	Seine Net	500 mm	tva	hours bullbard (Amejurus nebulosus)	1	230 mm	n/a
SN03	August 11, 1999	Seine Net	500 mm	n/a	brown builleau (Amelarae nebuleeee)	0	n/a	n/a
SN04	August 11, 1999	Seine Net	50 mm	n/a	no catch	0	n/a	n/a
SN05	August 11, 1999	Seine Net	300 mm	n/a	no catch		221 mm	n/a
CNIOS	August 11 1999	Seine Net	300 mm	n/a	brown bullhead (Ameiurus nebulosus)		221 1111	n/2
SINUS	August 11, 1999	Soine Net	400 mm	n/a	brown bullhead (Ameiurus nebulosus)	3	213 mm	11/a
SN07	August 11, 1999	Seme Net	150 mm	n/a	no catch	0	<u>n/a</u>	n/a
SN08	B August 11, 1999	ISeine Net	1 100 11111	1// 0				

 \sim

Discussion

Cranberry Marsh exhibits very low water levels, low dissolved oxygen concentrations (average summer concentrations 5.8 ppm) and extremely silted conditions. This type of environment is not conducive to minnow (Cyprinid) species production, most of whom require much higher dissolved oxygen concentrations (8.0 ppm+) and clear flowing or lentic waters. For these reasons, it is not surprising that the minnow trap survey produced no specimens. It is not likely that any fish species save the introduced carp or the indigenous brown bullhead would be present in such conditions.

Carp have been reported and observed on many occasions and by multiple observers within Cranberry Marsh. Although carp were observed during this survey, none were captured, which is most probably due to sampling methodology. When seining, investigators used canoes to traverse the marsh which led to surfical disturbance, which in turn caused the very mobile carp to move to a safer location. Carp tend to move great distances away from a disturbance, where the brown bullhead will head to the bottom substrates of the waterbody and perhaps bury itself in the substrate (Scott and Crossman, 1973). Of note, investigators conducted a seine within Cranberry Marsh on October 2, 1998, in the same location as SN08 (Appendix 2). This seine did produce 79 carp with total lengths ranging from 45 mm to 275 mm with an average total length of 100.11 mm. Water depth at this time was an average of 500 mm. Scott and Crossman suggest that "carp usually attain lengths of 130 - 190 mm in Southern Ontario Waters in the first growing season." and, further "males become sexually mature at ages 3 and 4, and females at ages 4 and 5". This would support a suggestion that these fish were within their first growing season, and not sexually mature. Carp are a non-native fish and most probably enter Cranberry Marsh through the outfall during periods of high water, most likely in the spring. During the spawn, (spring-early summer) carp move to weedy or grassy shallows to spawn, during which they tend to uproot and destroy submerged vegetation which, in turn, causes increased turbidity. Due to this trait, the carp should be considered an undesirable species within Cranberry Marsh as efforts to promote vegetative growth are being considered. Carp would probably find themselves "trapped" within the marsh when the spring waters recede and unless an opportunity to escape during a storm event presents itself, carp would probably perish when the marsh freezes in the winter. A "fish kill" may be noted during the spring, the severity of which may not be detected due to the sheer numbers of fish eating birds and mammals that would almost immediately remove these fish as a food item.

The five brown bullhead that were captured during seining exhibited total lengths ranging from 209 mm to 230 mm with an average total length of 217.8 mm. Scott and Crossman note that approximate ages of these fish judging by total length would be between 3 and 5 years of age which would indicate that these fish are sexually mature. Conditions in Cranberry Marsh are favorable for the brown bullhead with the exception of the extreme shallow water levels (Scott and Crossman, 1973). The brown bullhead is an indigenous species which inhabits waters and niches unsuitable for other fishes. Brown bullhead spawn in the spring and early summer in depressions created in the sediment, and one or both of the parents guard the young (which resemble tadpoles) until they are large enough to fend for themselves (usually when they are 50 mm in length). Brown bullhead can tolerate conditions of high water temperatures, low dissolved oxygen, high carbon dioxide and pollution. Indeed, they can survive in the winter at dissolved oxygen concentrations as low as 0.2 ppm. Brown bullhead can also burrow into soft substrates to elude predators or partially overwinter. Brown bullhead consume offal, waste, molloscs, immature insects, terrestrial insects, leeches, crustaceans, algae, plant material, fishes and fish eggs (Scott and Crossman, 1973).

The brown bullhead is well adapted to adverse water quality conditions and is a native species. Efforts proposed by the Authority to improve the vegetative quality of the marsh may or may not improve water and habitat quality, at least in the short term. It is suggested, therefore, that the Authority manage the aquatic portions of Cranberry Marsh for brown bullhead.

Recommendations

- that management practices favor brown bullhead as the predominant fish species in Cranberry Marsh.
- that if Cranberry Marsh were to be drained, pools of sufficient width and depth (1.2 1.8 metres) be created/maintained in the wertern lobe close to the outlet, to
 accommodate remaining brown bullhead, and that any carp be removed from the
 marsh,
- that stumps or erratics or rock structures be placed in the marsh bed to provide habitat for brown bullhead and other aquatic and terrestrial species.
- that any control structure be designed as a barrier to carp and other fish species,
- that an ongoing programme be designed to monitor fish species and water quality within Cranberry Marsh, and;
- that efforts be made, with user group support, to identify and confirm times of the year when a "fish kill' of either brown bullhead or carp is evident.

References

Archives of Ontario. 1900. Town of Whitby Natural Heritage.

- Central Lake Ontario Conservation Authority. 1999. The Web of Life, A Plan for Two Dynamic Coastal Wetlands. Central Lake Ontario Conservation Authority, Oshawa, Ontario.
- Lumsden, H. 1988. Transactions of a speech to the Central Lake Ontario Conservation Authority Annual Board Meeting. Central Lake Ontario Conservation Authority Library. Oshawa, Ontario
- McColl, J. 1998. Manager, Resources Policy and Planning, Central Lake Ontario Conservation Authority. Personal Communication.
- Scott W. B. and E. J. Crossman. 1973. Freshwater Fishes of Canada. Fisheries Research Board of Canada, Ottawa, Ontario.

References

Central Lake Ontario Conservation Authority, The Web of Life, A Plan for Two Dynamic Coastal Wetlands, 1999

Central Lake Ontario Conservation Authority, Mammals of the Lynde Creek Watershed, 1999

Central Lake Ontario Conservation Authority, Cranberry Mrsh, Lynde shores Conservation Area, Town of Whitby, 1991

Department of Fisheries and Oceans, Fish Habitat Management Branch. 1986. Policy for the Management of Fish Habitat. Communications Directorate, Ottawa. 28 pp.

Gartner Lee Limited, 1994. Lynde Creek Water Resource Management Strategy - Final Report.

Hanna, J.E. Associates Inc. 1989. Lynde Shores Secondary Plan, Final Report. Environmental Evaluation and Management. Town of Whitby and Ministry of Government Services.

Henshaw, B. and Barton, M. Wildlife Monitoring - Lynde Shores. Whitby Shores Environmental Advisory Committee. (In preparation).

International Biological Program Report. 1971. LeVays Marsh

Ontario Ministry of Natural Resources. 1994. Ontario Wetland Evaluation System, Southern Manual.

Ontario Ministry of Natural Resources. 1997. Natural Heritage Training Manual for Policy 2.3 of the Provincial Policy Statements, Version 1.0.
