

Draft Management Strategy for Double-crested Cormorants at Presqu'ile Provincial Park

Introduction

The *Environmental Assessment Act* provides direction to ensure that proposals that could affect the province's natural resources are assessed and that decisions are made in accordance with the requirements of the act. Exemption order MNR 59/2, which addresses the provincial parks program, helps to achieve environmental protection. It requires that projects and activities in provincial parks follow provincial park guidelines and policies and that plans be made available for public review. Public review was extensive during the development of the management plan for Presqu'ile which was approved in 2000. There was strong support to develop a management strategy to address cormorants. (See the [Summary of Public Response](#) published in October, 2000.) The management plan enables the development of a strategy to deal with cormorant impacts on specific park values such as the woodland habitat on High Bluff Island. Public comment on this draft strategy is invited.

Comments should be received by Saturday, April 6, 2002 at the following address
Draft Management Strategy for Double-crested Cormorants at Presqu'ile Provincial Park
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Following this comment period the final strategy will be completed and made available for inspection. It will include a summary of the public comment received on the draft strategy.

Project Proposal

Since 1982 the population of Double-crested Cormorants nesting at Presqu'ile Provincial Park has risen from one nest to 10,321 nests in 2001. While some cormorants nest on the ground, the majority of their nests are in trees. The nesting activity of these birds has killed all trees on Gull Island and now threatens the remaining woody vegetation on High Bluff Island. In order to protect representative woodland flora and fauna and the aesthetic beauty of High Bluff Island while retaining maximum diversity of nesting colonial bird species it is proposed that Double-crested Cormorants be removed from the western woodland of High Bluff Island.

This draft strategy proposes that the cormorants using the 3050 nests in the western woodland of High Bluff Island be discouraged from nesting through destruction of nests and subsequent harassment of adult cormorants which return to try to nest again. This is expected to provide other tree nesting colonial birds such as Great Egrets, Great Blue Herons and Black-crowned Night-Herons with continued nesting habitat at Presqu'ile Provincial Park. In addition, it is proposed that eggs that have been laid in nests on the ground be sprayed with either vegetable or mineral oil. Oiling prevents eggs from hatching.

Maintaining wooded habitat is not possible without ensuring the survival of the trees themselves. Maintaining trees on High Bluff Island is not possible without removing nesting cormorants.

Ontario Parks has completed an assessment of the impacts of Double-crested Cormorants at Presqu'ile Provincial Park. Action is now proposed, over a 4-year period, to limit the negative impacts that have been identified at the western woodland of High Bluff Island by preventing the nesting of cormorants by destroying their nests. The impacts of this action will be monitored as described at the end of this document, during and following the destruction of nests. Each year a review and evaluation will be completed and appropriate revisions to the management strategy will be made to ensure that the objective continues to be met and that any new information that arises is considered.

Presqu'ile Provincial Park Area

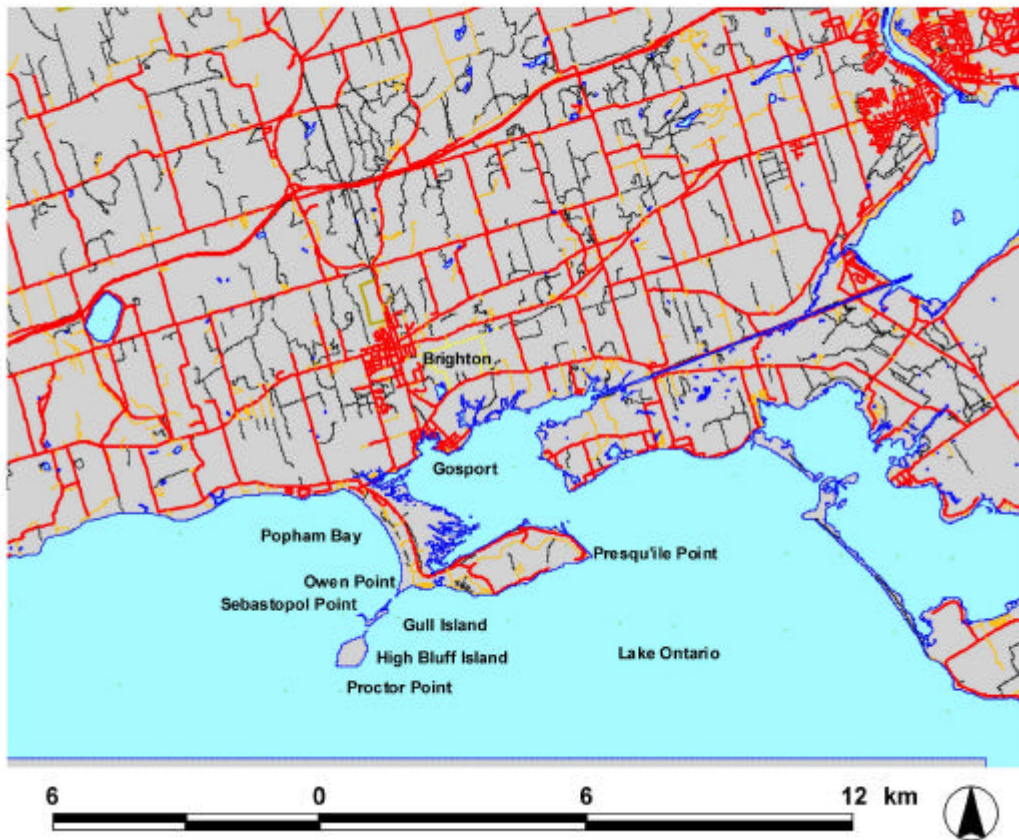


Figure 1

Project Alternatives

A number of alternative techniques have been considered in achieving the protection of woodland habitat on High Bluff Island. They include nest destruction, harassment, egg oiling, culling and taking no direct action to protect the woodland. Although culling was considered as a technique, the intent is to proceed with approaches that are as benign as possible in achieving the removal of cormorants from the western woodlands on High Bluff Island and to monitor their effectiveness.

Do Nothing

The “do nothing” option will result in the loss of woody vegetation on High Bluff Island as occurred on adjacent Gull Island in the late 1980s and early 1990s. It will not allow the forest habitat on the islands to be sustained. As a result, colonial and other bird species will lose nesting habitat at Presqu’île Provincial Park.

Nest Destruction

Existing nests could be destroyed by hand or by knocking them from the trees with long poles or firehoses. This would discourage birds from occupying the nesting trees. This process is expected to be labour-intensive given the number of nests to be destroyed and the likelihood that displaced cormorants will try to rebuild their destroyed nests. Displaced birds may attempt to nest again at other locations within the park or beyond the park boundaries.

Harassment

Birds attempting to nest could be discouraged by the use of harassment tools such as noisemakers, “scare-crow” devices and optical devices. Displaced birds may attempt to nest again at other locations within the park or beyond the park boundaries.

Oiling

Egg oiling is a management tool that has been successfully used to reduce ground nesting cormorant populations. However, this technique is not practical in tree-nesting populations. It may be considered on ground nests in order to slow the rate of increase in the cormorant population at Presqu’île.

Project Study Area

High Bluff Island is a low, essentially flat limestone outcrop which lies 2 km southwest of the Presqu’île peninsula. It is 38.16 ha in area and adjacent Gull Island is 7.25 ha in area.

Landform Features

The landforms of this site include a limited lakeshore representation of limestone island, shingle beach and gravel bar features. High Bluff Island is a low, essentially flat limestone outcrop which has a thin mantle of lacustrine sands and clays in its interior, and shingle beaches at its periphery and as remnants in its interior. Expanding towards the peninsula is a discontinuously exposed shingle and gravel bar (Gull Island) which has a protected bay and small interior pond.

Flora

The wooded areas of High Bluff Island consist of two woodlands at the western and eastern ends of the island. The western woodland is 8.75 ha and the eastern is 2.88 ha in size. Scattered individual trees are found throughout much of the island’s interior (Figure 2).

Until the early 1990s, a 1.55 ha strip of ash, poplar and cedar stretched along the island’s southern shoreline from the navigation beacon to Proctor Point, the island’s southwestern corner. These trees have since died and fallen.

Most of High Bluff's interior presents successional fields and thickets of Red-osier Dogwood (*Cornus stolonifera*), Choke Cherry (*Prunus virginiana*), Canada Bluegrass (*Poa compressa*), Canada Goldenrod (*Solidago canadensis*) and others.

The western end of High Bluff Island supports a forest type which is unique in the park. Very mature Sugar Maple (*Acer saccharum*), Red Oak (*Quercus rubra*) and Black Maple (*Acer saccharum ssp nigrum*) make up the tree cover. Dominant understory species include Virginia Waterleaf or John's Cabbage (*Hydrophyllum virginianum*) and Cutleaf Toothwort (*Cardamine concatenata*). The site is significant due to the age of the trees, the uncommon species association and the rarity of mature forest on islands in Lake Ontario.

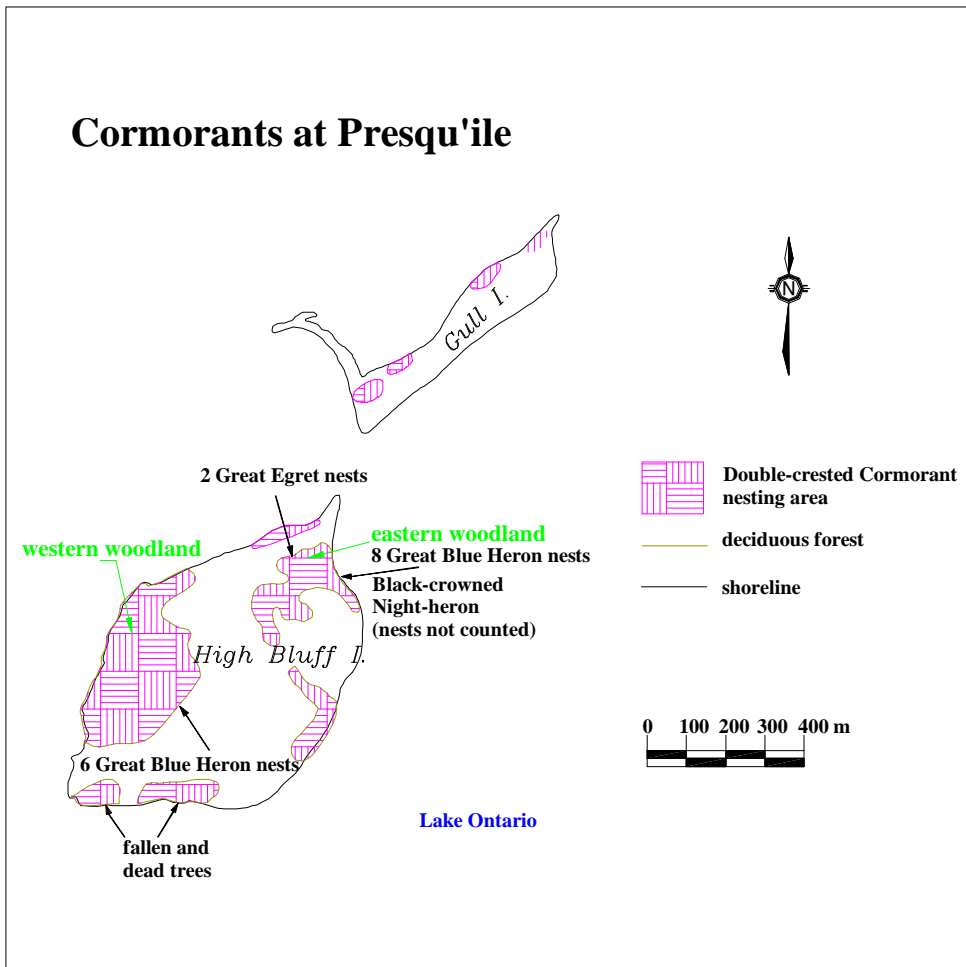


Figure 2: Project Study Area (Nest counts from 2000)

Significant Flora

According to the published lists of the Ontario Ministry of Natural Resources (OMNR) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) there are no known vulnerable, threatened or endangered plant species on Gull Island or High Bluff Island. Unusual species are listed in Table 1.

Table 1 UNUSUAL FLORA AND THEIR RANKINGS FROM THE OMNR NATURAL HERITAGE INFORMATION CENTRE

Species	Natural Heritage Information Centre (NHIC) Provincial Status *	Comments
Black Maple (<i>Acer saccharum</i> ssp <i>nigrum</i>)	S4?	Ranking uncertain. Large specimens found in the western woodland of High Bluff Island. Also found in other wooded areas of the Presqu'île peninsula. This species is at the northern edge of its range in Ontario.
Bushy Cinquefoil (<i>Potentilla paradoxa</i>)	S3	Specimens were recorded in the former wooded area on the southwestern shoreline of High Bluff Island. In 2000, a single specimen was located to the north of this area.
Smith's Club-rush (<i>Schoenoplectus smithii</i>)	S2?	Ranking uncertain. Thought to be between 6 and 20 sites in Ontario although not certain.

***Natural Heritage Information Centre (NHIC) Provincial Ranking System**

S1 Extremely rare in Ontario; usually 5 or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.

S2 Very rare in Ontario; usually between 5 and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.

S3 Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.

S4 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.

S5 Very common and demonstrably secure in Ontario

S? Unranked, or, if following a ranking, rank **uncertain** (e.g. S3?).

Fauna

a) Colonial Waterbirds

The recent addition of Great Blue Heron and Great Egret as nesting species on the Presqu'île islands has increased the number of species of colonial waterbirds breeding on the islands from seven to nine. A tenth colonial waterbird species, Cattle Egret (*Bubulcus ibis*) bred on Gull Island in 1962, 1964 and 1965. Cattle Egrets have been seen frequently in recent years and could breed again.

The species of colonial waterbirds which nested on Gull Island and High Bluff Island in 2000 are listed in Table 2.

TABLE 2 COLONIAL WATERBIRDS BREEDING ON GULL ISLAND AND HIGH BLUFF ISLAND IN 2000 AND THEIR RANKINGS FROM THE OMNR NATURAL HERITAGE INFORMATION CENTRE

Species	MNR Natural Heritage Information Centre (NHIC) Provincial Status *
Black-crowned Night-Heron <i>Nycticorax nycticorax</i>	S3B,SZN
Caspian Tern <i>Sterna caspia</i>	S3B, SZN
Common Tern <i>Sterna hirundo</i>	S4B, SZN
Double-crested Cormorant <i>Phalacrocorax auritus</i>	S4B,SZN
Great Blue Heron <i>Ardea herodias</i>	S5B, SZN
Great Egret <i>Casmerodius albus</i>	S2B,SZN
Greater Black-backed Gull <i>Larus marinus</i>	S2B, SZN
Herring Gull <i>Larus argentatus</i>	S5B, SZN
Ring-billed Gull <i>Larus delawarensis</i>	S5B,SZN

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S3 Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.

S4 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.

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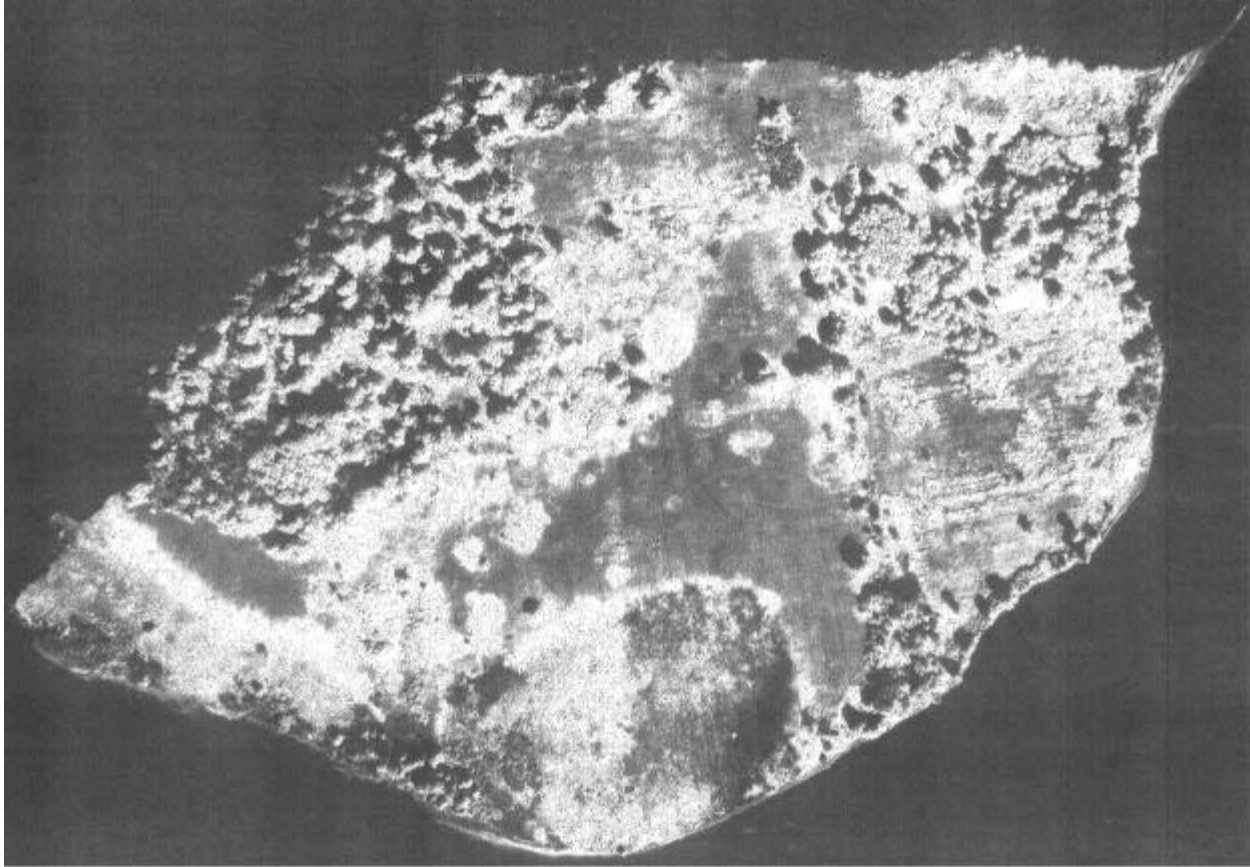


Figure 3 Aerial photo of High Bluff Island, 1978

Much research has been done on the colonial waterbirds of Presqu'île and, as a result, their populations have been tracked quite closely. Below is a listing of the status of breeding colonial waterbird species:

Ring-billed Gull

The Ring-billed Gull is by far the most abundant colonial waterbird at Presqu'île. From an initial discovery of 10 nests in 1948, the park's Ring-billed Gull colonies grew to a peak population of 69,417 pairs in 1990. In 1999, when the population was last tallied, it consisted of 55,699 pairs.

Herring Gull

The second most abundant gull species at Presqu'île is the Herring Gull. In 1990, the total for the islands was 89 pairs. In 1999, it had increased to 213 pairs.

Greater Black-backed Gull

The typically marine, Greater Black-backed Gull, also nests at Presqu'île. Usually, 2 to 4 pairs can be found. The Presqu'île colony of this species is one of the first known nesting locations on the Great Lakes with the first nest having been discovered in 1962. The *Atlas of the Breeding Birds of Ontario* lists eight confirmed nestings of this species in the province during the period 1981 to 1985. Two of these were at Presqu'île.

Common Tern

The Common Tern was the most abundant colonial waterbird nesting at Presqu'île during the 1960s. From a population once estimated at 10,000 pairs, it declined dramatically in the early

1970s to a few pairs. In recent years, the colony has stabilized with between 20 and 150 nests each year.

Caspian Tern

Caspian Terns have enjoyed remarkable population growth at Presqu'île in the last decade. From ten nests in the mid-1980s, to 102 nests in 1990, the colony has grown to 1222 nests in 2000.

Black-crowned Night-Heron

The nocturnal, Black-crowned Night-Heron has nested at Presqu'île since 1962. Numbers of pairs have ranged from 15 to around 80. This species has also nested in a variety of locations at Presqu'île. These include:

- the former trees on the north shore of Gull Island
- the shrubby vegetation on Sebastopol Point, Gull Island
- two separate locations in the former strip of woods between the navigation beacon and Proctor Point on High Bluff Island
- a location in the Presqu'île marsh in 1980
- most recently (1999 and 2000), the eastern woodland on High Bluff Island and Sebastopol Point, Gull Island in 2000

Black-crowned Night-Heron nests were not counted in 1999 and 2000 to avoid disturbing the Great Blue Herons and Great Egrets that use the same woodland. However, judging from the degree of activity, including an abundance of young birds, the colony appears healthy.

Great Blue Heron

In 1998, Great Blue Herons started nesting on the western shore of High Bluff Island with a single nest. In 1999, five nests were found in the eastern woodland of High Bluff. In 2000, a total of 14 nests was located on High Bluff Island. Eight nests were located in the eastern woodland and a further six were found in the western woodland.

Great Egret

A single nest and pair of Great Egrets were found on May 19, 1999 in the eastern woodland of High Bluff Island. On June 12, 2000 two nests were noted, one containing three young and a second nest containing eggs. In 2001 three nests were noted for this species on High Bluff Island. The egret nests are located in shrubby vegetation beneath several large trees containing both cormorant and Black-crowned Night-Heron nests. High Bluff Island is the only colony for Great Egrets on Lake Ontario. In 2001, twenty or more Great Egrets were seen on several occasions.

Double-crested Cormorant

From a single nest in 1982 the breeding population of Double-crested Cormorants has grown to 10,321 nests in 2001. Of these, 3,050 nests were found in the western woodland in 2001.

b) Non-Colonial Waterbird Species

Birds use High Bluff Island and Gull Island throughout the year. The island's variety of habitats and location at the southwest corner of the Presqu'île peninsula make these islands attractive to birds.

Shorebirds frequent the shorelines, especially at Gull Island during autumn migration. Waterfowl stage along the shorelines of both islands and diving species can form massive rafts in the adjacent waters.

Birds of prey including Bald Eagles (*Haliaeetus leucocephalus*) and Peregrine Falcons (*Falco peregrinus anatum*) hunt from the islands. Bald Eagles formerly bred on High Bluff Island. Snowy Owls (*Nyctea scandiaca*) frequent Gull Island, being reported in 38 different years since 1961.

c) Non-Avian Fauna

Non-avian fauna, especially mammals are conspicuously absent from Gull Island and High Bluff Island. This is one of the qualities which allows ground nesting colonial birds to establish themselves. Nevertheless, a large population of White-tailed Deer (*Odocoileus virginianus*) lives permanently on High Bluff Island. Occasionally, other large mammals such as foxes and Raccoon (*Procyon lotor*) can be found on Gull Island and High Bluff Island. Meadow Voles (*Microtus pennsylvannicus*) are common, occasionally abundant in the pasture areas of High Bluff Island.

There is a rich assemblage of insects on Gull Island and High Bluff Island. Of particular note is the Monarch butterfly (*Danaus plexippus*) which uses High Bluff Island as a roosting area during migration. Extensive Milkweed (*Asclepes sp.*) also provides food to the larvae of this species.

Aesthetic Values

A report of a visit by the Canadian Wildlife Service to High Bluff Island, noted: "At High Bluff we were struck by the beauty of the island. In my experience, it is the most beautiful island on the lower Great Lakes". The report continues: "although the waterbird colonies are an asset to the island, and hence to Presqu'île Provincial Park, their continued growth will sooner or later have a negative impact on vegetational variety and visual beauty of the island".

Environmental Analysis

Terrestrial Resources

The primary objective of reducing cormorant numbers on High Bluff Island is the protection of woodland habitat. By reducing the numbers of nesting and roosting birds the negative effects of their guano and nest building activity will be minimized resulting in healthier forest cover. This forest cover provides habitat for a suite of species requiring woodland habitat. Some of the more significant bird species include tree-nesting colonial waterbirds such as Great Blue Heron, Great Egret and Black-crowned Night-Heron. High Bluff Island supports the only nesting colony of Great Egrets on Lake Ontario and is one of five colonies for this species in Ontario.

Maintenance of woody vegetation also provides protection from soil erosion. On nearby Gull Island considerable erosion has occurred as cormorant nesting eliminated woody vegetation.

Aquatic Resources

While cormorant management at Presqu'île Provincial Park is designed to protect terrestrial habitat, the proposal complements the research of MNRs Fish and Wildlife Branch in assessing the influence of cormorants on fish stocks in eastern Lake Ontario. Reducing cormorant numbers may have positive effects on adjacent aquatic habitats. These effects may include reductions in nutrient run-off into surrounding waters and reduced foraging pressure on local fish populations.

Land Use

Cormorant management will have no impact on existing land use. Public access to Gull Island and High Bluff Island is prohibited, from March 10 until September 10 each year, to prevent disturbance to the colonial waterbirds which nest there.

Social Concerns

Cormorant management on High Bluff Island will protect woodland habitat, maintaining the highly valued aesthetic beauty of this site. There will be some noise caused by the destruction of nests and harassment of any cormorants which return to try nesting again. The high level of noise associated with the 100,000 breeding gulls on the park islands will overwhelm most, if not all, of the noise associated with nest destruction and harassment. Nest destruction and harassment will occur at times when park attendance is low. There are no significant economic impacts anticipated in implementing the proposed cormorant management strategy.

Evaluation and Selection

The selection of the preferred management technique was based on the following criteria:

- 1) Efficacy of protecting the western woodland of High Bluff Island
- 2) Potential for negative impacts on other colonial waterbird species
- 3) Potential for shifting the problem elsewhere within the park or beyond park boundaries
- 4) Social considerations regarding management practice.

The overriding criterion is the efficacy of protecting woodland vegetation. It is paramount because nesting cormorants are now using all wooded areas on High Bluff Island and the health of these areas is rapidly deteriorating.

Evaluation of the alternative techniques is presented in Table 3, following.

Based on a review of these alternatives, it has been determined that over four years the annual destruction of nests, and subsequent harassment if required, will result in the removal of nesting cormorants from the western woodland of High Bluff Island. Techniques will be adjusted if the birds respond in a different manner than anticipated or if there are inadvertent impacts on other colonial bird species. A limited program of oiling the eggs of ground nesting cormorants is also proposed, subject to the clear objective of leaving other non-target colonial waterbirds undisturbed. While egg oiling is not practical where cormorants are nesting in trees, it has proven to be effective in reducing cormorant breeding success in ground nests.

Table 3. Evaluation of alternative techniques

Criteria ▶ Technique ▼	Efficacy in Protection of Woodland Habitat	Potential for negative impacts on other colonial waterbird species	Potential for shifting cormorants elsewhere	Social considerations
Do Nothing	No protection to woodland habitat. Trees will die and habitat will be lost.	As trees die other tree-nesting colonial waterbird species will lose nesting habitat. Those that nest close to the ground such as Black-crowned Night-Herons will be forced to find new nesting locations due to cormorant guano dropping from overhead nests.	Until existing habitat is saturated the do-nothing approach has the smallest potential for encouraging the establishment of "satellite" colonies. After saturation occurs the excess young will look elsewhere for new colony locations.	The do-nothing alternative has some public acceptance. However, there is widespread acknowledgement that the cormorant population explosion is driven to a certain degree by ecological changes brought about by humans. As a result, many groups, including bird enthusiasts have advocated control.
Nest Destruction	Success in discouraging cormorant nesting is expected to result in improved health of woodland vegetation.	The western woodland of High Bluff Island is used almost exclusively by cormorants so the likelihood of disturbing other colonial species is reduced.	Nest destruction has a high potential for encouraging the establishment of "satellite" colonies, as the disturbed birds will look elsewhere to nest.	Social acceptance may be moderate. The results of nest destruction, especially the development of new colonies may result in a negative reaction.
Egg Oiling	Impractical because cormorant nests are in trees in the western woodland and so are inaccessible Oiling of ground nests would reduce the population growth of the colony.	The activity required to oil eggs will result in a moderate level of disturbance to other colonial species. If all cormorant ground nests in the colony are oiled then other ground nesting species will be disturbed.	Egg oiling has a limited potential to encourage the establishment of "satellite" colonies, as disturbed birds may look elsewhere to nest.	Social acceptance may be moderate. This is a low disturbance management technique which prevents egg hatching.
Harassment	Used alone, harassment has proven to vary in its effectiveness at other sites.	Harassment will cause a high degree of disturbance to other colonial species. However, the western woodland of High Bluff Island is used almost exclusively by cormorants so the likelihood of disturbing other colonial species is reduced.	Harassment has a high potential for encouraging the establishment of "satellite" colonies, as the disturbed birds will look elsewhere to nest.	Social acceptance may be moderate. The effects of harassment, especially the development of new colonies, may result in a negative reaction.

Implementation Details

The most effective implementation dates for cormorant management are from late April to mid-June. Management activity will be daily for several weeks at the outset to be followed by activity every other day as the cormorant nesting instinct declines.

Initially, nest destruction by blasting with water from firehoses will occur. Nests which are accessible will be knocked from trees by hand or with poles. Returning birds will be discouraged from nesting through the loss of their nests and the associated human activity and harassment. Throughout the entire breeding period nest destruction will continue, accompanied, as required, by other harassment techniques. Harassment tools may include: noise-makers, "scare-crow" and optical devices. Experimental devices may also be employed, if and when they become available.

If management activities cause a detectable disturbance to other colonial bird species then management will cease or it will be modified to avoid undue stress on these species. Other species, especially Black-crowned Night-Herons and Great Egrets, will be watched during management activity. If signs of stress occur, such as incubating birds leaving their nests, then management activity will cease. At that time management personnel will assess the situation and will only resume management activity if it can be conducted without causing stress to non-target species. If stress recurs then management activity will cease until suitable alternative strategies are established. The priority will be to not disturb non-target colonial waterbirds.

A limited program of oiling eggs in the ground nests of Double-crested Cormorants is also proposed, subject to the clear objective of leaving other non-target colonial waterbirds undisturbed. It is proposed that eggs that have been laid in nests on the ground be sprayed with either vegetable or mineral oil. Oiling prevents eggs from hatching. If this activity is found to be stressing non-target colonial waterbirds it would be stopped.

Some damage to trees will be caused by the spraying of high pressure water from firehoses. This damage will be assessed in the field and a determination will be made if the woodland can sustain this damage.

Project Monitoring Details

A report completed in 2000 provides an analysis of the impacts of Double-crested Cormorants at Presqu'île Provincial Park. Specific work to assess the damage to vegetation in the western woodland of High Bluff Island was also completed in 2000. It concluded that the forest is in serious decline, which will continue with prolonged pressure from cormorant nesting.

In order to determine the effectiveness of cormorant control in protecting the western woodland of High Bluff Island a program of ongoing monitoring will be carried out.

Ongoing monitoring is designed to:

- 1) Count cormorant nests within all breeding locations of Presqu'île Provincial Park with particular attention on those within the western woodland of High Bluff Island.

- 2) Assess the forest health of the western woodland of High Bluff Island using the method used in 2000. (Individual trees along grid lines are identified and data is recorded about each: diameter at breast height, percent leaf loss and crown dieback.)
- 3) Assess degree of disturbance to other colonial waterbird species by counting nesting pairs and estimating populations
- 4) Modify control measures as needed to ensure continued protection of the western woodland of High Bluff Island and to prevent disturbance to non-target colonial waterbirds.