



Presqu'île

Resource Management
Implementation Plan
High Bluff and Gull Islands

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January 31, 2011

This is a re-issue of the final approved Presqu'île Islands Resource Management Implementation Plan that was released November 2009. The plan has been amended to reflect conditions required by the Minister of Environment in October 2010, as a result of several requests for a Part II Order under the *Environmental Assessment Act*. Clarification and additional information was added to sections 3.3.5, 4, and 5, and Figure 3. Timelines within the plan have now been updated, but monitoring results have not. The effective date of this plan is now January 31, 2011.

I am pleased to approve the **Presqu'ile Islands Resource Management Implementation Plan**.

The resource management implementation plan meets project evaluation and consultation requirements for cormorant management, deer management and vegetation restoration under the *Class Environmental Assessment for Provincial Parks and Conservation Reserves*. This document will apply to the implementation of these projects on Gull and High Bluff Islands for the next ten years (2010 – 2019). The document also summarizes the results of the public consultation process.

The plan will be used to guide the resource management of High Bluff and Gull Islands in Presqu'ile Provincial Park. It will be reviewed at 5 year intervals to address changing issues or conditions, and may be amended as the need arises.



Bruce Bateman
Southeast Zone Manager
Ontario Parks

Date *October 29, 2009*

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1. Introduction and Planning Context

Presqu'île Provincial Park is recognized for its diversity of habitats, its unique landform, and the migratory and nesting birds that it receives each year. Established in 1922, the park now encompasses a total of 937 ha, including two islands – High Bluff and Gull. As a natural environment class park, Presqu'île is managed to protect its significant and representative natural features while providing high quality recreational and educational experiences.

The *Presqu'île Provincial Park Management Plan* (2000) provides policy direction for cormorant, deer and vegetation management at Presqu'île Provincial Park. *Ontario's Cormorant Strategy* (1998, reviewed in 2006) established current policy direction for cormorant management.

This implementation plan for the islands constitutes the strategy to deal with cormorant impacts on specific park values described in the Park Management Plan. The Park Management Plan is available on the Ontario Parks website: http://www.ontarioparks.com/english/pres_planning.html. Implementation plans translate broad direction from management plans into specific actions. Under the *Provincial Parks and Conservation Reserves Act* the maintenance and restoration of ecological integrity is one of the guiding principles for park management and planning. This principle is addressed by the guidelines provided throughout this document.

High Bluff and Gull Islands protect nesting habitat for tree nesting colonial waterbirds, such as black-crowned night-heron (*Nycticorax nycticorax* - S3) and great egret (*Casmerodius albus* – S2)¹. They also provide migration habitat for other birds and the monarch butterfly (*Danaus plexippus* – S4, *Special Concern*). These islands form part of Nature Reserve Zone 2 of the park as described in the park management plan (Ontario Parks, 2000b). Additionally, they have been designated as a wilderness area under the *Wilderness Areas Act* (1990).

Some of the vegetation communities of High Bluff and Gull Islands have been significantly affected by hyper-abundant² species. Specifically, the hyper-abundance of white-tailed deer (*Odocoileus virginianus*) on High Bluff Island and double-crested cormorant (*Phalacrocorax auritus* – herein referred to as cormorant or DCCO) on both islands have affected the health and species composition of the vegetation present. High Bluff Island is a mosaic of mature woodlots, shrubby thickets, and former agricultural fields. The treed portions of High Bluff Island have been affected by deer

¹ Conservation statuses are assigned to species in Ontario by 3 bodies: the Committee on the Status of Species at Risk in Ontario (COSSARO), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and the Natural Heritage Information Center (NHIC). COSSARO assigns provincial statuses that range from Endangered (facing extinction or extirpation) to Special Concern (sensitive to human activities); these statuses have legal implications under Ontario's *Endangered Species Act*. COSEWIC assigns similar statuses at a national level that have legal implications under the federal *Species at Risk Act*. The NHIC assigns subnational ranks that range from S1 (extremely rare in Ontario) to S5 (demonstrably secure in Ontario); species ranked S1 to S3 are considered significant. NHIC ranks have no legal status.

² Hyper-abundant refers to a wildlife population that clearly exceeds the upper range of natural variability that is characteristic of the ecosystem, and as a result, there is a demonstrable long-term negative impact on ecological integrity (Parks Canada 2007). It is important to note that in this case hyper-abundance in both species is due to human-caused factors.

and cormorants. Gull Island formerly supported trees and shrubs but is now essentially bare due to the impacts of cormorants.

This document focuses on project evaluation aspects of three projects, in accordance with the Class Environmental Assessment for Provincial Parks and Conservation Reserves (Class EA PPCR):

- Cormorant management,
- Deer management, and
- Vegetation restoration.

This document will apply to the implementation of these projects on Gull and High Bluff Islands for the next ten years (2011 – 2020). Using an adaptive, ecosystem-based approach for these projects recognizes that the island ecosystems are naturally dynamic and are strongly influenced by factors in the broader landscape and Great Lakes basin.

2. Ecological Context

The impacts of hyper-abundant species at Presqu'île are not unique to the park and dramatic increases in both species due to human activities have been noted across their ranges (e.g. Rooney 2001). At Presqu'île and elsewhere, both deer and cormorants have exceeded the capacity of some of the vegetation communities that they use to persist – this may also be referred to as the ecological or habitat carrying capacity (Sinclair 1997, Côte et al 2004, Mysterud 2006). Populations of animals may exceed the habitat carrying capacity of an area when they can make use of alternative resources. For example, populations of deer or cormorants can grow beyond what a natural area can support if those populations have supplementary food sources (e.g. deer may use agricultural resources outside of the park) or can use alternative habitat (e.g. cormorants may nest on the ground once all the woody habitat dies and falls).

Deer are considered hyper-abundant throughout much of southern Ontario and the northeastern United States, and they have caused significant changes in vegetation communities in many areas. Deer numbers have fluctuated in Ontario over the last century but have been steadily increasing since the 1980s due to a combination of human-caused changes to the environment, including landscape fragmentation creating preferred habitat, abundance of agricultural food sources, warmer winters, and changes in hunting patterns (OMNR 2006a). Although deer population levels prior to European colonization of North America are unknown, experts agree that today's levels in areas like southern Ontario exceed any historical levels (Rooney 2001).

At Presqu'île deer numbers became even higher than the surrounding landscape through the 1980s and 1990s because of the park's location on a peninsula and absence of hunting and natural predators (OMNR 1996). When deer numbers are very high, the deer eat all of the young trees, shrubs, and other vegetation. Young trees and shrubs are necessary for forest regeneration and also provide habitat for many species of animals. The cascading impacts of hyper-abundant deer on vegetation communities and the wildlife they support are well-documented in the scientific literature (Rooney and Waller 2003, Côte et al 2004).

Similarly, while cormorant numbers have fluctuated in North America over the past century, their numbers have steadily increased since the 1980s. Again, a combination of human-caused changes to the environment is responsible for both their decline and their explosive recovery (Weseloh and Collier 1995, Hatch and Weseloh 1999, OMNR 2006b). Many populations of predatory birds in the Great Lakes area, including cormorants, declined dramatically in the 1960s and 1970s due to the effects of contaminants (such as DDT). As these contaminants were phased out, starting in the 1970s, cormorant populations have increased. In addition, there was historically more human persecution of cormorants.

Since the phase out of contaminants, there has also been an increase in the amount of food available to cormorants in their wintering grounds due to the creation of extensive catfish farms, allowing more cormorants to survive each winter and return north to breed. Changes in fish communities in the Great Lakes have also allowed cormorants to breed more successfully in the past 2 decades (Weseloh and Collier 1995, Hatch and Weseloh 1999, OMNR 2006b).

At Presqu'île the number of cormorant nests rose from one nest to 12,082 between 1982 and 2002. Cormorants kill vegetation by removing branches and twigs to build their nests and through the deposition of large amounts of guano. The high numbers of cormorants are causing the death of trees and shrubs that other tree nesting colonial waterbirds use for nesting habitat.

Great Lakes islands provide important habitat for colonial waterbirds. There are few islands on the lower Great Lakes (Lake Erie and Lake Ontario). Unlike Presqu'île, most of the islands in both Canada and the United States are privately owned and are managed by the owners. In addition, some of the Canadian publicly owned islands are difficult to access for management and protection. With increasing development on Great Lakes shorelines, protected habitat is valuable. Therefore, at Presqu'île Provincial Park there is an uncommon opportunity to protect colonial waterbird habitat for a diversity of species.

2.1 Adaptive Management Approach

Ecosystems are dynamic and complex and cause-effect relationships are rarely simple to understand. Adaptive management is the science-based application of specific management activities to address resource management issues. The results of the management activities are then incorporated into further management decisions and activities (Grumbine 1999, Stankey et al. 2005). An adaptive management approach will be used on High Bluff and Gull Islands.

Effective adaptive management requires actions to be informed by monitoring and the outcomes of previous activities. Each proposed management action will have associated predicted outcomes and monitoring indicators. Yearly management activities will be based on the results of monitoring previous management outcomes.

2.2 Description of Project Study Area

This resource management implementation plan provides direction for High Bluff and Gull Islands. Both islands are low, essentially flat islands lying 2 km southwest of the Presqu'ile peninsula (Figure 1), to which they were once connected. High Bluff Island is approximately 38 ha in area and adjacent Gull Island is approximately 7 ha in area. Since the late 1990s Sebastopol Point on the west side of Gull Island has been separated from the main body of the island in both low and high water years, but is still referred to as part of Gull Island. In recent years, Gull Island has sometimes been connected to Owen Point on the mainland depending on storm events and water levels.

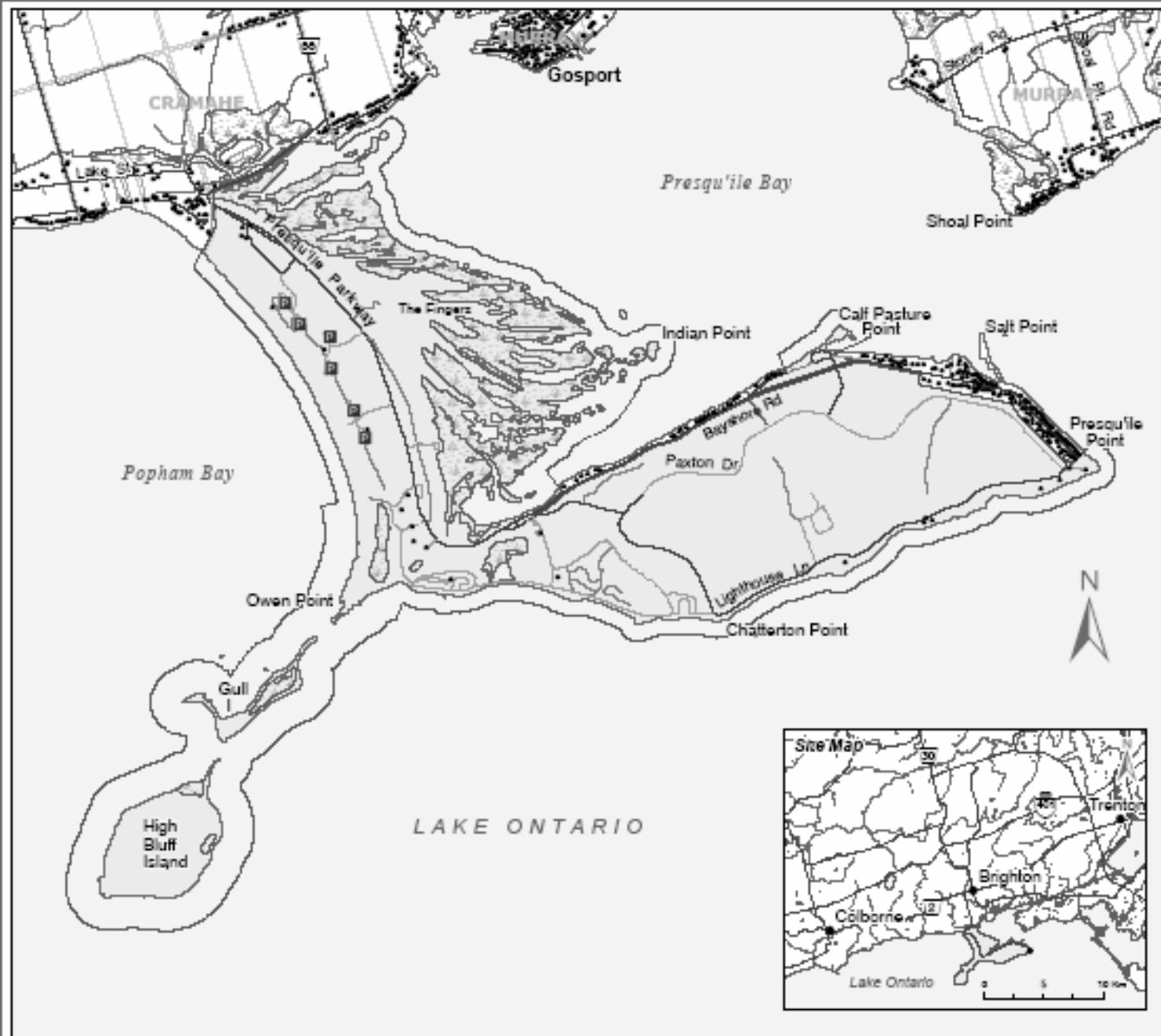
Given the diversity of ecosystems at Presqu'ile and the complexity of resource management challenges, two complementary resource management implementation plans have also been prepared for the park mainland – one for the mainland as a whole and one for the beach and dune areas on the mainland. The *Presqu'ile Mainland Resource Management Implementation Plan* provides project details for landform, vegetation, and wildlife management on the park mainland. The *Presqu'ile Beach and Dune Resource Management Implementation Plan* (Ontario Parks 2008) provides project details for recreation and shorebird habitat within the beach and dune areas in park zones NE1, NR2 and NR3. All plans are available on the Presqu'ile planning website (http://www.ontarioparks.com/english/pres_planning.html). **The general guidelines provided in the mainland plan will apply on the islands when this island resource management implementation plan remains silent.**

2.2.1 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 limestone outcrop that has a thin layer of sands and clays in its interior. It has shingle beaches along its perimeter. Gull Island is an exposed shingle and gravel bar that has a protected bay and small interior pond. Sebastopol Point and the western end of High Bluff experienced significant erosion after the loss of woody vegetation. Erosion is also occurring on the west end of Gull Island, including the loss of the spit connecting Sebastopol Point to the main body of Gull Island.

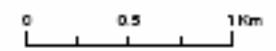
FIGURE 1

REGIONAL SETTING



Legend

- Building
- Primary
- Secondary
- Tertiary
- Water Line, Permanent
- Lot
- - - Township Boundary
- ▒ Provincial Park
- ▒ Water Area, Permanent
- ▒ Wetland Area, Permanent



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This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources (OMNR) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

Projection: UTM Zone 18
 Datum: North American Datum 1983
 Base derived from: MIVIS (Natural Resource Value Information System)
 Produced by: Ontario Parks, Southwest Zone

2.2.2 Vegetation

A variety of vegetation communities typical of this part of Ontario are present on High Bluff Island. These habitats include mixed deciduous forest, mature swamp forest, various shrub thickets, scattered groves of mature and young trees, and old field areas.

Some of the vegetation communities of both High Bluff and Gull Islands have changed substantially since the 1980s, which is when deer and cormorant numbers began to increase in the park (OMNR 1996, Ontario Parks 2000a, Ontario Parks 2000b). Changes in vegetation communities are natural in any ecosystem, but change on the islands has been drastically influenced by hyper-abundant deer and cormorants. On Gull Island there has been an almost complete loss of tree and shrub cover – only one willow tree remains on Sebastopol Point. On High Bluff Island forest cover and composition have changed dramatically. While habitat for tree-nesting colonial waterbirds and other migratory species still exists on the islands, it is under threat.

The forested areas of the island consist of two woodlots at the southwestern and northeastern ends of the island. The area covered by the two woodlots was originally approximately 10 ha (Figure 2). The remainder of the island is mainly old field and shingle beach. Although most of the mature trees of the western woodlot have died and many have fallen, the subcanopy – composed of basswood (*Tilia americana*), ironwood (*Ostrya virginiana*), and choke cherry (*Prunus virginiana*) – is recovering. The ground cover in this area is now dominated by pioneer species like Canada thistle (*Cirsium arvense*) and stinging nettle (*Urtica dioica*) and there is little to no growth of young trees to replace those that die. The dense cover of these tall species may be providing the shade required to maintain a few groups of the typical forest species like Dutchmen's breeches (*Dicentra cucullaria*), Canada violet (*Viola canadensis*), white trillium (*Trillium grandiflorum*), jack-in-the-pulpit (*Arisaema triphyllum*), wild geranium (*Geranium* sp.), and ostrich fern (*Matteuccia struthiopteris*) that are still present.

The eastern woodlot is an even-aged mature swamp forest, with a canopy dominated by red ash (*Fraxinus pennsylvanicus*). The subcanopy is composed of red ash, choke cherry, ironwood, eastern white cedar (*Thuja occidentalis*), and basswood. The understorey has been fairly sparse for at least several decades (D. Tyerman, pers. comm.).

Low intensity agriculture took place until 1916; as a result, much of High Bluff's interior is composed of fields and thickets dominated by early successional shrubs, as well as grasses, milkweed, goldenrods, and native and alien flowering plants. These fields provide nectar plants and caterpillar food plants for monarch butterflies. The lack of succession of these fields to forest may be due to a combination of poor soils, limited seed sources, competition from existing meadow species, and deer browsing. Scattered groves of eastern cottonwood (*Populus deltoides*), basswood, eastern white cedar, eastern red cedar (*Juniperus virginiana*), red oak, ironwood, and shagbark hickory (*Carya ovata*) are also present. These groves, and the live understorey areas of the western woodlot, are preferred habitat for black-crowned night-heron and great egret, and are used as roosting areas by migrating monarch butterflies.

Until the early 1990s, an approximately 2 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 were once used for nesting by black-crowned

night-herons but they have died and fallen due to effects of cormorants (D. Tyerman, pers. comm.).

Gull Island is essentially bare, with only a single large willow (*Salix* sp.) surviving on Sebastopol Point on Gull Island. The island formerly supported willows, red ash, and some American elm (*Ulmus americana*), all of which died and fell by approximately 2000 after 8 years of cormorant nesting. When trees were present they were used by black-crowned night-herons. In its unvegetated state the island remains an important nesting site for ground-nesting colonial waterbirds, especially gulls and terns. Black-crowned night-herons also typically nest in the remaining willow tree on Sebastopol Point, although in some recent years they have been displaced by cormorants.

Significant Vegetation

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 endangered, threatened, or special concern plant species on High Bluff or Gull Island.

2.2.3 Wildlife

Many species of birds use High Bluff Island and Gull Island throughout the year for nesting, feeding, and migrating – in fact, the islands' nesting and migratory bird communities are their most significant features. Several species have been observed using the islands through the summer months (McRae 1979). The variety of habitats and location of the islands at the southwest corner of the Presqu'île peninsula make these islands attractive to birds.

Warblers and other songbirds are abundant and diverse during migration, making use of the thickets, scattered groves of trees, and woodlots of High Bluff Island. Shorebirds frequent the islands' shorelines during autumn migration, especially at Gull Island. Waterfowl gather along the shorelines of both islands before migration. Diving duck species can form massive flocks in the adjacent waters. Birds of prey including bald eagles (*Haliaeetus leucocephalus*) (Special Concern) and peregrine falcons (*Falco peregrinus anatum*) (Threatened) have hunted from the islands. Bald eagles formerly nested on High Bluff Island until the 1930s. Snowy owls (*Nyctea scandiaca*) use the island most winters and barred owls (*Strix varia*) were observed regularly until the late 1990s. Northern saw-whet owls (*Aegolius acadicus*) have been observed in large numbers on High Bluff Island, although there is little recent data on their presence or abundance.

Few species of mammals have been observed on High Bluff and Gull Islands, which is one of the factors that have allowed ground-nesting birds to establish colonies. White-tailed deer have been found on High Bluff Island year-round. Deer have been less frequently present on the island since the reduction of deer numbers on the park mainland, although they were present in 2008 and 2009. Occasionally, predators such as red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), and weasels (*Mustela* sp.) have been found on High Bluff and Gull Islands, and there is evidence that a family of foxes lived on High Bluff Island in 2009. Meadow voles (*Microtus pennsylvanicus*) are abundant in the pasture areas of High Bluff Island, with periodic population explosions that likely support owls and other overwintering predatory birds.

The few reptiles and amphibians that have been observed are American toad (*Bufo americanus*), common gartersnake (*Thamnophis sirtalis*), and snapping turtle (*Chelydra serpentina*).

A rich assemblage of insects on High Bluff and Gull Islands has been noted. Of particular note is the monarch butterfly. Extensive milkweed on the island provides food to the larvae of this species and thousands of adult monarchs use the trees and shrubs on High Bluff Island as roosting areas during fall migration.

Significant Wildlife

The diversity of the waterbird nesting colonies on the islands (Table 1) is uncommon on the Great Lakes. Colonial waterbird populations at Presqu'île, while naturally dynamic, have been tracked closely for several years.

Recent detailed data on the number of nesting colonies for the different species of gulls and terns that are currently present on Lake Ontario has not yet been published. Black-crowned night-heron colonies are naturally variable and their status in Ontario is still being assessed by the Canadian Wildlife Service (C. Weseloh, pers. comm. 2009). Nonetheless, many night-heron colonies are currently facing threats due to competition by cormorants, including the largest colony at Tommy Thompson Park, which supported over 60% of the total Ontario population (Weseloh 2005, Cadman et al 2007, NHIC 2007). There are 11 known great egret colonies across Ontario, 7 of which consistently produce young (C. Weseloh, pers. comm. 2009). Presqu'île remains the largest successful breeding colony for great egrets on Lake Ontario (NHIC 2007, C. Weseloh pers.comm. 2009). Great blue herons rarely nest directly on the shorelines of Lake Ontario, with the Presqu'île colony being the only known consistently active colony in recent years (D. Moore pers.comm. 2009). Cattle egret (*Bubulcus ibis*) nested three times in the trees that were on Gull Island in the 1960s. This species has been observed on Sebastopol Point numerous times since, but has not nested.

Table 1. Summary table of rank and history of colonial waterbirds that regularly breed on Presqu'ile islands (NHIC 2007, D. Moore and C. Weseloh pers. comm. 2009). Checkmarks indicate which island(s) each species has bred regularly on since DCCO management began in 2002.

Species	NHIC Provincial Status *	Breeding History at PQPP*	High Bluff	Gull	Preferred Nesting Habitat	Lake Ontario status (Canada and US)
double-crested cormorant <i>Phalacrocorax auritus</i>	S4B, SZN	first nest 1982 peak 12,082 nests in 2002 3,872 nests in 2009 complete details of cormorant nest numbers are provided in Table 2, section 3.3.2	✓	✓	Nests on both the ground and in trees on High Bluff Island. On Gull Island formerly nested in the trees and ground but now nests only on the ground due to loss of trees. Ground nests are located in the vicinity of the former nest trees.	Common. Population increased until 2002. From 2002 until 2006 it decreased slightly then stabilized in 2007 and 2008. The areas of highest population shifted towards the western end of Lake Ontario as management activity was initiated in the eastern and central basins.
great blue heron <i>Ardea herodias</i>	S5B, SZN	1998 – first nest 2003 – 25 nests 2004 – 38 2005 – 32 2006 – 22 2007 – 18 2008 – 23 2009 – 20	✓		Prefers super-canopy trees. As these trees die and fall nest numbers have declined.	Uses Lake Ontario as a feeding area but rarely nests along its shores. Presqu'ile supports the only known consistently active colony on the shores of Lake Ontario in recent years. Commonly nests inland. Trend variable, perhaps declining.
great egret <i>Casmerodius albus</i>	S2B, SZN	1999 – first nest 2003 – 4 nests 2004 – 10 2005 – 16 2006 – 14 2007 – 21 2008 – 23 2009 – 27	✓		Uses densely foliated living sub-canopy vegetation.	Trend increasing. Two known nesting areas on Lake Ontario (Toronto and Presqu'ile). Presqu'ile is the largest successful nesting colony for this species on Lake Ontario.

Species	NHIC Provincial Status *	Breeding History at PQPP*	High Bluff	Gull	Preferred Nesting Habitat	Lake Ontario status (Canada and US)
black-crowned night-heron <i>Nycticorax nycticorax</i>	S3B,SZN	nested at various locations on the islands since 1962 2003 – 80 2004 – 59 2005 – 71 2006 – 84 2007 – 77 2008 – 80 2009 – 40	✓	✓	Uses densely foliated living sub-canopy vegetation, sometimes in vegetation not suitable for other tree nesters.	BCNH are variable on Lake Ontario and have shown an overall decline over the last decade, perhaps mainly due to fluctuations at the 600 – 1000 nest colony at Toronto Harbour.
ring-billed gull <i>Larus delawarensis</i>	S5B,SZN	most abundant species 10 nests in 1948 38,370 nests in 2008	✓	✓	Open ground-nesting locations and shorelines.	Common. Trend declining slightly.
herring gull <i>Larus argentatus</i>	S5B, SZN	271 nests in 2004 276 nests in 2008	✓	✓	Open ground-nesting locations and shorelines.	Common. Trend declining slightly.
great black-backed gull <i>Larus marinus</i>	S2B, SZN	usually marine, PQPP was one of first known Great Lakes nesting sites annual breeder (1-3 nests) until recently	✓	✓	Open, barren ground nest sites within existing gull colony.	Over the past decade this species has been virtually eliminated as a nesting species on Lake Ontario. At its peak the population supported around 50 nests. The decline is likely due to botulism.
Caspian tern <i>Sterna caspia</i>	S3B, SZN	2 nests in 1959 980 nests in 2004 850 nests in 2008** 840 nests in 2009		✓	Open, sparsely vegetated ground habitat	Locally common. Trend is stable to increasing. The majority of Lake Ontario Caspian terns are restricted to three sites – two in Ontario (Presqu'île and Hamilton) and one in New York.

Species	NHIC Provincial Status *	Breeding History at PQPP*	High Bluff	Gull	Preferred Nesting Habitat	Lake Ontario status (Canada and US)
common tern <i>Sterna hirundo</i>	S4B, SZN	9,000 nests in 1966 declined in 1970s 168 nests in 2004 129 nests in 2008		✓	Has nested in a variety of habitats including open gravel and sand areas. In the past two decades this species has been displaced by ring-billed gulls from preferred nest habitat and has been forced to use the mud-flats surrounding the pond margins. In 2007 a new site was located adjacent to the Caspian tern nesting colony.	Locally common. Trend declining. Most birds nests on man-made sites. Presqu'ile is the only known annually utilized substantial colony (> 10 nests) in a natural area on either Lake Erie or Lake Ontario.

* Number of successful nests since 2003 is provided for great blue heron and great egret. Maximum nest numbers are provided for black-crowned night-heron.

** Nest-counting methods differed between years – 2008 count did not include nests without chicks or eggs

3. Resource Management Approaches

This section focuses on specific Class EA requirements for deer management, cormorant management, and vegetation restoration. Deer management and vegetation restoration projects have been screened to Category B and the sections below meet project evaluation requirements. Cormorant management has been screened to Category C and the section below meets environmental study report requirements. Screening records are attached as appendices.

3.1 Purpose and Rationale for Resource Management

Some of the vegetation communities of High Bluff and Gull Islands have been significantly affected by deer and cormorants. A hyper-abundance of these species on the islands has affected the regeneration of trees and shrubs, which in turn will eventually affect other species that rely on this habitat. In particular, nesting and migrating birds require woody vegetation for shelter and nesting sites. There is an uncommon opportunity to protect habitat for a diverse waterbird colony at Presqu'île Provincial Park.

The overall purpose of resource management on High Bluff and Gull Islands is:

- *to maintain representative diversity of species and their habitats using an adaptive management approach that is ecosystem-based.*

Habitat on the islands will be protected by integrating management of cormorant and deer populations and both active and passive habitat restoration. There are many combinations of approaches that may be undertaken. The particular combination of approaches that will be undertaken will be determined by assessing the results of previous management activities.

The impacts and effectiveness of management activities will be monitored and assessed annually and management activities will be adjusted over time as required to meet the purpose of the project.

3.2 White-tailed Deer

3.2.1 Purpose of Deer Management

Deer densities are high throughout their continental range and are considered hyper-abundant in many jurisdictions in the U.S. and Canada (section 2.0). At high densities deer can alter forest habitats by eating understory plants and new growth on young trees, thereby causing long-term changes in the composition of both plant and animal species (e.g. Allombert et al 2005, DeCalesta 1994, Rooney 2001, Tilghman 1989). The effect of deer on forest habitats has been well documented in many locations in southern Ontario, including at Presqu'île and other provincial parks (Koh 2005, Tanentzap unpublished data).

Deer numbers began increasing in Ontario in the late 1980s and the same trend was noticed at Presqu'île. Population monitoring began at Presqu'île in the early 1990s and the park population exceeded 200 animals by the early 2000s. Forty or more deer could be counted on High Bluff Island at this time and extensive browse on young trees was observed.

In response to this condition, the Presqu'île Provincial Park Management Plan (OMNR 2000) states that:

“The deer population will be reduced to, and then maintained at, a level that is within the carrying capacity of the park’s deer habitat and sustainable in the context of the park environment... The target population is estimated to be 35 as of 2000, but will be subject to change from time to time on the basis of new information or habitat changes...”

The park management plan also states that deer population reduction will be undertaken directly by Ontario Parks, or through partnerships, and that the reduction will be by shooting.

In 2003 a deer management program began for the park as a whole through reduction activities on the park mainland. Since that time deer numbers on High Bluff Island have been reduced to a few animals. None were seen on the island in 2006 or 2007, but their presence was noted in 2008 and 2009. Deer numbers can fluctuate and deer may return to the island and require specific management action by Ontario Parks in the future. Deer management objectives for the wildlife management unit surrounding the park differ from those inside the park. The park’s geographic context allows deer to be concentrated within the park. The impacts of deer and management opportunities at Presqu'île are further described in Section 2, Ecological Context.

The purpose of deer management is:

- *to manage the deer population on the islands, as part of the broader park-wide program, at a sustainable level that allows for the regeneration and growth of trees and shrubs*

Specific desired outcomes are:

- *measurable increase in the number of stems of native trees and shrubs*
- *survival of young trees to sapling size*
- *prevention of excessive browse on shrubs*

3.2.2 Review of Previous Deer Management Activities

A successful deer herd reduction program took place on the park’s mainland from 2003 until 2007. This management was successful in reducing the deer population and allowing some recovery of forest vegetation. Anecdotal observations from park staff and visitors have indicated noticeable recovery of preferred food plants in the forest understorey on the mainland in recent years. The effectiveness of the deer herd reduction program is being investigated through long term vegetation monitoring on the park mainland. Recent vegetation monitoring has confirmed that winter browse on woody species in 2008/2009 was not severe.

3.2.3 Description of Deer Management

Deer may be managed on the park islands as part of a larger park-wide management program from 2011 – 2020. Deer management may occur if monitoring indicates that deer are preventing the regeneration of new woody vegetation and causing a decline in existing vegetation, and therefore affecting the amount of habitat that will be available to other species. Deer management activities would occur after the peak of fall bird migration and before spring bird migration in order to reduce disturbance to colonial waterbirds. The operational details of any management on the island would be derived from the park-wide deer management approach.

3.2.4 Alternatives to Deer Management and Rationale for Preferred Alternative

The only practical alternative is to not manage deer on the islands. This is the option that will be taken unless deer arrive on the island again in numbers high enough to prevent regeneration and growth of trees and shrubs. Deer will only be managed in years when it has been determined that they are continuing to have a serious impact on vegetation and there are sufficient numbers within the park during the winter months to make a deer herd reduction operation feasible. If deer do reach numbers high enough to prevent regeneration, not managing deer would lead to the continued loss of woody habitat and would prevent forest regeneration. The suggested option of fencing specific areas of live vegetation is not practical in the harsh island environment, and may affect movement of other animal species.

3.2.5 Potential Environmental Effects of Deer Management and Mitigation

Net potential environmental effects will be positive, as this project will contribute to allowing woody habitat to recover. Project activities will be carried out in a way to minimize potential suffering to the animals. Deer management activities would occur after the peak of fall bird migration and before spring bird migration, thus minimizing disturbance to colonial waterbirds. There is minimum ecological impact from these activities at this time of year. Human safety would continue to be the primary concern during all deer management activities.

Negative effects are limited to demands on government services and impacts on the deer population. Deer will not be extirpated from the park. These are expected and reasonable negative impacts for this project. Some public concern regarding the need to manage a native species from certain groups and individuals has been expressed.

3.2.6 Deer Management Monitoring

Methods for evaluating deer impact on vegetation communities have been developed in cooperation with other Ontario Parks and OMNR staff. Vegetation parameters will be measured to determine if deer management is required on the islands, and if implemented, to determine if it has been successful in allowing the recruitment of woody species.

Specifically, the following parameters will be assessed to determine the need for deer management on the islands:

- *numbers of stems of native trees and shrubs*
- *survival of young trees to sapling size*
- *browse impacts on shrubs and young trees*

Trends in the deer population in the park will continue to be assessed yearly or bi-annually for comparison with vegetation parameters.

3.2.7 Assessment of Deer Management to Meet its Intended Purpose

Successful deer management, in combination with cormorant management, will help restore more natural forest dynamics. Management will help young woody vegetation grow, which provides habitat for many species. Restoration of woody habitats cannot occur without decreasing deer impacts. Deer management at Presqu'île since 2003 has been successful as deer have been less frequently present on the island since the reduction of deer numbers on the park mainland.

3.3 Double-crested Cormorants

The cormorant colony at Presqu'île is part of a larger population that has been experiencing tremendous growth since 1987. Cormorant numbers in the eastern Great Lakes basin (lakes Huron, Erie, and Ontario) peaked at 69,317 nests in 2001. While they have fluctuated since then, they have generally declined since 2002, concurrent with management at Presqu'île.

As a native species, cormorants are an important part of the mixed waterbird colony on the islands at Presqu'île Provincial Park. The cormorant population at Presqu'île rose from one nest in 1982 to a peak of 12,082 nests in 2002 (Table 2). Following colonization of High Bluff Island by cormorants, great blue herons and great egrets began nesting on the island (Table 1). As colonial waterbirds, these species may have been attracted to the site due to the presence of other tree-nesting birds. Their relatively recent arrival may also be due to displacement from other sites (herons), or range expansion in Ontario (egrets). Black-crowned night-herons have nested on the islands since 1962.

Since their initial arrival, cormorants have caused the death of all but one tree on Gull Island and have had significant impacts on the woody vegetation on High Bluff Island through their nesting and roosting activity. Vegetation impacts occur through the physical removal or breakage of branches by the birds and through the chemical effects caused by guano. Cormorants are also known to compete with other species for nesting sites (OMNR 2006b). Cormorant management activities from 2003 to 2007 reduced the population at Presqu'île to 3,855 nests in 2007.

Management of cormorants did not occur on Lake Ontario prior to 1994. Cormorant management at New York sites (1994-2002) coincided with a rapid increase in nest numbers at Presqu'île, suggesting that management activities to reduce cormorant populations in one area leads to population increases in other areas. Banding, satellite, and radio-telemetry studies show that individual birds move among islands and colonies. However, the dynamics among colonies are not well understood. Future analysis of the results of cormorant management activities at Presqu'île will need to consider the influence of the broader landscape.

Complete details of cormorant numbers and management are provided in the annual reports of management from 2003 to 2007 (Ontario Parks 2003, 2004b, 2005, 2006, 2007; http://www.ontarioparks.com/english/pres_planning.html)

3.3.1 Purpose of Cormorant Management

For many years, cormorant populations at Presqu'île have exceeded the ability of some woody habitats on High Bluff and Gull Islands to persist in the long term. In order for the remaining woody areas used by other wildlife to persist and recover, the impacts of cormorants on these areas must be minimized. Cormorant management will not necessarily result in an overall decrease in the number of nesting cormorants, as there are other habitats available for them to use. The impacts of cormorants and

management opportunities at Presqu'île are further described in Section 2, Ecological Context.

The purpose of cormorant management is:

- *to manage the cormorant population to prevent the loss of specific woody habitat areas and permit recovery of woody habitat*

Specific desired outcomes are:

- *maintenance of nesting habitat for great egrets and black-crowned night-herons, and roosting habitat for monarch butterflies*
- *no loss of specific woody habitat areas, including the remaining willow tree on Gull Island*

Habitat and nest monitoring will be conducted yearly to determine if the desired outcomes are being met. While High Bluff Island is the focus for protection and restoration of woody habitat, cormorant management activities may also take place on Gull Island to help meet management objectives, including protection of the remaining willow tree.

The tall trees used for nesting by great blue herons are likely to be lost as a result of past impacts by nesting cormorants – many of these trees have fallen already. Given the poor condition of these trees and the difficulty of managing cormorants in them their protection will no longer be a priority.

3.3.2 Review of Previous Cormorant Management Activities

Ontario Parks has completed an assessment of the impacts of cormorants and cormorant management at Presqu'île Provincial Park over the duration of the previous cormorant management strategy (2003-2007) (Ontario Parks 2002, 2004a, 2008, http://www.ontarioparks.com/english/pres_planning.html). The review assessed the impact of management on the following parameters:

- number of cormorant tree and ground nests
- behaviour of great egrets, great blue herons and black-crowned night-herons in response to management activities
- number of successful great egret, great blue heron and black-crowned night-heron nests and young fledged
- woody vegetation condition in the woodlots and extent across High Bluff Island

The previous cormorant management – egg oiling, nest removal, and culling – reduced tree nests by 68% on High Bluff Island and ground nests by 69% on both islands from pre-management (2002) levels (Table 2). In 2008, when no management occurred, tree nests rose by 56% from 2007 levels and 138 new trees were used for nesting. Many of these trees were in areas used by other tree-nesting colonial waterbirds. In 2009, another 85 new trees were colonized by cormorants. Ground nests declined from 2007 to 2009, likely due to predator activities.

Comparison of nesting behaviour and nesting success for the other tree-nesting colonial species – black-crowned night-heron, great egret and great blue heron – between High Bluff Island and control sites did not demonstrate any adverse effects of cormorant management activities on these species. Black-crowned night-heron and great egret

numbers have remained stable or increased throughout previous management activities. Great blue herons have declined, likely due to the loss of the tall trees that they prefer for nesting.

The assessment of the first four years of management indicates that vegetation impacts have been severe in the woodlots and many of the canopy trees have died. However, the subcanopy in these areas began recovering following reduction of nesting cormorants. The impacts have been localized to the main woodlots as a result of strategic cormorant management. In addition, other colonial waterbird species continue to use the woody habitat that remains to date on High Bluff Island (Ontario Parks 2007).

The assessment indicates that continued management of cormorants will be required on High Bluff and Gull Islands in order to protect and restore priority woody habitat areas to retain maximum diversity of nesting colonial birds and other species.

Table 2. Cormorant nest counts for Presqu'île Provincial Park from 1984 – 2009.

Year	High Bluff Island – tree nests	High Bluff Island – ground nests	High Bluff Island – total nests	Gull Island – total nests *	Presqu'île – total nests	Management Activity
1984	--	--	0	0 *	0	no management of DCCO occurring
1985	--	--	0	116 *	116	
1986	--	--	32	132 *	164	
1987	--	--	42	447 *	489	
1988	--	--	168	471 *	639	
1989	--	--	439	498 *	937	
1990	--	--	888	704	1592	
1991	--	--	746	1050	1796	
1992	--	--	822	1596	2418	
1993	--	--	898	2143	3041	
1994	--	--	1724	1435	3159	management occurs at New York sites only on Lake Ontario
1995	--	--	1956	771	2727	
1996	--	--	2442	1257	3699	
1997	--	--	3196	819	4015	
1998	--	--	5126	1042	6168	
1999	--	--	6741	1074	7815	
2000	--	--	8105	867	8972	
2001	--	--	9532	789	10321	
2002	6893	3491	10384	1698	12082	management occurred at New York sites and Presqu'île
2003	4631	2948	7567	1113	8680	
2004	3656	1683	5339	1601	6940	
2005	1976	1305	3281	1328	4609	
2006	2108	498	2615	204	2819	strategy extended without culling
2007	2233	1562	3795	60	3855	
2008	3488	664	4152	0**	4152	no management of DCCO at Presqu'île
2009	3756	116	3872	0	3872	

* nest counts on Gull Island during 1986-89 included both tree and ground nests. By 1990, all trees but one had fallen and all nest counts on Gull Island from 1990 to present were ground nests only

** cormorants abandoned Gull Island over the last few years, possibly due to the regular presence of a predator and the lack of nesting success. It is possible they moved to ground or tree nests on High Bluff Island. Cormorant nests are more susceptible to predation than gulls and terns as they do not defend their nests.

3.3.3 Cormorant Management Alternatives

Three possible alternatives were considered during consultation: to allow for a full suite of cormorant management methods in the cormorant management area identified in Figure 2³, including culling; to use a limited suite of cormorant management methods without culling in cormorant management areas; and to reduce action to monitoring only. The cormorant management area identified in Figure 2 encompasses the specific woody habitat areas that are priorities for protection.

1) Full suite of cormorant management activities, including culling: A full range of cormorant management activities described below would be allowed as necessary. Unlike the approach taken from 2003 – 2007, the purpose of management would be to protect specific woody habitat areas (Figure 2), rather than overall forest cover, and would therefore require much less effort and leave large areas of the island undisturbed for nesting by all species. This option would provide the flexibility required to respond most effectively to changes in cormorant behaviour and population dynamics. For example, if cormorants nested in areas used by herons or egrets, culling of those particular cormorants would be the most effective way to protect heron and egret nesting habitat while minimizing disturbance to those species. This option would be expected to result in the maintenance of specific woody habitat areas on High Bluff Island through natural regeneration and active restoration, maintaining habitat diversity. The most valuable habitats for black-crowned night-heron and great egret – areas of live chokecherry, basswood, and eastern white cedar – would be restored relatively quickly as impacts on them by cormorants has thus far been minimized through past cormorant management. These areas are also used by other species like migrating monarchs and songbirds.

This alternative would be expected to have a high likelihood of achieving the project purpose for cormorant management.

2) Limited suite of cormorant management activities, without culling: All non-lethal cormorant management activities described below would be allowed. Culling would not be used. This approach was used in 2007. Cormorant management would be targeted only to specific woody habitat areas (cormorant management area). This option would be expected to result in the maintenance of some specific woody habitat areas on High Bluff Island through natural regeneration and active restoration. The most valuable habitats for black-crowned night-heron, great egret, and other species – areas of live chokecherry, basswood, and eastern white cedar – could be restored relatively quickly so long as cormorants did not move into them in large numbers causing conflicts between cormorant management and protection of herons and egrets. However, by eliminating culling this option would provide less flexibility to respond with maximum effectiveness to changes in cormorant behaviour and population dynamics. Other jurisdictions recognize that non-lethal cormorant management techniques are less effective than culling, depending on the management purpose (Parks Canada 2008).

³ Nesting areas of great egrets and black-crowned night-herons shown in Figure 2 are based on monitoring of both species since 2003.

This alternative would be expected to have a moderate likelihood of achieving the project purpose for cormorant management.

3) Monitoring with no management action (null alternative): Monitoring of the status of colonial waterbirds would continue to a limited extent. This option would likely result in an almost complete loss of woody vegetation on High Bluff Island, as has happened on Gull Island (Ontario Parks 2008). As a result, some tree nesting colonial waterbirds – particularly black-crowned night-heron, great egret, and great blue heron – and other bird species would lose nesting sites. Additionally, many bird species and monarch butterflies would lose migration habitat on the northeastern shore of Lake Ontario, habitat that is being threatened by development outside of protected areas along the Canadian side of Lake Ontario.

This alternative would not be expected to meet the project purpose for cormorant management.

Preferred Alternative: Full suite of cormorant management activities in cormorant management area, including culling. Given the 10 year time-frame of this plan and the dynamic nature of ecosystems, this option would allow the most effective cormorant management.

3.3.4 Evaluation of Cormorant Management and Rationale for Preferred Alternative

Because management of the islands will occur over the next 10 years (with a review in 5 years) the full suite of possible management actions are being evaluated, though it is recognized that not all actions may be implemented in any given year. The two non-preferred alternatives are to not conduct any cormorant management or to use a limited suite of control methods. The “no management – monitoring only” option risks the continued loss of woody habitat for other colonial waterbird species and other migratory species. Based on past experience, the limited suite of control methods is known to be less effective than the full suite of control measures, and this could prevent the project from being successful if there are changes in cormorant behaviour and population dynamics at Presqu’île.

Cormorant management on the islands from 2003 – 2007 successfully reduced the number of cormorant nest and the effect on woody habitat was positive. Results show that the most positive results were when a full suite of techniques, including culling, was used.

3.3.5 Description of Cormorant Management

The project will involve some or all of the following activities: removal of tree nests, discouragement and/or disturbance of tree-roosting cormorants, and culling in cormorant management area (Figure 2), and egg oiling. Large areas of the islands would remain undisturbed for nesting by all species, although monitoring may occur in those areas. These activities will be limited to High Bluff and Gull Islands in Presqu’île Provincial Park, and will take place from the first arrival of returning cormorants until the beginning of the fall bird migration (approximately April – September) and may occur over the next ten years, with a review of the plan in 5 years. Stakeholders will receive written notification of intended management activities annually.

Cormorant management in any given year may include any one or a combination of the activities described below, with culling and egg-oiling as the last options if other methods cannot be used successfully. A decision tree describing the criteria that will be used to determine management activities for tree-nesting cormorants is outlined in Figure 3. A yearly operational plan will provide details on management activities and will address safety and training. All activities will be done in accordance with provincial and federal regulations and policies. It is acknowledged that cormorant management activities may displace cormorants to nest and/or roost at other locations inside or outside Presqu'île Provincial Park.

Yearly management activities will be determined based on assessment of the results from previous activities, and nesting behaviours observed in a given management year (Figure 3).

Nest Removal

Cormorant nests will be removed from trees and shrubs in the cormorant management area (Figure 2) to discourage cormorants from nesting in those areas (including the remaining willow tree on Sebastopol Point on Gull Island). Nest establishment dates will be tracked, and nests will be monitored, to ensure that nests with eggs beyond 75%⁴ of their incubation period will not be removed. This process is labour-intensive and displaced cormorants are likely to try to rebuild nests. Nest removal is the activity with the greatest potential to disrupt other tree-nesting colonial waterbird species because of the time required to complete it. By focusing cormorant nest removal prior to the arrival of herons and egrets or during the heron and egret incubation and chick-rearing periods and limiting the time spent in the vicinity of heron and egret nests the disturbance of these colonial waterbird species can be minimized. However, despite these cautionary approaches there may be some cormorant nests that cannot be removed because they are too close to heron or egret nests or due to timing of egg-laying and chick-rearing by the cormorants or herons and egrets.

Roost Disturbance

Cormorants attempting to roost in the cormorant management area on High Bluff Island (Figure 2) may be discouraged by the use of disturbance tools such as noisemakers, "scare-crow" devices and optical devices. This will be done to prevent the deposition of guano on living vegetation. Such activities would only take place after the nesting season and once it has been determined that other colonial waterbird species are not using the area as a roosting site.

Culling

Culling will be the last method to be considered, and will only occur when non-lethal methods cannot be used effectively, or are not successful. The need to cull is based on the number and location of nests, and not the level of staff effort required to implement management activities. Based on information available and trends observed during the planning stage of this document, it is anticipated that fewer than 100 cormorants may need to be culled in each of the first 5 years of implementation of the plan. However,

⁴ Cormorant management will be initiated early in the nesting season and it is likely that nest removal or culling will take place well before eggs reach 50% development. However, there is a possibility that a small proportion of eggs may reach 75% development prior to being managed.

cormorant populations are influenced by a number of factors, so the need to cull will be evaluated annually.

Adult cormorants nesting in the cormorant management area on High Bluff Island identified in Figure 2 may be culled in certain circumstances (Figure 3): when nests are too high to be removed, when nesting in an individual tree or group of trees is persistent despite several attempts at nest removal and the use of other feasible deterrents over a week or more, or when nests cannot be removed without threatening the nests of other tree-nesting colonial waterbirds. Culling may be used as an option for reducing cormorant numbers when the rate of nest establishment in the target protection areas is faster than the rate at which nesting can be prevented through non-lethal means, including having at least two MNR staff removing the nests. Birds in flight would not be shot. Culling would be done in short time periods (less than 30 minutes) to minimize stress to the cormorants and disturbance to other tree-nesting colonial waterbirds (Moore et al. 2006). Each shooter will be accompanied by a staff observer who will observe the behaviour of other nearby waterbird species. Previous management showed that shooting accuracy was very high. Any future cormorant management activities are expected to have even higher accuracy given the reduced scale of the operation. Nonetheless, some birds may be wounded. Any wounded birds would be located and humanely dispatched immediately following individual cull events to minimize suffering. Wounding rates will be monitored so that they may be minimized. As is the practice in other jurisdictions, carcasses of culled cormorants would be left in place in order to minimize disturbance.

Nest establishment dates will be tracked, and nests observed, to ensure that adults at nests with eggs beyond 75% incubation will not be culled or disturbed and those nests will not be removed or oiled. The numbers of cormorant nests in all nesting areas used will be recorded and the date of removal of nests in an area recorded, together with details of the use of other deterrents for the area, in order to document the decision-making process used to determine the need for culling in a particular nesting area. This documentation will be made available as an appendix to the yearly annual report of the management activities on the islands, which will also include all monitoring data. The yearly annual report will be made available to the public and submitted to the Environmental Assessment and Approvals Branch, Ministry of the Environment, upon completion.

Egg Oiling

Ground-nesting of cormorants will be encouraged. However, there may be more birds nesting in the cormorant management area than can be managed through non-lethal techniques and culling. Egg oiling is a management tool that has been used successfully to prevent eggs from hatching and thereby reduce the rate of population increase. This technique is not practical in tree-nesting populations. Egg oiling may be considered if all of the following conditions are met:

- The number of nests in the woody habitat areas increases between years despite other management techniques,
- There are more birds nesting on the ground than in the trees,
- Ground nesting cormorants become very numerous (more than 1000 nests), and
- Ground nests are shown to produce young that attempt to move into tree-nest sites or roost in the cormorant management area (using coloured leg bands on chicks from ground nests)

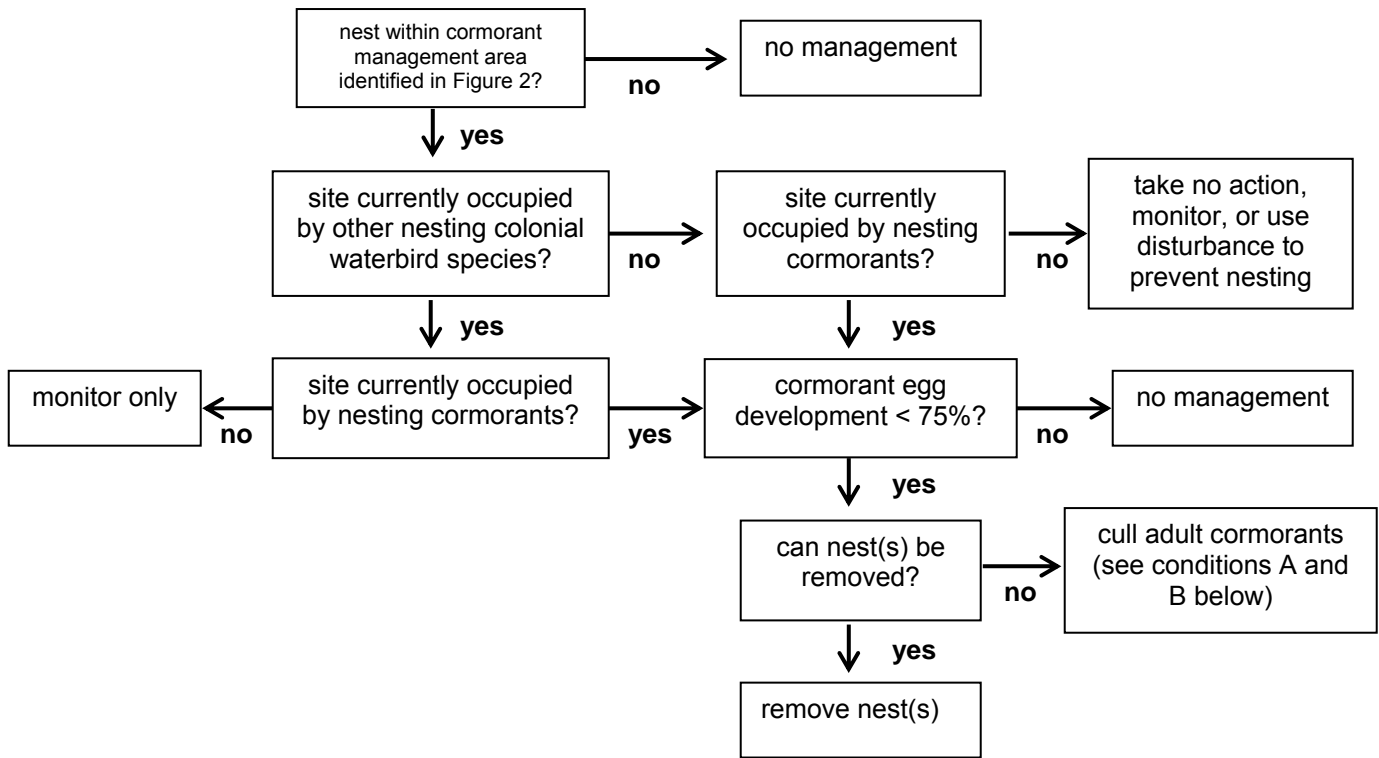
The consideration of egg oiling would occur prior to the breeding season and would be based on the previous year's monitoring results. Other available information (e.g. the presence of predators) may also be considered.

Eggs that are beyond 75% incubation will not be oiled. Techniques to minimize disturbance to ground-nesting cormorants and other species, such as conducting oiling at night, may be used.

Other Cormorant Management Methods

Additional non-intrusive activities may be used to enhance cormorant management efforts. For example, the construction of artificial ground-nesting sites and/or other feasible social attractant techniques will be used annually to attract displaced tree-nesting cormorants to the ground colony nesting areas, or large dead trees preferred for nesting and roosting by cormorants may be removed to reduce impacts on the living woody vegetation below them.

Figure 3: Decision tree for managing tree-nesting cormorants



Conditions for culling:

A – selective culling – occurs in one of 3 conditions: i) nest is too high for removal, ii) persistent reconstruction of nest(s) in an individual tree or group of trees despite several attempts at nest removal or use of deterrents , iii) nest cannot be removed without disturbing other nesting colonial waterbirds

B – culling to reduce population – only occurs if nest construction increases to a rate that is greater than the rate at which nests can be removed by at least 2 MNR staff

3.3.6 Potential Environmental Effects of Cormorant Management and Mitigation

Net environmental effects are mainly positive, including improvement of ecological integrity through benefits to wildlife and vegetation communities at Presqu'île and maintenance of habitat diversity, which is the purpose of the project.

The main potential negative effects are on other colonial waterbirds. Some cormorant management activities may disturb other nesting colonial waterbird species. However, previous studies at Presqu'île and control sites elsewhere have indicated no measurable negative impact of previous cormorant management activities on the nesting behaviour, nest attendance, or nesting success of great egrets, great blue herons, and black-crowned night-herons (Moore et al. 2006). Furthermore, nest productivity of these species has remained consistent. The nesting success of other colonial species will continue to be monitored, and activities modified accordingly if any impacts on these species are observed.

Negative effects also include demands on government services and impacts on the cormorant population. These are expected and reasonable negative impacts for this project. Some public concern from certain groups and some individuals regarding animal welfare and the justification for managing a native species has been expressed.

By tracking nest establishment dates and observing nests, extreme care will continue to be taken to avoid culling adults, oiling eggs, and removing nests with eggs that are more than 75% developed. Cormorants will be dealt with humanely, ensuring suffering is minimized. Human safety will be the primary concern in all management activities.

3.3.7 Consideration of Not Proceeding with Cormorant Management

Not proceeding with cormorant management would likely result in an almost complete loss of woody vegetation on High Bluff Island, as has happened on Gull Island (Ontario Parks 2008). As a result, some colonial waterbirds – particularly black-crowned night-heron and great egret – and other bird species would lose nesting sites at Presqu'île. Additionally, many bird species and monarch butterflies would lose migration habitat on the northeastern shore of Lake Ontario, habitat that is being limited by development outside of protected areas along the Canadian side of Lake Ontario.

3.3.8 Cormorant Management Monitoring

Vegetation condition will be assessed through surveys to determine if cormorant management has prevented further habitat destruction and if recovery of key habitat features is occurring.

Specifically, the following vegetation condition parameters will be assessed to determine the extent of cormorant management required:

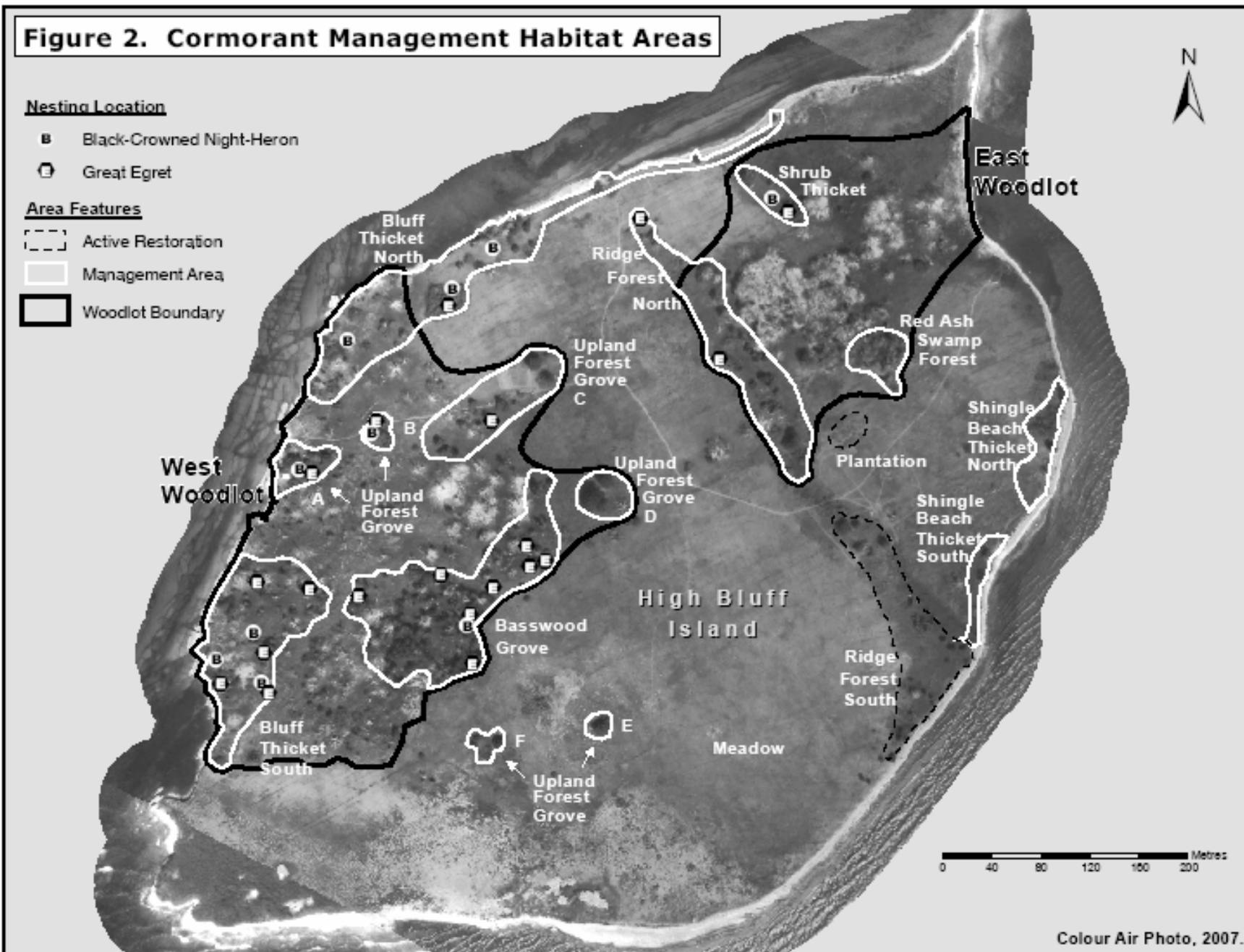
- *condition of the trees and shrubs within the specific woody habitat areas*

Arrival dates of all colonial tree-nesting waterbirds will be recorded yearly to help determine appropriate starting dates for management activities. Cormorant nests will continue to be counted each year in late June (to coincide with annual nest counts on the Great Lakes) and after management activities have finished (mid-July) to aid in

determining specific activities for cormorant management for the following year. Records will be kept describing each management activity (e.g. number of nests removed, number of adult birds culled, nest contents).

Monitoring is a key part of the implementation of this project. Monitoring results will inform future management decisions. Annual summaries of monitoring results will be made available to the public.

Figure 2. Cormorant Management Habitat Areas



3.4 Vegetation Restoration

3.4.1 Purpose of Vegetation Restoration

The woody habitat of High Bluff Island has sustained high levels of impact from deer and cormorants in some areas. Remaining woody habitat on the island is used by several species of tree nesting colonial waterbirds and requires enhancement. Passive restoration alone is a slow process and may not be sufficient. In conjunction with deer and/or cormorant management, restoration of the woody habitat on High Bluff Island will be required.

The purpose of vegetation restoration is:

- *to assist the recovery of woody habitats on High Bluff Island for tree nesting colonial waterbirds and other wildlife.*

Specific long-term desired outcomes include:

- *restoration of existing specific woody habitat areas*
- *improvement of woody habitat in previously wooded areas (prior to 1982) on High Bluff Island*

3.4.2 Review of Previous Vegetation Restoration Activities

Small scale active restoration using native species from park stock, including tree planting, seed planting, and tree protection, has occurred in previously wooded areas on High Bluff Island. Previously planted trees and seeds have shown good survival rates. Impacts by deer were noted in the winters of 2004, 2005, and 2008, but not 2006 and 2007. Some impacts and mortality due to drought and girdling by small mammals has also been noted. Growth of planted trees is comparable to those planted on the park mainland and some of the planted trees, notably white birch, are now producing seed.

Little is known at this time about the ability of soils to recover from the effects of cormorant guano, or of the tolerance limits of trees in such nutrient-enriched habitats (North-South Environmental 2007, Dr. T. Noland, E. Czerwinski pers. comm). However, soil impacts been localized to areas of high cormorant density (i.e. the eastern and western woodlots). The relative vigour of trees and shrubs in areas of the island with low cormorant density suggest that the soil in these areas has not been affected by cormorant guano.

3.4.3 Description of Vegetation Restoration

Restoration activities will take place on High Bluff Island from 2011 – 2020. Restoration may include any of the activities described below. Restoration areas will be matched with control areas where no active restoration takes place in order to assess the effectiveness of restoration activities. High Bluff Island will be the focus for restoration activities as little soil remains on Gull Island.

Tree and seed planting

Seedlings and/or saplings of tree and shrub species native to the islands and propagated from seeds collected within the park may be planted in priority areas for

restoration – areas that had trees and shrubs prior to 1982. Seeds of tree and shrub species native to the islands and collected within the park may also be directly planted in priority areas for restoration.

Watering

Planted and naturally occurring trees and shrubs may require watering to ensure survival and maximum growth given the drought conditions that may occur on the island.

Protection of woody vegetation

Existing and planted trees and shrubs may be protected from browsing by deer (fencing) or girdling by small mammals (vole-guards) when necessary and if feasible. Scare-crows and other roost disruption devices may be needed to prevent roosting and nesting by cormorants in planted trees.

Control of alien invasive species

Some alien species have thrived in the heavily impacted areas of the woodlots and may prevent young trees from growing. Garlic mustard (*Alliaria petiolata*), motherwort (*Leonurus cardiaca*), and possibly other alien invasive species may need to be controlled in areas targeted for restoration. Alien species like dog-strangling vine (*Vincetoxicum* sp.) may need to be controlled in the meadow areas to protect meadow habitat. Control may include mechanical methods (pulling, cutting, mowing). In cases where mechanical methods are not sufficient, limited applications of quickly degrading herbicides (e.g. glyphosate) may be used. Control will follow best practices determined from updated research.

3.4.4 Alternatives to Vegetation Restoration and Rationale for Preferred Alternative

The only alternative is to not actively restore woody habitat on the island. This option may lead to the potential net loss of breeding species of birds on the island as their habitat disappears due to the impacts of cormorants and deer. Restoration is intended to take place in combination with deer and cormorant management. The island vegetation may recover naturally but such recovery is expected to occur over the long term.

3.4.5 Potential Environmental Effects of Vegetation Restoration and Mitigation

Net potential environmental effects will be positive, as this project will enhance woody habitat. There are no anticipated negative environmental effects to be mitigated.

3.4.6 Vegetation Restoration Monitoring

Vegetation monitoring associated with the deer and cormorant management components of this implementation plan will provide information on the condition and recovery of the specific woody habitat areas on High Bluff Island. Additional indicators that may be measured to determine if restoration has enhanced forest habitat for birds and other wildlife include:

- Survival of planted trees
- Natural recruitment

Records will be kept describing each management activity (e.g. number of trees planted, invasive alien species control undertaken).

3.4.7 Assessment of Vegetation Restoration to Meet its Intended Purpose

The islands and their woody environments are part of the park's unique natural heritage. Restoration will help young woody vegetation grow, which provides habitat and will help reduce the loss of soil from the island by maintaining tree cover. Previous vegetation restoration on the islands has shown positive results.

3.5 Assessment of Three Projects to Meet Overall Purpose

Although the resource management projects described here may take place over the next 10 years, the results are expected to be achieved over the long term. The three individual proposed projects are integrated and the outcome of any one project is related to the outcomes of the other two projects. The results of cormorant management are expected to be the most significant and will determine the success of the other projects. Without cormorant management, the other resource management projects would not be as successful. The greatest effectiveness can be achieved by implementing a full suite of cormorant management methods when necessary, as well as deer management and habitat restoration. A detailed analysis of alternatives is provided in Appendix 5.

4. Description of Consultation

Consultation is an important part of this environmental assessment process. Deer management and vegetation restoration projects described within this plan were screened as Category “B” projects and were evaluated as such under the *Class EA PPCR*. Cormorant management was screened as a Category C project. Consultation requirements for all three projects were at the Category C level. The Category C process includes public notices and the preparation of an environmental study report (ESR). Consultation for these projects on the Presqu’île islands included the following:

Initial Public Notice (30 days – completed November 25 – December 29, 2008)

- Paid advertisement in local media
- Mail out to project mailing list
- Supplemental to the Class EA process, in keeping with past practice for cormorant management at Presqu’île, an information notice was posted on the Environmental Registry to provide general notice to the public that project planning is being conducted at Presqu’île.
- Notice posted on the Ontario Park’s website.
- Results of consultation summarized in Appendix 4

Notice: Opportunity to inspect draft Resource Management Implementation Plan/ Environmental Study Report (45 days – completed January 29 – March 16)

- Paid advertisement in local media
- Mail out to project mailing list
- Draft Plan/ESR posted on Ontario Parks Website (www.ontarioparks.com/english/pres_planning.html)
- Updated Environmental Registry information notice included 45 day comment period
- Results of consultation summarized in Appendix 6

Notice of Completion, Opportunity to Inspect Final Resource Management Implementation Plan/Environmental Study Report (30 days – current stage)

- Mail-out to groups or individuals that expressed interest or concern
- Paid advertisement in local media
- Final Plan/ESR posted on Ontario Parks website
- Update Environmental Registry information notice

Upon the release of the final plan, a notice was sent to individuals and groups that commented on the draft plan.

Statement of Completion (Jan. 31, 2011)

- 12 Part II Order requests received by the Minister of the Environment in December 2009 were denied in October 2010, with conditions required of the MNR
- The required conditions are reflected in Amended Final Plan
- Amended Final Plan posted on Ontario Parks website and notification sent to groups or individuals that expressed interest during the planning process

5. Plan Implementation, Review, and Amendment

This implementation plan will be in effect from 2011 until 2020, in accordance with the provisions for recurring projects under the *Class EA for Provincial Parks and Conservation Reserves*. Upon approval, the projects described within this plan may be implemented each year that the plan is in effect. In keeping with the principles of adaptive management, elements of the plan may be implemented in whole or in, depending upon the results of monitoring and the need for management actions.

Management actions and their effects will be reviewed each year and described in a detailed annual report to be made available to the public and submitted to the Environmental Assessment and Approvals Branch, MOE. The annual report will include any available data on cormorant, black-crowned night-heron, and great egret populations on Lake Ontario and in Ontario. MNR will also ensure that no detrimental cumulative effects on overall cormorant populations result from activities at Presqu'ile Provincial Park by continuing to share information and collect data from other jurisdictions. MNR will take into account these data and assessments when recommending management actions for cormorants for the following year.

Stakeholders will receive written notification of intended management activities annually. Operational plans outlining detailed steps for carrying out these activities will be prepared each year to guide staff. Any yearly (or at the five-year review) proposals to enact a minor or major modification to the project, the latter of which would include a forecast of likely culling greater than 300 cormorants in one year, would follow the modification provisions of the *Class EA-PPCR*. The major modification provisions require a Revised Notice of Completion allowing the submission of Part II Order requests.

In five years this implementation plan will be formally reviewed to determine if any modifications are necessary. A general public notice to invite participation in the review will be sent to groups and individuals that responded during consultation for this RMIP, one First Nation and the MOE regional office. Notification will also be posted on the Ontario Parks website and in newspapers. A detailed report of deer and cormorant management and monitoring activities undertaken during the first five years of resource management plan implementation will be made available and will consider all items included in annual reports at a five-year cumulative time-scale. The review will take into consideration any changes that may have taken place since the initial approval of the implementation plans, results of monitoring activities, and comments received regarding deer and cormorant management over the five year period or as a result of the general public notice. Any proposed modification to this RMIP will be in accordance with the *Class EA-PPCR*, including a revised Notice of Completion for major modifications.

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Appendix 1. Record of Screening for Deer Management on High Bluff Island

Step 1: Assess Project Against List of Projects

0 ID # 10 – Manage an animal population – requires screening

Step 2: Project Description

Name of Project	Deer management on Presqu'ile Islands (as part of the Presqu'ile Islands Resource Management Implementation Plan)
Provincial Park or Conservation Reserve name and location	Presqu'ile Provincial Park, Northumberland County
Purpose and rationale	Deer populations at Presqu'ile have been above the ecological carrying capacity of the park for many years, negatively affecting forest communities. Deer have been present on the park islands and caused browse damage to young trees and shrubs. In order for treed communities to recover deer browse pressure must be minimized.
Project description, scale, duration	Deer may be managed on the park islands consistent with deer management on the mainland.
Study area that may be affected	This screening applies to deer management activities that may take place on High Bluff and/or Gull Island
Applicable MNR policies, procedures, manuals, guidelines	Provincial Park Policy 2.48 – General liability in provincial parks
Other required approvals or permits	none required
Alternatives to the project and alternative methods of carrying out the project (explain if no alternatives)	The only alternative is to not manage deer on the islands if they arrive on the island again. This option will lead to the continued degradation of this habitat.
Preliminary evaluation (cost, feasibility, effectiveness, potential effects)	There is expected to be little additional cost associated with including the islands in any

park-wide deer management that occurs.

Mitigation features that will apply to the design of the project

Deer management activities would occur after the peak of fall movement to wintering areas and before spring movement. There is minimum ecological impact from these activities at this time of year. Human safety would continue to be the primary concern during all deer management activities.

Step 3: Assess Against Screening Criteria

Main potential net environmental effects

Net potential environmental effects will be positive, as this project will allow treed habitat to recover.

Additional investigation and analysis required to confirm environmental effects

None required.

Step 4: Assign Project to Appropriate Category

Anticipated level of public or agency concern

Medium – opposition to deer herd management has occurred in the past. However, these activities have been carried out on the park mainland since 2003 and concern has generally decreased yearly.

This project has been assigned to **Category B**.

Brief rationale

The proposed project is part of a larger deer management program that will take place throughout the park. Deer management at Presqu'île since 2003 has been successful. Most effects are positive, with some public concern expressed from certain groups.

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
<ul style="list-style-type: none"> ▪ Values for which the provincial park or conservation reserve was established 							X		The islands and their treed environments are part of the park's unique natural heritage
Natural Environment Considerations									
<ul style="list-style-type: none"> ▪ Air quality 				X					
<ul style="list-style-type: none"> ▪ Water quality or quantity (ground or surface) 				X					
<ul style="list-style-type: none"> ▪ Species at risk or their habitat 				X					
<ul style="list-style-type: none"> ▪ Significant earth or life science features 				X					
<ul style="list-style-type: none"> ▪ Fish or other aquatic species, communities, or their habitat (including numbers, diversity and movement of resident or migratory species) 				X					
<ul style="list-style-type: none"> ▪ Land subject to natural or human-made hazards 				X					
<ul style="list-style-type: none"> ▪ Recovery of a species under a special management program (e.g. elk restoration) 				X					
<ul style="list-style-type: none"> ▪ Ecological integrity 							X		Deer management will help restore natural forest dynamics
<ul style="list-style-type: none"> ▪ Terrestrial wildlife (including numbers, diversity and movement of resident or migratory species) 							X		Deer management will help young woody vegetation grow, which provides habitat
<ul style="list-style-type: none"> ▪ Natural vegetation and terrestrial habitat linkages or corridors through fragmentation, alteration and/or critical loss 							X		Deer management will help young woody vegetation grow, which provides habitat
<ul style="list-style-type: none"> ▪ Permafrost 				X					
<ul style="list-style-type: none"> ▪ Soils and sediment quality 				X					
<ul style="list-style-type: none"> ▪ Drainage or flooding 				X					
<ul style="list-style-type: none"> ▪ Sedimentation or erosion 				X					
<ul style="list-style-type: none"> ▪ Release of contaminants in soils, sediments 				X					
<ul style="list-style-type: none"> ▪ Natural heritage features and areas (e.g. areas of natural and scientific interest, provincially significant wetlands) 						X			The islands and their treed environments are part of the park's unique natural heritage
<ul style="list-style-type: none"> ▪ Other (specify) 									
Land Use, Resource Management Considerations									
<ul style="list-style-type: none"> ▪ Remoteness (access inaccessible areas) 				X					
<ul style="list-style-type: none"> ▪ Navigation 				X					
<ul style="list-style-type: none"> ▪ Other projects within a park or reserve 							X		Deer management is part of an ecosystem-based approach on the islands
<ul style="list-style-type: none"> ▪ Other projects outside a park or reserve 				X					
<ul style="list-style-type: none"> ▪ Traffic patterns or traffic infrastructure 				X					
<ul style="list-style-type: none"> ▪ Public or private recreation 				X					
<ul style="list-style-type: none"> ▪ Or create excessive waste materials 				X					
<ul style="list-style-type: none"> ▪ Or commit a significant amount of a non-renewable resource (e.g. aggregates, agricultural land) 				X					
<ul style="list-style-type: none"> ▪ Noise levels 				X					

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
▪ Views or aesthetics				X					
▪ Another project or be a precondition or justification for implementing another project								X	Restoration of treed habitats cannot occur without decreasing deer impacts
▪ Uses, persons or property outside a park or reserve				X					
▪ Other (specify)									
Social, Cultural, and Economic Considerations									
▪ Archaeology				X					
▪ Built heritage				X					
▪ Cultural heritage landscapes				X					
▪ Sacred or traditional use sites				X					
▪ Or displace people, businesses, institutions, or public facilities				X					
▪ Community character, enjoyment of property, or local amenities				X					
▪ Demands on government services or infrastructure			X						Deer management requires staff time and resources
▪ Public health and/or safety				X					
▪ Local, regional or provincial economies or businesses				X					
▪ Tourism values (e.g. resource-based tourist lodge)				X					
▪ Other (specify)		X							There are some ethical concerns in the community at large regarding killing deer
Aboriginal Considerations									
▪ First Nation reserves or communities				X					
▪ Spiritual, ceremonial, or cultural sites				X					
▪ Traditional land or resources uses, or affect economic activities						X			Aboriginal groups are involved in deer management
▪ Aboriginal values						X			Aboriginal groups are involved in deer management
▪ Lands subject to land claims				X					
▪ Other (specify)									

Appendix 2. Record of Screening for Cormorant Management

Step 1: Assess Project Against List of Projects

θ ID # 10 – Manage an animal population – requires screening

Step 2: Project Description

Name of Project	Cormorant management on Presqu'ile Islands (as part of the Presqu'ile Islands Resource Management Implementation Plan)
Provincial Park or Conservation Reserve name and location	Presqu'ile Provincial Park, Northumberland County
Purpose and rationale	Cormorant populations at Presqu'ile have exceeded the ability of the park islands to support them for many years, negatively affecting treed habitats. Cormorants have been managed at Presqu'ile since 2002. In order for treed habitats for other wildlife to persist and recover the impacts of cormorants must be minimized.
Project description, scale, duration	The project will involve some or all of the following activities: oiling of eggs in ground nests, removal of tree nests, disturbance of roosting cormorants, and culling, following methods approved in the previous strategy. These activities will be limited to High Bluff and Gull Islands in Presqu'ile Provincial Park, and will take place from the first arrival of returning cormorants until the beginning of the fall migration (approximately April – September). Staff will make every effort to avoid culling adults at nests with chicks and will attempt to not remove nests with hatched chicks.
Study area that may be affected	The only areas that will be affected are Gull and High Bluff Islands at Presqu'ile Provincial Park.
Applicable MNR policies, procedures, manuals, guidelines	<ul style="list-style-type: none"> • Provincial Park Policy 11.03.01 Preparation of Implementation Plans for Provincial Parks • Management Guidelines for the Protection of Heronries in Ontario, April 1984
Other required approvals or permits	<ul style="list-style-type: none"> • Approval to use food grade oils (Health Canada, Pest Management Regulatory Agency) • Permit for Damage under Section 26(1) of the Migratory Bird Regulations (Environment

Canada, Canadian Wildlife Service)

Alternatives to the project and alternative methods of carrying out the project

The only alternatives are to not conduct any cormorant management or to use a limited suite of control methods. The “no management – monitoring only” option risks the continued loss of terrestrial vegetation and associated habitat for other colonial waterbird species and other migratory bird species. A limited suite of control methods may not allow control efforts to be effective. Because the resource management implementation plan will direct activities for the next 10 years the full suite of possible management actions should be considered

Preliminary evaluation (cost, feasibility, effectiveness, potential effects)

This project has succeeded in reducing cormorant numbers on the islands, and thereby protecting biodiversity, while minimizing disturbance to other colonial waterbirds. The main potential effects are on the non-target species. Data from 5 years of management indicate no negative effects on these species. Costs are expected to be less than those incurred in previous years, but the project can be modified to reflect resource availability.

Mitigation features that will apply to the design of the project

As in all previous years of this project, extreme care is taken to ensure that the breeding success of non-target colonial birds is not compromised by MNR activities on the island. Care is also taken to ensure that cormorants and their chicks are dealt with in a humane way. Human safety is the primary concern.

Step 3: Assess Against Screening Criteria

Main potential net environmental effects

Net environmental effects are mainly positive, including improvement of ecological integrity through benefits to wildlife, both at Presqu'île and potentially across the Great Lakes basin. Negative effects are limited to demands on government services and impacts on the cormorant population. These are expected and reasonable negative impacts for this project.

Additional investigation and analysis required to confirm environmental effects

Monitoring is a key part of the implementation of this project. Monitoring results will inform future management decisions.

Step 4: Assign Project to Appropriate Category

Anticipated level of public or agency concern

High. A high level of concern has been shown previously in response to this project, and to similar projects in other jurisdictions. Most concern comes from specific groups.

This project has been assigned to **Category C**.

Brief rationale

This project continues actions that have been carried out since 2003 with minimal negative environmental impact. Nonetheless, public concern is expected to be high. All proposed activities are aimed at maintaining ecologically sustainable cormorant population levels at Presqu'île Provincial Park.

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
<ul style="list-style-type: none"> ▪ Values for which the provincial park or conservation reserve was established 							X		The islands and their treed environments are part of the park's unique natural heritage
Natural Environment Considerations									
<ul style="list-style-type: none"> ▪ Air quality 				X					
<ul style="list-style-type: none"> ▪ Water quality or quantity (ground or surface) 				X					
<ul style="list-style-type: none"> ▪ Species at risk or their habitat 				X					
<ul style="list-style-type: none"> ▪ Significant earth or life science features 				X					
<ul style="list-style-type: none"> ▪ Fish or other aquatic species, communities, or their habitat (including numbers, diversity and movement of resident or migratory species) 				X					
<ul style="list-style-type: none"> ▪ Land subject to natural or human-made hazards 				X					
<ul style="list-style-type: none"> ▪ Recovery of a species under a special management program (e.g. elk restoration) 				X					
<ul style="list-style-type: none"> ▪ Ecological integrity 							X		Cormorant management will help restore natural forest dynamics
<ul style="list-style-type: none"> ▪ Terrestrial wildlife (including numbers, diversity and movement of resident or migratory species) 							X		Cormorant management will prevent destruction of habitat for many species
<ul style="list-style-type: none"> ▪ Natural vegetation and terrestrial habitat linkages or corridors through fragmentation, alteration and/or critical loss 							X		Cormorant management will prevent destruction of habitat for many species
<ul style="list-style-type: none"> ▪ Permafrost 				X					
<ul style="list-style-type: none"> ▪ Soils and sediment quality 				X					
<ul style="list-style-type: none"> ▪ Drainage or flooding 				X					
<ul style="list-style-type: none"> ▪ Sedimentation or erosion 				X					
<ul style="list-style-type: none"> ▪ Release of contaminants in soils, sediments 				X					cormorant carcasses will be disposed of in a way that avoids the release of toxins into the soil
<ul style="list-style-type: none"> ▪ Natural heritage features and areas (e.g. areas of natural and scientific interest, provincially significant wetlands) 						X			The islands and their treed environments are part of the park's unique natural heritage
<ul style="list-style-type: none"> ▪ Other (specify) 									
Land Use, Resource Management Considerations									

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
▪ Remoteness (access inaccessible areas)				X					
▪ Navigation				X					Navigation around High Bluff Island may be restricted during culling periods
▪ Other projects within a park or reserve							X		Cormorant management is part of an ecosystem-based approach on the islands
▪ Other projects outside a park or reserve				X					Cormorant management projects occurring across the Great Lakes can benefit each other
▪ Traffic patterns or traffic infrastructure				X					
▪ Public or private recreation				X					
▪ Or create excessive waste materials				X					
▪ Or commit a significant amount of a non-renewable resource (e.g. aggregates, agricultural land)				X					
▪ Noise levels				X					
▪ Views or aesthetics				X					
▪ Another project or be a precondition or justification for implementing another project								X	Restoration of treed habitats cannot occur without decreasing cormorant impacts
▪ Uses, persons or property outside a park or reserve				X					
▪ Other (specify)									
Social, Cultural, and Economic Considerations									
▪ Archaeology				X					
▪ Built heritage				X					
▪ Cultural heritage landscapes				X					
▪ Sacred or traditional use sites				X					
▪ Or displace people, businesses, institutions, or public facilities				X					
▪ Community character, enjoyment of property, or local amenities				X					
▪ Demands on government services or infrastructure		X							Cormorant management requires staff time and resources
▪ Public health and/or safety				X					Safety protocols must be strictly adhered to
▪ Local, regional or provincial economies or businesses				X					
▪ Tourism values (e.g. resource-based tourist lodge)				X					
▪ Other (specify)	X								There are some ethical concerns in the community at large regarding killing cormorants
Aboriginal Considerations									
▪ First Nation reserves or communities				X					
▪ Spiritual, ceremonial, or cultural sites				X					
▪ Traditional land or resources uses, or affect economic activities				X					
▪ Aboriginal values				X					management

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
■ Lands subject to land claims				X					
■ Other (specify)									

Appendix 3. Record of Screening for Restoration

Step 1: Assess Project Against List of Projects

0 ID # 15/23 – Enhance, rehabilitate, restore, or manage wildlife habitat/maintain or restore natural environments

Step 2: Prepare Project Description

Name of Project	Restoration on Presqu'ile Islands (as part of the Presqu'ile Islands Resource Management Implementation Plan)
Provincial Park or Conservation Reserve name and location	Presqu'ile Provincial Park, Northumberland County
Purpose and rationale	Treed habitats on High Bluff Island have been affected by high numbers of deer and cormorants. Ongoing active restoration will complement deer and cormorant management activities and enhance natural recovery of the ecosystem.
Project description, scale, duration	Restoration activities will take place on High Bluff Island and possibly Gull Island from 2009 – 2018. Restoration activities may include tree and seed planting, watering of planted trees, protection of existing and planted woody vegetation, control of invasive alien species, and soil restoration.
Study area that may be affected	This screening applies to restoration activities that take place on High Bluff and/or Gull Island
Applicable MNR policies, procedures, manuals, guidelines	Ontario Parks Policy 2.16 – Use of Pesticides and Herbicides in Provincial Parks
Other required approvals or permits	none required
Alternatives to the project and alternative methods of carrying out the project (explain if no alternatives)	The only alternative is to not actively restore treed habitat on the island. This option may lead to the potential net loss of breeding species of birds on the island as their habitat disappears due to the impacts of cormorants and deer. Restoration is intended to take

place in combination with deer and cormorant management. The island vegetation may recover naturally but such recovery is expected to occur over the long term.

Preliminary evaluation (cost, feasibility, effectiveness, potential effects)

There is expected to be little additional cost associated with these activities as materials for planting are obtained from within the park, and staff involved in cormorant management are already present on the island.

Mitigation features that will apply to the design of the project

No mitigation is necessary for this project.

Step 3: Assess Against Screening Criteria

Main potential net environmental effects

Net potential environmental effects will be positive, as this project will enhance treed habitat to recover.

Additional investigation and analysis required to confirm environmental effects

None required.

Step 4: Assign Project to Appropriate Category

Anticipated level of public or agency concern

Low to none – this is an inexpensive project that has already shown success in its pilot phases.

This project has been assigned to **Category B**.

Brief rationale

The proposed project is part of a larger ecosystem management program for the island. Net effects from this project are positive.

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
<ul style="list-style-type: none"> ■ Values for which the provincial park or conservation reserve was established 							X		The islands and their treed environments are part of the park's unique natural heritage
Natural Environment Considerations									
<ul style="list-style-type: none"> ■ Air quality 				X					
<ul style="list-style-type: none"> ■ Water quality or quantity (ground or surface) 				X					

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
■ Species at risk or their habitat				X					
■ Significant earth or life science features				X					
■ Fish or other aquatic species, communities, or their habitat (including numbers, diversity and movement of resident or migratory species)				X					
■ Land subject to natural or human-made hazards				X					
■ Recovery of a species under a special management program (e.g. elk restoration)				X					
■ Ecological integrity							X		Restoration will help restore natural forest dynamics
■ Terrestrial wildlife (including numbers, diversity and movement of resident or migratory species)							X		Restoration will help young woody vegetation grow, which provides habitat
■ Natural vegetation and terrestrial habitat linkages or corridors through fragmentation, alteration and/or critical loss							X		Restoration will help young woody vegetation grow, which provides habitat
■ Permafrost				X					
■ Soils and sediment quality				X					
■ Drainage or flooding				X					
■ Sedimentation or erosion							X		Restoration will help reduce the loss of soil from the island by maintaining tree cover
■ Release of contaminants in soils, sediments				X					
■ Natural heritage features and areas (e.g. areas of natural and scientific interest, provincially significant wetlands)						X			The islands and their treed environments are part of the park's unique natural heritage
■ Other (specify)									
Land Use, Resource Management Considerations									
■ Remoteness (access inaccessible areas)				X					
■ Navigation				X					
■ Other projects within a park or reserve							X		Restoration is part of an ecosystem-based approach on the islands
■ Other projects outside a park or reserve				X					
■ Traffic patterns or traffic infrastructure				X					
■ Public or private recreation				X					
■ Or create excessive waste materials				X					
■ Or commit a significant amount of a non-renewable resource (e.g. aggregates, agricultural land)				X					
■ Noise levels				X					
■ Views or aesthetics							X		Part of the aesthetics of High Bluff Island is its treed habitats and the wildlife they support
■ Another project or be a precondition or justification for implementing another project				X					
■ Uses, persons or property outside a park or reserve				X					

Screening Criteria "This project may affect ..."	Rating of Potential Net Effect								Comments, Rationale
	-H	-M	-L	Nil	Unk	+L	+M	+H	
■ Other (specify)									
Social, Cultural⁵, and Economic Considerations									
■ Archaeology				X					
■ Built heritage				X					
■ Cultural heritage landscapes				X					
■ Sacred or traditional use sites				X					
■ Or displace people, businesses, institutions, or public facilities				X					
■ Community character, enjoyment of property, or local amenities				X					
■ Demands on government services or infrastructure			X						Restoration requires staff time and resources
■ Public health and/or safety				X					
■ Local, regional or provincial economies or businesses				X					
■ Tourism values (e.g. resource-based tourist lodge)				X					
■ Other (specify)				X					
Aboriginal Considerations									
■ First Nation reserves or communities				X					
■ Spiritual, ceremonial, or cultural sites				X					
■ Traditional land or resources uses, or affect economic activities				X		X			
■ Aboriginal values				X		X			
■ Lands subject to land claims				X					
■ Other (specify)									

⁵ Where projects may affect a known or suspected cultural resource, further technical heritage studies may be warranted. Technical studies that may be required include items such as archaeological assessments by licensed archaeologists and built heritage studies by qualified heritage consultants if a significant built heritage structural feature is being affected.

MNR shall develop a technical guideline, in consultation with the Ministry of Culture, to address how cultural heritage resources should be identified, and how to assess their significance and develop mitigation techniques.

Appendix 4. Summary of Initial Public Consultation

**Presqu'île Islands Resource Management
Class EA for Provincial Parks and Conservation Reserves
Public consultation summary – Initial Notice
EBR Registry Number 010-5191**

Distribution of Notice

Direct Mailing: On November 25, 2008 mailed or emailed 76 individuals/groups:

- relevant government and interest group contacts considered mandatory for park management planning
- groups and individuals that responded during previous cormorant consultation
- 1 First Nation

Media Ads: Nov. 27, 2008 – Brighton Independent
Nov. 27, 2008 – Cobourg Daily Star
Nov. 27, 2008 – Belleville Intelligencer
Nov. 28, 2008 – Belleville Quinte Community Press
Nov. 28, 2008 – Trenton Trentonian

Internet: Background Information posted on Ontario Parks website
November 24, 2008.

EBR: Information notice posted November 24, 2008
No comment period provided through EBR website

- One of the direct mailings was returned marked 'Return to Sender'.
- Six of the electronic mailings experienced 'Delivery Failure'
- One response was received after December 29 but was included in the summary below.

Consultation Results

Overview

- 105 individuals and 6 groups provided a response
- Few individuals requested further information at this time
- Additional information was provided to three non-government organizations who requested it
- Only one respondent quoted the EBR number
- No respondents commented specifically on the vegetation restoration aspects of this project

Table 1. Summary of responses by nature of response

Position	Individuals	Groups	Total
Total Supporting	31	4	35
<i>All cormorant and deer management</i>	3	1	
<i>Only cormorant management mentioned</i>	28	3	
Total Opposed	70*	2	72
<i>All cormorant and deer management</i>	43	2	
<i>Only cormorant and deer culling mentioned</i>	13	0	
<i>Only cormorant management mentioned</i>	5	0	
<i>Only cormorant culling mentioned</i>	8	0	
<i>Only deer culling/management mentioned</i>	1	0	
Unclear	4	0	4
TOTAL	105	6	111

*45 of these individuals copied Minister Cansfield in their response

Table 2. Breakdown of location of supportive and opposed respondents

Location	Supportive	Opposed
Local (K0H, K0K, K8N, K8V, K9A)	6	6
Elsewhere in Ontario	12	28
Outside Ontario	0	7
Address unknown	13	29

- Responding individuals were local, from Ontario, and from outside of Ontario; some respondents did not include their address in their email messages
- Relatively few respondents mentioned that they were park visitors (both supportive and opposed)
- Both opposed groups were from Toronto
- Of the supportive groups, 2 were local, 1 was Ontario-based, and 1 was from the U.S.

Media

- 2 media articles appeared:
 - “Controversy over cormorant cull about to re-ignite” – The Community Press, Dec. 16, 2008 (tone – balanced)
 - “Public consultation process begins on proposed Presqu’île park management projects” – Port Hope Evening Guide, Dec. 1, 2008 (tone – informative)
- Some groups provided information to their memberships through websites or email

Consideration of Comments

- At this early stage of consultation little information was provided to the public; many responses were based on previous management at Presqu’île or on information provided by outside sources
- Many opposed respondents quoted directly from information available on environmental non-government organization websites

- Some comments, both supporting and opposing wildlife management, were clearly based on strongly held emotional or philosophical standpoints

Supportive Respondents

General comments	Consideration in document
<ul style="list-style-type: none"> • Of those that support cormorant management, many mentioned fish and/or water quality. 	<ul style="list-style-type: none"> • The purpose of cormorant management on High Bluff and Gull Islands is to manage the cormorant population to prevent the loss of specific woody habitat areas and permit recovery of woody habitat (Section 3.3.1) • Management of aquatic resources is beyond the scope of resource management at Presqu'île
<ul style="list-style-type: none"> • Some respondents thought that cormorants should be severely reduced or eradicated and some (9 individuals, 1 group) expressed support for a province-wide cormorant management program 	<ul style="list-style-type: none"> • This implementation plan, and the projects it describes, are specific to the islands at Presqu'île and their habitat biodiversity (Section 2.2, Section 3.1) • Province-wide cormorant management is beyond the scope of this consultation

Opposed Respondents

General comments	Consideration in document
<ul style="list-style-type: none"> • Many opposed respondents were against all forms of wildlife management 	<ul style="list-style-type: none"> • The Presqu'île Provincial Park Management Plan (2000) provides policy direction for cormorant, deer, and vegetation management at Presqu'île • Under the <i>Provincial Parks and Conservation Reserves Act</i> the maintenance and restoration of ecological integrity is one of the guiding principles for park management • The ecological integrity of High Bluff and Gull Islands has been significantly affected by hyper-abundant species (Section 1)
<ul style="list-style-type: none"> • Many opposed respondents were concerned about cruelty to cormorants and their chicks 	<ul style="list-style-type: none"> • Culling, if it takes place, is expected to be on a much smaller scale than in previous years (Section 3.3.1, Section 3.3.3) • Adults at nests with hatched young would not be culled. Based on previous management, shooting accuracy is expected to be very high; nonetheless, some birds may be wounded. Any wounded birds would be dispatched in a

	<p>humane manner as soon as possible following cull events to minimize suffering (Section 3.3.6)</p> <ul style="list-style-type: none"> • Staff will make every effort to avoid culling adults at nests with chicks and will attempt to not remove nests with hatched chicks. Every effort will be made to deal with cormorants in a humane way, ensuring suffering is minimized (Sections 3.3.9)
<ul style="list-style-type: none"> • Some opposed respondents were concerned about disturbance to other nesting colonial waterbirds 	<ul style="list-style-type: none"> • Results from previous management activities have shown that cormorant management has not had a negative effect on other species (Section 3.3.7) • Extreme care will continue to be taken to ensure that management activities on the island do not compromise the breeding success of other tree-nesting colonial waterbirds on the islands (Section 3.3.9)
<ul style="list-style-type: none"> • Some opposed respondents were concerned about the cost of the resource management projects 	<ul style="list-style-type: none"> • Due to the success of previous resource management at Presqu'île, the effort required to maintain specific woody habitat areas is expected to be much less than in previous years (Section 3.3.3)
<ul style="list-style-type: none"> • A few individuals mentioned that they were park visitors and questioned the need to reduce deer numbers as they have not seen many deer in recent years. • Some of these individuals also commented on the waterfowl hunt in the park. 	<ul style="list-style-type: none"> • This plan will guide resource management activities on the Presqu'île Islands until 2019 (Section 1) • Deer numbers were previously above the ecological carrying capacity of the park's environment and can fluctuate over time. If monitoring indicates that deer numbers have increased to a level at which they are negatively affecting natural ecosystem dynamics, management will be considered (Section 3.2) • The waterfowl hunt is beyond the scope of this consultation

Appendix 5. Evaluation of Project Alternatives

Likelihood of the projects to meet the overall purpose of the plan. The preferred alternative is shaded.

	Cormorant Management Alternatives		
Project combinations	Alternative 1 full suite of cormorant management	Alternative 2 limited suite of cormorant management activities (no culling)	Alternative 3 no cormorant management
Deer management	moderate to high	moderate to low	low
Habitat restoration	moderate (depending on deer numbers)	moderate to low (depending on deer numbers)	low
Deer management and habitat restoration together	high	moderate	moderate to low

Alternative 1 - full suite of cormorant management activities (including culling as needed)

- preferred cormorant management alternative
- provides the greatest flexibility to deal with cormorant population numbers and use of nesting sites
- provides greatest capability to protect nesting habitat and nest sites of other colonial tree-nesting species (i.e. herons and egrets)
- culling provides opportunity to protect specific nesting sites while minimizing impacts on other colonial tree-nesting species

Alternative 1 + Deer management only – moderate to high

- management of both deer and cormorant populations will reduce the pressures on woody vegetation
- natural regeneration will occur in some areas without pressure from deer browse
- natural regeneration is a passive restoration activity and is a slower process than active habitat restoration
- nesting habitat for colonial tree-nesting species is likely to be maintained in the long term
- overall woody habitat cover is not likely to return to previous levels

Alternative 1 + Habitat restoration only – moderate

- management of cormorants will reduce only one of the pressures on woody vegetation
- active habitat restoration will be a positive activity
- if deer numbers become high on the islands, deer browsing will damage planted trees and natural regeneration
- with low deer numbers, natural regeneration and active habitat restoration activities would be expected to be successful

- nesting habitat for colonial tree-nesting species expected to be maintained and restoration of habitat begun

Alternative 1 + Deer management + Habitat Restoration – high

- preferred overall management alternative
- management of both deer and cormorant populations will reduce the pressures on woody vegetation
- natural regeneration will occur in some areas without pressure from deer browse
- active habitat restoration would be expected to be successful
- nesting habitat for colonial tree-nesting species expected to be maintained and restoration of habitat begun

Alternative 2 - limited suite of cormorant management activities (no culling)

- limited flexibility to deal with cormorant population numbers and use of nesting sites
- limited capability to protect nesting habitat and nest sites of other colonial tree-nesting species
- no opportunity to protect specific nesting sites without disturbing other colonial tree-nesting species

Alternative 2 + Deer management only – moderate to low

- management of both deer and cormorant populations will reduce the pressures on woody vegetation
- natural regeneration will occur in some areas without pressure from deer browse
- natural regeneration is a passive restoration activity and is a slower process than active habitat restoration
- reduced capability to control cormorant population size could lead to increased impacts on woody vegetation, offsetting benefits associated with natural regeneration
- no opportunity to protect specific nesting sites without disturbing other colonial tree-nesting species

Alternative 2 + Habitat restoration only – moderate to low

- management of cormorants will reduce only one of the pressures on woody vegetation
- active habitat restoration will be a positive activity
- if deer numbers become high on the islands, deer browsing will affect planted trees and natural regeneration
- with low deer numbers, habitat restoration would be expected to be successful
- reduced capability to control cormorant population size could lead to increased impacts on woody vegetation, offsetting benefits associated with natural regeneration and habitat restoration
- no opportunity to protect specific nesting sites without disturbing other colonial tree-nesting species

Alternative 2 + Deer management + Habitat restoration – moderate

- management of both deer and cormorant populations will reduce the pressures on woody vegetation
- natural regeneration will occur in some areas without pressure from deer browse
- active habitat restoration would be expected to be successful
- reduced capability to control cormorant population size could lead to increased impacts on woody vegetation, offsetting benefits associated with natural regeneration and habitat restoration
- no opportunity to protect specific nesting sites without disturbing other colonial tree-nesting species

Alternative 3 - no cormorant management activities (monitoring may continue)

- no capability to protect woody vegetation, resulting in a complete loss of existing nesting habitat of other colonial tree-nesting species
- as other woody vegetation becomes suitable for nesting by colonial tree-nesting species, it will be occupied and affected by nesting cormorants

Alternative 3 + Deer management only – low

- natural regeneration will occur in some areas without pressure from deer browse
- natural regeneration is a passive restoration activity and is slower process than active habitat restoration
- management of the deer population will reduce the pressures on natural regeneration
- inability to control cormorant population size will result in a complete loss of existing nesting habitat of other colonial tree-nesting species
- as woody vegetation grows and becomes suitable for nesting by colonial tree-nesting species, it may be occupied and affected by nesting cormorants

Alternative 3 + Habitat restoration only – low

- active habitat restoration will be a positive activity
- if deer numbers become high on the islands, deer browsing will affect planted trees and natural regeneration
- with low deer numbers, natural regeneration and active habitat restoration activities would be expected to be successful
- inability to control cormorant population size will result in a complete loss of existing nesting habitat of other colonial tree-nesting species
- as woody vegetation grown and becomes suitable for nesting by colonial tree-nesting species, it may be occupied and affected by nesting cormorants

Alternative 3 + Deer management + Habitat restoration – moderate to low

- natural regeneration will occur in some areas without pressure from deer browse
- active habitat restoration will be a positive activity
- management of the deer population will reduce the pressures on natural regeneration and plantings associated with habitat restoration
- inability to control cormorant population size will result in a complete loss of existing nesting habitat of other colonial tree-nesting species
- as woody vegetation grows and becomes suitable for nesting by colonial tree-nesting species, it will be occupied and affected by nesting cormorants

Appendix 6. Summary of Second Public Consultation

Public consultation summary Presqu'île Islands Resource Management – Second notice EBR Registry Number 010-5191

DISTRIBUTION OF NOTICE

- Direct Mailing:** On January 29, 2009 mailed or emailed 131 individuals/groups:
- relevant government and interest group contacts considered mandatory for park management planning
 - groups and individuals that responded during initial consultation period for Presqu'île islands resource management
 - 1 First Nation
- Media Ads:** Jan. 29, 2009 – Brighton Independent
Jan. 29, 2009 – Cobourg Daily Star
Jan. 29, 2009 – Belleville Intelligencer
Jan. 30, 2009 – Belleville Quinte Community Press
Jan. 30, 2009 – Trenton Trentonian
- Internet:** Draft Resource Management Implementation plan for islands posted on Ontario Parks website Jan. 29, 2009.
- EBR:** Information notice with a 45-day comment period for the Islands Resource Management Implementation Plan posted Jan. 29, 2009
-

CONSULTATION RESULTS

Overview

- 20 individuals and 4 groups provided a response; 3 of these individuals and 1 of these groups were commenting for the first time
- 6 individuals and 2 groups indicated that they reviewed the plan; the remainder provided general opinions on cormorant and deer management
- 2 individuals and 3 groups quoted the EBR number
- Some comments were directed specifically at cormorant and/or deer management, and some commented on a combination of activities.
- Comments were provided by 1 group on the project screenings. However, these are included in the plan for information only and are not changed once completed.
- A summary of specific comments on the plan and Ontario Parks response is provided in Table A-1
- Two groups requested a site visit and dispute resolution as provided for under the Class EA. A site visit and two meetings were held. The results of the alternative dispute resolution process are not recorded here.

Cormorant management

- 1 individual did not comment on cormorant management
- 1 group stated they were “not opposed” to cormorant management

Supportive (9)

- 8 individuals and 1 group supported cormorant management
 - 2 of these individuals generally supported cormorant management as described in the plan
 - 4 of these individuals indicated general support for any reduction in cormorant numbers
 - 1 of these individuals did NOT support cormorant management as described in the plan, indicating that more management is required than what is described in the plan
 - 1 of these individuals was unclear in their response to the plan
 - 1 group generally supported the plan, but stated they thought more management was required (ie: greater reduction in cormorant numbers)

Opposed (13)

- 7 individuals and 2 groups were opposed to any cormorant management
 - 3 of these individuals and 1 group commented specifically on the plan
- 4 individuals were generally opposed to cormorant culling, but did not comment on the plan

Deer management (6 supportive, 9 opposed)

- 4 individuals and 2 groups supported deer management generally in the park
- 7 individuals and 2 groups were opposed to deer management
 - 1 of these individuals and 1 group commented specifically on the plan
 - 2 of these individuals were park visitors
 - 4 of these individuals were generally opposed to any wildlife management
- 9 individuals did not comment on deer management

Restoration (1 supportive, 2 opposed)

- 1 individual generally supported vegetation restoration in the park
- 1 individual and 1 group opposed vegetation management on the islands
- 1 individual was unclear in their response to vegetation management on the islands
- 17 individuals and 3 groups did not comment on vegetation management

Table A-1.

Presqu'île Islands Resource Management Implementation Plan
 Issues raised during consultation on draft plan and Ontario Parks' response

Issue	Commenting parties	Ontario Parks response
General		
The plan does not reference the fact that the islands are protected as Wilderness Areas under the Wilderness Area Act	<ul style="list-style-type: none"> • 1 individual 	<ul style="list-style-type: none"> • Reference to the Act has been included in the plan (section 1) • All proposed activities are in accordance with the Wilderness Areas Act
The plan does not reference the 1978 survey of breeding birds of High Bluff Island and a 1988 paper on the history of colonial birds at Presqu'île	<ul style="list-style-type: none"> • 1 individual 	<ul style="list-style-type: none"> • Reference to the survey has been added to the plan (section 2.2.3)
Ontario Parks is trying to maintain a “static” ecosystem	<ul style="list-style-type: none"> • 1 individual 	<ul style="list-style-type: none"> • Sections 2.2, 2.2.2, and 3.1 have been updated to clarify • Ontario Parks recognizes that the island ecosystems are dynamic. However, it is clear that when a native species becomes hyper-abundant due to human activities it can influence ecosystem dynamics to the detriment of other less common species, reducing biodiversity
Various critiques of language used throughout, particularly the word “overabundant”	<ul style="list-style-type: none"> • 2 individuals • 2 groups 	<ul style="list-style-type: none"> • Wording has been adjusted where appropriate to more correctly reflect our knowledge of the islands' ecosystems as well as our management purpose • A definition of the term hyper-abundant has been provided in section 1
Various comments demonstrating a misunderstanding of the island's vegetation communities, including restoration activities	<ul style="list-style-type: none"> • 1 individual • 2 groups 	<ul style="list-style-type: none"> • High Bluff Islands vegetation community descriptions have been updated in sections 2.2.2 and 3.4.1
Various comments demonstrating a misunderstanding of the use of the island by monarch butterflies	<ul style="list-style-type: none"> • 2 individuals • 2 groups 	<ul style="list-style-type: none"> • Section 2.2.2 has been updated to clarify • Monarch butterflies use High Bluff Island for three different purposes: to feed from nectar flowers in the old field areas, to lay eggs on milkweed in the old field areas, and to roost during

Issue	Commenting parties	Ontario Parks response
		<p>their fall migration in woody areas. While old field areas are extensive and stable on the island, woody areas are threatened by cormorants and deer and declining.</p> <ul style="list-style-type: none"> • While monarch behaviour is not well-understood by the scientific community, there is recognition that monarchs use peninsulas and points of land during their migration. High Bluff Island is one of the locations in the park that provides excellent migration habitat, as it has all three habitat components mentioned above. • While the main threat to the monarch butterfly is habitat loss in its overwintering area in Mexico, it is Ontario Parks' mandate to protect ecological integrity, which includes all natural components of an ecosystem.
Various comments demonstrating a misunderstanding of the concept of carrying capacity	<ul style="list-style-type: none"> • 1 individual • 2 groups 	<ul style="list-style-type: none"> • A clarification of habitat carrying capacity is provided in section 2
Critiques of the reference to vegetation communities formerly on High Bluff Island	<ul style="list-style-type: none"> • 1 individual • 1 group 	<ul style="list-style-type: none"> • Reference to these communities have been removed as they are no longer present and are not relevant to the current management purpose
<p>Critiques of the significance and population status of herons and egrets in Ontario</p> <p>Heron monitoring data should be included in the plan</p>	<ul style="list-style-type: none"> • 1 individual • 2 groups 	<ul style="list-style-type: none"> • The known population status of these species has been updated in sections 2.2.3 and 3.3 • Heron monitoring data has been included in Table 1
Cormorant Management		
target population ranges should be set for DCCO on islands	<ul style="list-style-type: none"> • 1 group 	<ul style="list-style-type: none"> • Target population ranges will not be set as the management purpose is habitat-specific and dependent upon cormorant nesting behaviour
Ontario Parks should work with the	<ul style="list-style-type: none"> • 2 individuals 	<ul style="list-style-type: none"> • Provincial strategies are beyond the scope of this project

Issue	Commenting parties	Ontario Parks response
provincial government on an integrated cormorant management plan to avoid displacing cormorants to other areas	<ul style="list-style-type: none"> • 1 group 	
Cormorant control should take place across both islands Cormorant control measures are too limited	<ul style="list-style-type: none"> • 1 individual • 1 group 	<ul style="list-style-type: none"> • Cormorant management activities will support the purpose of minimizing impacts on specific woody habitat areas (section 3.3) • The 10-year plan will be adaptive. Management activities each year will be adjusted based on observations of impacts.
Cormorants should not be managed since natural systems regulate their own numbers The arrival of cormorants on High Bluff Island and subsequent vegetation destruction is natural; eventually cormorant numbers will stabilize and the vegetation will return naturally	<ul style="list-style-type: none"> • 3 individuals • 1 group 	<ul style="list-style-type: none"> • Cormorants will continue to nest on High Bluff Island and be an important part of the mixed waterbird colony • Factors contributing to the increase of cormorants are explained in section 2 of the plan. Additionally, cormorants are responding to increased food availability across the continent and their numbers in tree-nesting colonies exceed the ability of the habitat to persist. It is expected that cormorants will cause irreversible impacts on High Bluff Island vegetation communities, as experienced at Gull Island.
Lack of details in plan of how cormorants will be treated humanely – various concerns outlined (minimizing wounding rates, ensuring shot cormorants are dead, shooting adults with hatched young, removing nests with hatched young)	<ul style="list-style-type: none"> • 1 group 	<ul style="list-style-type: none"> • Recommendations from the commenting group and protocols from Parks Canada have been reviewed and have been incorporated where appropriate in sections 3.3.5 • Some operational details will be described in the operations plan
Egg oiling should include doing “float-tests” and occur at night	<ul style="list-style-type: none"> • 1 group 	<ul style="list-style-type: none"> • Oiling activities are started at the initiation of nesting and individual eggs are marked so that the age of eggs can be tracked. • Float testing would cause too much disturbance to the colony as it is time-consuming. • Night oiling will be considered and has been added to the plan 3.3.5
Creation of ground-nesting sites sounds	<ul style="list-style-type: none"> • 1 individual 	<ul style="list-style-type: none"> • Previous activities have shown that cormorant are drawn to

Issue	Commenting parties	Ontario Parks response
ineffective		artificial ground nesting areas on these islands
There is no acknowledgement of the “value” of DCCO to biodiversity	<ul style="list-style-type: none"> • 1 individual • 1 group 	<ul style="list-style-type: none"> • DCCO are one of several species in this diverse waterbird colony and will not be eliminated from the islands. Section 3.3 has been updated to reflect this.
Great blue herons and great egrets arrived at High Bluff Island after DCCO	<ul style="list-style-type: none"> • 2 individuals • 1 group 	<ul style="list-style-type: none"> • Section 3.3 has been updated to address this fact. • Colonial waterbirds may be drawn to areas where other colonial waterbirds are present. They may occupy habitat together, but DCCO, unlike herons and egrets, can nest on the ground or in trees. Therefore, if DCCO activity causes all the trees die and fall in a nesting colony over time, it will no longer be suitable for use by herons and egrets. This is a concern as suitable habitat for mixed waterbird colonies is becoming more limited in southern Ontario.
Cormorant control may affect other nesting species	<ul style="list-style-type: none"> • 1 individual • 1 group 	<ul style="list-style-type: none"> • Mitigation of impacts on other nesting species are described in section 3.3.3 and 3.3.6 of the plan
MNR staff presence and activities have caused a decline in great blue herons, which are declining provincially	<ul style="list-style-type: none"> • 2 individuals 	<ul style="list-style-type: none"> • Great blue herons nest in the tallest trees, most of which have fallen on the island. GBHE are declining on the island due to loss of habitat on the island (Table 1, sections 2.2.3, 3.3.1, 3.3.2).
Management actions caused DCCO to move into habitat used by herons and egrets	<ul style="list-style-type: none"> • 1 individual 	<ul style="list-style-type: none"> • Section 3.3.2 and Table 2 have been updated to clarify • All tree-nesting colonial waterbirds have lost habitat on High Bluff Island as the large trees die and fall annually • DCCO continued to move into habitat occupied by herons and egrets in 2008 and 2009 when no management occurred • This comment is based on assumptions about previous management activities
Confusion regarding heron and cormorant use of Sebastopol Point	<ul style="list-style-type: none"> • 1 individual • 1 group 	<ul style="list-style-type: none"> • In the past, cormorants regularly used Sebastopol Point to rest, and BCNH nested in the willow • In 2007 management on the islands was delayed until late April. By the time management began, there were DCCO nests in the willow tree and no BCNH nests. The DCCO nests were

Issue	Commenting parties	Ontario Parks response
		regularly removed from the willow. A single BCNH nested in early May but its nest quickly disappeared, while DCCO nests continued to be built in the tree.
Various comments on the impacts of Ontario Parks management activities on the islands (e.g. compost, ATV trail)	<ul style="list-style-type: none"> • 2 individuals • 1 group 	<ul style="list-style-type: none"> • Two small compost piles (less than 30 m²) were constructed next to each other in an area selected by the Ontario Ministry of Environment. Both piles have since been reduced to less than half their original size as they have decomposed. • Native trees grown from seeds collected within the park have been planted on upland areas that would have been previously treed • A small tent and privy has been established near the shoreline of High Bluff Island for use by staff conducting management, monitoring, and restoration work. The site was selected by C. Weseloh of the CWS in order to minimize disturbance to other colonial waterbirds • A small ATV and footpath has been created to facilitate movement by staff doing management, monitoring, and restoration work. This is essential to concentrate activity to a limited area and because movement is severely restricted by the dense nettles and thistles that have grown in response to cormorant guano. • This comment is based on assumptions about previous cormorant management activities
Deer Management		
target population ranges should be set for deer on islands	<ul style="list-style-type: none"> • 1 group 	<ul style="list-style-type: none"> • target population ranges will not be set as deer numbers on the island fluctuate between and within years and the management goal is vegetation-specific
There is no acknowledgement of the “value” of deer to biodiversity Deer should not be managed since natural systems regulate their own	<ul style="list-style-type: none"> • 1 group 	<ul style="list-style-type: none"> • Sections 2 and 3.2 have been updated to clarify • Deer will not be eliminated from the park • Factors contributing to the increase of deer are explained in section 2 of the plan.

Issue	Commenting parties	Ontario Parks response
numbers		<ul style="list-style-type: none"> Impacts of hyper-abundant deer have been thoroughly documented in the scientific literature. Section 2 has been updated to clarify this.