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East Sister Island: Briefing Notes September 30, 2004

Authored by AnnaMaria Valestro, Peaceful Parks Coalition

Reviewed by Barry Kent MacKay, Animal Protection Institute

In its ongoing effort to justify reducing the population of Ontario's Double-crested Cormorants, the Ontario Ministry of Natural Resources has raised the spectre of loss of endangered species on East Sister, and other small islands in southern Lake Erie.

According to the Ministry, 23 rare plant species are found on East Sister Island. One, the Rough Aven (*Geum virginianum*), is, within Ontario, found only on East Sister Island, although it is found in all the contiguous eastern U.S. states except Vermont and Maine in the northeast, and Florida in the south.

The others are found in various locations in southwestern Ontario, such as Essex County, including other islands within the Lake Erie archipelago.

Southern Ontario is the northern fringe of their respective ranges. These plants are commonly found south of the Canadian border.

None of these plants are currently endangered, threatened or vulnerable within their range, overall.

Aliens and Double Standard

In its justification for reducing population levels of Double-crested Cormorants the Ministry has previously stated (David Ramsay, pers. comm., with senior author of this note) that the species is "invasive". That, clearly, is not the case, but ironically, if we presume that plant species such as the Rough Aven arrived on East Sister Island, it could, itself, be declared "invasive", and much more so than the Double-crested Cormorant.

The small islands of southern Lake Erie have been invaded by a range of plant species that did not "always" occur there, and population levels of those plants go up and down in accordance to a suite of factors, just as do population levels of birds.

But the "mindset" is that cormorants are somehow "wrong" and the plants somehow "right". The impact of non-native (alien) plant species on native flora is likely greater than that of the arrival of cormorants at any rate, but cormorants are targeted in response to political pressure.

PO Box 326, Station B,

Toronto, Ontario

Canada, M5T 2W2

T: 416.537.3212

W: www.peacefulparks.org

E: ppc@peacefulparks.org



Is Change Natural?

Our argument is that both anthropogenic changes and “natural” changes inevitably occur, and are not inherently “bad” or “good” except as they impact on subjective values.

One of those values that is widely shared within the environmental community, is the protection of rare or endangered fauna and flora.

There is no flora on East Sister Island that is endangered. The Lake Erie Water Snake is a distinct taxon, at the subspecies level, endemic to the region, and rare enough to warrant full protection. But so far there is no indication that the presence of colonial water birds, including cormorants, poses a threat to the snake’s survival, and indeed, could aid it to the degree that there is an increase in animal biomass, and ground cover, beneficial to the snake.

Why are They There?

Many factors, both “natural” and anthropogenic, influence what species, and how many, of various flora and fauna occur on islands of southern Lake Erie.

Since most of the focus has been on East Sister Island, we will focus on that island in this briefing note.

In the early 1900’s, East Sister Island contained a house and 4 hectares of peach orchards and garden crops. The island is a total of 15 hectares, and so the influence of early human colonization would have been significant.

According to the “A Life Science Inventory And Evaluation Of Six Natural Areas In The Erie Islands (Ontario) OMNR 1995 - Field work 1988, “guano deposits have killed off some trees and herbs but the overall available nutrients in the soil has probably increased.”

Thus, with the shift away from influence asserted by human agency (the farm), there has been an increase in “natural” agents (birds) who continue to influence the nature of the island.

In 1988, of the 29 rare plants listed, only 14 were actually sighted. In 2000, only 6 rare plants were actually sighted, and only three were sighted in 2004.

The number of cormorant nests from 1981 (first nesting) to 1987 were: 6, 6, 17, 40, 133, 292 and 587. It seems highly unlikely that such few nesting cormorants would have such a large impact on the rare plants unless these plants were already poorly represented on East Sister Island. The fact that the cormorants survived, and multiplied, indicates a strong carrying capacity for the species. There is no inherent reason why any given plant species “belongs” where conditions are marginal, in preference to any animal species, for whom conditions are very good.

The only rationale is esthetical, in the absence of concern for the protection of endangered species - plant or animal.



According to the document, "A Natural Science Inventory Report" (OMNR 1971), "The moist to wet lowland forest on the interior of the island is in rather heterogeneous condition possibly due to a combination of local blowdown from past storms and the accumulation of guano from the extensive heronry that is found there." Records of this heronry date from 1953.

Thus "natural" alteration of the nature of the plant profile for East Sister Island is well documented, if we assume that both herons and wind are natural. There is no reason to declare the results of nature to be "wrong" in some absolute sense.

In 1971, it was noted that there was, by then, a great host of "weedy" plant species such as motherwort (*Leonurus cardiaca*), lamb's-quarters (*Chenopodium album*), and poke-weed (*Phytolacca americana*). The proliferation of these "weedy" plants was thought to be introduced by the migrant and resident bird population.

However, the issue is complicated by virtue of the anthropogenic origin of the first two species, motherwort and lamb's-quarters, neither of which are native to North America.

Thus two of the most common ground cover species arrived "unnaturally" as a result of human intervention, in North America, however they arrived at East Sister Island. Whether the third species, the pokeweed, native to North America, arrived "on its own" or not, is moot. However, there is nothing "unnatural" about it arriving via birds, as birds are a "natural" means of plant distribution, with some plants dependent upon birds for their distribution.

All of this change did occur from an inextricable blend of "natural" and human-caused activity before the arrival of the cormorants as a nesting species on East Sister Island. Such change is what happens; the nature of nature, and the nature of islands.

No cormorants were found nesting at East Sister Island until 1981, but were recorded as migrant visitors in 1971. It was at this time that the Great Lakes Double-crested Cormorant was at an extremely low ebb in the Great Lakes basin, not yet recovered from the effects of DDT in the environment, and presumably high level of persecution prior to that. Pre-20th Century numbers of the species in the Great Lakes basin simply can't be reliably estimated, but it is known that the species did occur.

Seventy Years of Change:

In 1970, a paper was published in the Michigan Botanist, "Changes in the Vascular Flora of Seven Small Islands in Western Lake Erie" (Duncan and Stuckey), that measured the changes over 70 years - 1903, 1939, 1940 and 1941, and 1967, 1968 and 1969, of the vascular plant communities. East Sister Island was not one of the seven islands under study, but the findings of this study would still generally apply.

This study found:

Floras are continually in a state of flux, and any contemporary floristic analysis should take into account those changes that have occurred through time, and the possible factors affecting those changes.



For example:

The vascular flora on four of the small islands underwent change to the extent that 30-40% of the species seen in 1939 were not seen in 1969.

Another two islands experienced more drastic floristic changes of 68% and 67%, and one island had all of the vascular flora disappear.

Considering the flora as a whole for these seven islands, 261 species were noted in 1939, of which only 196 were found in 1969, for a 25% reduction in the flora.

Obviously, none of these losses had anything to do with cormorants. This percentage is lower than that for any one island, because some species that disappeared from all of the islands where they were seen in 1939, were seen in 1969 on one or more of the other islands.

This paper suggests that many of the changes could have occurred in very short periods of time influenced by environmental conditions such as wave erosion, ice action, fluctuating water levels, and bird inhabitation.

Obviously, if it is acceptable to use artificial means to protect such flora, there are many available, such as physical transplanting, seawalls, or dikes, that have never been implemented.

Similarly, if it is acceptable to use artificial means to reduce the influence of birds that can influence the nature of the island floras, none have been specifically implemented.

Only cormorants have been singled out as a natural factor requiring control. Since they are only one of a broad, intertwined suite of both "natural" and anthropogenic forces at play, we believe they have been singled out for political reasons, as explained elsewhere.

Nesting Birds at East Sister Island

Islands attract species of birds that nest on islands, and the numbers and species of such birds vary from season to season in response to a wide range of factors. Many species of colonially nesting birds tend to form rather small colonies, but some (gulls and cormorants among fresh-water species) can occur in very large numbers. What follows shows the types of changes that occur among non-cormorant species, on East Sister Island.

1971:	Great Blue Herons 150-175 Black-crowned Nigh Herons 150-200
1976/77:	Great Blue Herons - 45 Black-crowned Nigh Herons - 350 Great Egrets - 10
1980:	Black-crowned Night Herons - 500
1988:	Great Blue Herons - 500 Black-crowned Night Herons - 20 Great Egret - 68 Herring Gulls - 500 Double-crested Cormorants - 1085



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1990:	Double-crested Cormorants -1568 Black-crowned Night Herons - 40
1991:	Great Blue Herons - 248 Black-crowned Night Herons - 106 Great Egrets - 141 Double-crested Cormorants - no record
2000/01	Great Blue Herons - 55 Black-crowned Night Herons - 9 Great Egrets - 17 Double-crested Cormorants - 5332
2004	Great Blue Herons - 83 Black-crowned Night Herons - 38 Great Egrets - 32 Double-crested Cormorants - 6028

Source: Canadian Wildlife Service and the Ontario Ministry of Natural Resources

Summary:

Although the data are not as complete as desirable, they show that numbers of non-cormorant species who directly co-exist with the cormorants (in the sense that they will nest in trees that are in the same patch of trees, adjacent to, or near cormorants) have fluctuated considerably over the last three decades, with the Great Egret showing a distinct upward trend. The peak that appears for the Great Egret in 1991, may or may not be the ultimate all-time high, but in the meantime this species, the most common, widely distributed species of heron (egrets are herons) in the world, is overall increasing its numbers in Ontario. Since the Great Egret tends to be found in warmer climates, it seems likely that there is a cause-and-effect relationship between global warming, the warming trend of Ontario's climate, and the increase overall of Great Egrets in Ontario.

Similarly, Black-crowned Night-Herons seem to be undergoing range expansion as well, as compete with the Great Egret as being one of the most widely distributed of the herons, although generally less common.

Both species appear on average, to be increasing in Ontario. The Great Blue Heron "always" has been common in Ontario, and is, provincially the most widely distributed of the three species, within the province. Numbers in colonies vary, but as the statistics show, the species is nicely surviving the presence of increasing Double-crested Cormorants.

We urge protection of this dynamic, ever-changing, interactive community of plants and animals, and that such protection extend to all species.

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Canada, M5T 2W2

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