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THE CANOE AND ROSE ISLETS

Managing Seabird Ecological Reserves Problems and Solutions

In the early 1970's, in order to protect sensitive seabird nesting habitat, a number of British Columbia Ecological Reserves were established, including the Canoe and Rose Islets Ecological Reserves. Preliminary work showed that these were important reserve sites in the provincial context, because the Double-crested Cormorant (*Phalocrocorax auritus*), for which these reserves were established, was know to nest only in a few sites in the southern Strait of Georgia (including Mandarte Island and the Ballingall Islets)[1]. At the time of the establishment of the Rose and Canoe Islets reserves, there were collectively 200 breeding pairs of Double-crested Cormorants. Soon after their establishment, an "alarming drop was observed in the numbers of cormorants nesting and raising young". The Canoe Islets for example, were totally abandoned and the Rose Islets severely reduced. The following data illustrates this phenomenon.

a) Rose Islets

1968	180 pairs
1975	80 pairs
1981	12 pairs
1983	0 pairs

b) Canoe Islets

prior to 1960's	0 pairs
late 1960's	30 pairs
mid 1970's	12 pairs
early 1980's	0 pairs

THE CORMORANTS - BACKGROUND

Three species of cormorants occur in British Columbia. They are characterized as follows:

SPECIES	SIZE	DISTRIBUTION	STATUS	COMMENTS
Pelagic Cormorant (Phalacrocorax pleagicus)	65 cm	Coastal	Abundant •population steady	Smallest of our cormorants. Nests on coastal cliffs.
Brandt's Cormorant (P. penicillarus)	90 cm	Coastal	Common, Gulf Islands •population steady	Seen in large flocks, nests on rocky islets, few sites in B.C.
Double-crested Cormorant (P. auritus)	88 cm	Coastal and Fresh Water	Common, Strait of Georgia •numbers appear to be declining over North American •range steady increaing in B.C.	Nests on rocky islets on bare rocks or in trees
Cormorants are largely fish-eating birds, consuming species such as herring, hake, and rock fish.				

Two species regularly use the Rose and Canoe Islets; the Pelagic and Double-crested. These species differ significantly in nesting habitat requirements. Pelagic nests on cliff ledges, whereas Double-crested utilizes low rocky islets or trees (as in the Ballingall Islets). Most Double-crested Cormorant colonies in British Columbia are marine. In Canada's prairie provinces, they utilize fresh water habitats for nesting and feeding. Canoe and Rose Islets provide lake nesting habitat which is largely suitable for Double-crested Cormorants.

The Double-crested Cormorant measures approximately 92 cm in total length and is easily distinguished from the other two species by its bright-yellow throat. Plumage is shiny greenish-black; immatures are dark brown with light coloured breasts.

The nest of the Double-crested Cormorant is a large structure, 60 or more centimetres in diameter, and made of sticks, tree branches, roots, and lined with seaweeds and grasses. Clutch size, varies from three to five eggs which are laid from mid-April to mid-May. Incubation, which is shared by both parents takes 28 days. Young are fed by the parents, for about six to eight weeks, after which they feed on their own. There may be later nesting attempts, but these are thought to be attempts by the birds to make up for egg losses.

Nesting usually occurs in conjunction with the Glaucous-winged Gull (*Larus glaucescens*). It has been speculated that the presence of these gulls serves as a cue to the cormorants that mammalian predators are absent (Henny 1989). Interestingly, one of the chief predators on eggs and small young of the Double-crested Cormorant is the

Glaucous-winged Gull. This usually occurs when cormorants are frightened off their nests by, for example, a Bald Eagle or human. The long hiatus from nesting duties permits the gulls to move in and feed on eggs or small young.

WHY HAVE THE CORMORANTS ABANDONED?

Vermeer, et al. (1987) reviewed the population trends of the Double-crested Cormorants in the Strait of Georgia. Work has been done by Drent (1961), Campbell (1976) and Vermeer and Rankin (1981). Two species of cormorants were studied - the Pelagic and Double-crested:

> "results suggest that the numbers of Double-crested Cormorants continued to increase from the 1960's to 1983".

Historically, the Double-crested Cormorant began nesting in the Strait of Georgia in the 1920's, with the first colony discovered on Mandarte Island (Munro 1928). Other breeding populations established themselves on such sites as Mandarte and the Chain Islets. both of these colonies continue to be important for obtaining base-line data on overall trends, and have been studied extensively. The Chain Islets have the fastest growth rate of Double-crested Cormorants in the Strait of Georgia, whereas Mandarte is the largest colony (Vermeer, 1987). It has been suggested that both Pelagic and Double-crested populations are levelling off, but more studies are needed to determine the survival rates of adult and immature cormorants. It may be that reproductive success varies considerably from colony to colony (Vermeer, 1984).

The chief question of concern to B.C. Parks, the agency charged with the management of ecological reserves is how sensitive sites such as the Rose and Canoe Islets may best be protected. Firstly, in the case of the two cormorants breeding colonies, the cause of their abandonment must be determined as accurately as possible, since this will partly determine the course of action required.

A number of specialists characterize the Double-crested Cormorants as being extremely sensitive to disturbance, especially human (Campbell et al.). It is also important to keep in mind that abandonment and reduction of breeding colonies is not isolated to the Rose and Canoe Islets. Perhaps, the view could be taken that it is a shifting of colonies from one place to another (Henny 1981). Vermeer (1987) noted that Pelagic Cormorants shifted from Bare Point to Tent Island and speculated this was a result of human disturbance. Vermeer and Rankin (1984) state that:

> "colony on the Rose Islets decreased in 1983 as a result of disturbance by pleasure boaters in 1983."

Foster (1983) comments that the cormorants from the Rose and Canoe Islets relocated to the Chain Islets Reserve (near Saturna Island).

A study of Graph A shows that in 1976 there was a total abandonment of the colony soon after hatching. Campbell (1976) attributes this to human disturbance.
While human disturbance is probably the main factor in the abandonment and reduction of cormorant numbers on the reserves, there are two other factors which have been implicated as at least making an important contribution:

1. the rapid rise in Glaucous-winged Gull numbers in the Strait of Georgia as a result of garbage handling practices. Cormorants share nesting habitat with gulls. What is the exact relationship between the Glaucous-winged Gulls and the Double-crested Cormorant from a nesting habitat, predation and competition for food perspectives.

2. Bald Eagles flying into the colony to catch cormorants and gulls can create a great deal of havoc. Could this species be responsible for placing pressure on the cormorants to shift nesting site locations?

The issue as to whether the reserves should be marked is a debatable one. One school of thought suggests that signs merely attract people who want to read what they have to say. The other says that people will respect the reserve if they know that it is a special protected area. They cannot be expected simply "know" something is there if there is nothing to tell them.

The author feels that is important that reserves be properly identified as an Ecological Reserve. This aids in the enforcement of regulations by park staff.

A volunteer warden is assigned to both the Rose and Canoe Islets reserves and makes regular inspections. Park staff will also make inspections of the site, especially during the critical nesting period.

The most important aspect of reserve management is public education - a well informed public as to the philosophy and purpose of reserves will surely lead to a condition of self-policing. However, regulations must be enforced since Ecological Reserves are not parks, but are managed with the goal of maintaining the sites in natural states so that natural processes can proceed without the interference of man.

Seabirds have long be recognized as import to the health of the marine environment. Cormorants are at the ends of complex food chains and webs. Understanding the mechanisms by which these systems operate will help to ensure the survival of all marine creatures - perhaps even man, as we come to rely more and more on the sea for our food.

It is the mandate of B.C. Parks to manage ecological reserves with the following five purposes, upper most. The Ecological Reserves Act states:

> (2) The Purpose of this Act is to reserve Crown land for ecological purposes including;
> (a) areas suitable for scientific research and educations purposes associated with studied in

productivity and other aspects of the natural environment;
(b) areas that are representative examples of natural ecosystems within the Province;
(c) areas that serve as examples of ecosystems that have been modified by man and that offer an opportunity to study the recovery of the natural ecosystem from such modification;
(d) areas in which rare or endangered native plants and animals in their natural habitat may be preserved; and
(e) areas that contain unique and rare examples of botanical, zoological, or geological phenomena.

Ecological Reserves are benchmarks against which man-made changes may be measured.

There is a considerable body of opinion which suggests that continued strict management of access to ecological reserves such as the Rose and Canoe Islets, will save the nesting habitat, should the birds return. These reserves have shown that strict enforcement is essential, but that public education and therefore appreciation are also key factors in the continued protection of marine reserves. There are good reasons to expect that in the long term, the Double-crested Cormorant will return to the islets given sufficient strict protection.

Footnote:
1. Ballingall Islets is a Class A Provincial Park

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Al Grass
B.C. Parks
May 1991

FRONT COVER

BALLINGALL ISLETS MARINE NATURE PARK

Located in Trincomali Channel, west of Galiano Island, this B.C. Park (1 hectare Class A marine park) was established in 1963 to protect a unique colony of tree nesting Double-crested Cormorants. The nests here are seen on the stark white remains of rocky mountain junipers.

PHOTO: Al Grass

Cont. from page 7 - Natural Vegetation

but in general, at the expense of important foundations of the food chains for the hawks that at least appeal to human vanity enough such that an appeal for their conservation is attentively received. It is time to see as urgent a need to educate everyone to respect native shrubs and trees and herbage, and to understand that most imported replacements, part of a culture destructive to life in these regions, by the care that they need for emplacement and continuation, help decimate or exterminate all of those minute parts of that very natural life which is indicative of a healthy balanced ecology.

Educational initiatives towards both councillors and staff in every municipality are needed, to turn back the destructive tide of lawns, imported shrubs, and the insecticides, herbicides, and bulldozing that precedes and sustain the unnatural conditions. The remaining bits of land with natural vegetation really cannot stand any further assault. The hordes of contractors, the subverting forces of contractual arrangements that remain unpublicized, the profits that generate and motivate the problem, and promise of an unimaginable worsening due to the presently developing momentum that few have recognized or tried to stop, comprise the force that must be widely recognized for what it is and turned back. The expenditures must be redirected to community needs that all would agree are more useful.

Householders who do not wish to bother with lawns and shrubs should be allowed to relax at least part of back and even front gardens to more natural contents. Bylaws that suit the destructive tide and the contractors that perpetrate it, should be changed as quickly as possible.

The basic principles in what has been said here are really what are required for natural conservation in general everywhere. With enough fostered natural vegetation, parks, highway verges, and odd bits of land can form links in a chain of communication between substantial ecological reserves, in which various species, including rodents that feed hawks, would otherwise face serious risks in unreplenishing isolation.

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