

# Ground Nest Survey of Cleland Island and Murre Reef 2004

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Cleland Island is British Columbia's first Ecological Reserve and one of the largest seabird colonies along Canada's west coast. It provides nesting habitat for a wide-variety of both ground and burrow-nesting birds. The island has long been used by local first nations for egg-gathering and has become increasingly popular with commercial wildlife viewing operators. Shore access is forbidden except for traditional egg harvesting which may occur in May and June. A considerable amount of wildlife research was undertaken on the island during the 1970 and 80's however few studies have been conducted since 1989. This report summarizes finding from 2 visits to the island during 2004 to survey for ground nesting activity of Black Oystercatchers, Glaucous-winged Gulls, Common Murre and Brandt's Cormorant.

## **Methods:**

Using a crew of 3 persons we surveyed Cleland Island and Murre reef by foot on May 31, 2004. Two experienced observers searched all likely areas for Black Oystercatcher nests while the third person recorded all nest locations using a Trimble GPS. In addition to the nest location, observers recorded the number of eggs, and estimated the percent composition of nest material, distance to nearest glaucous-winged gull nest, distance to nearest oystercatcher nest, and distance to high tide line. We began and ended the survey at the small shell beach off the south-east end of the island (Campbell Bay) and anchored the boat just offshore. To account for the oystercatcher's occasional habit of building multiple nests prior to egg-laying, sites with more than one nest within a 4 m radius were counted as one nest (unless there were eggs in more than one nest). During the first visit we confined our survey efforts to oystercatcher nests only.

We returned on July 06, 2004 with the same crew and an additional 2 volunteers to survey for Glaucous-winged Gull, Brandt's Cormorant and Common Murre nests. On this visit we did not re-survey for oystercatcher nests. All occupied gull nests (either freshly-built or with eggs) were counted using hand counters. Rather than take way points for each gull nest, we divided Cleland Island into 10 polygons based on recognizable physical features, and recorded the number of nests in each polygon. Murre Reef was represented as one polygon. In addition to the foot patrol, prior to landing, we surveyed the shoreline for roosting Common Murres and Brandt's Cormorants.

## **Results:**

On May 31 we surveyed Cleland Is. and Murre Reef between 1100-1500 hrs. Conditions were good with a moderate SW swell, light mist and overhead clouds. Tide was high at 1130 hrs. We observed 35 active oystercatcher nests around Cleland Island and 8 nests on Murre Reef. All nests on Cleland Island were located on bare ground between the vegetation fringe and inter-tidal zone. All nests on Murre Reef were located on bedrock. Most occupied nests were located within 10 m of another occupied oystercatcher nest and 5-20 m from the high tide line. All nests were within 10 m of a gull nest, with most <5 m. Most gull nests were freshly constructed although very few had eggs yet.

Table 1: Summary of the number of Black Oystercatcher eggs per nest on May 31, 2004

Location	Total no. Nests	No. of eggs per nest			
		0	1	2	3
Cleland Island	35	18	9	7	1
Murre Reef	8	4	0	3	1

On July 06, we surveyed the two islands again from 1100 – 1530 hrs. The weather was clear with a moderate NW wind and 2 m SW swell. Tide was very low (0.3') at 1020 hrs. We did not observe any nesting Common Murre or Brandts Cormorant, but did record 5 murrees on the water near the east side of Cleland and 2 flying over the island. No cormorants were observed. We counted a total of 1142 active gull nests on Cleland and 214 nests on Murre Reef.

### Historical Records:

#### *Black Oystercatchers:*

A variety of historical oystercatcher nest records exist for Cleland Island. Vermeer et. al. (1992) observed 35 active nests on Cleland Is. and 9 nests on Murre Reef in 1989. The average clutch size for Cleland was 2.24 and average hatching success was 39%. Ultimately, a total of 29 chicks were hatched from 15 nests. Predation and flooding accounted for the loss of 5 nests, cause of the other egg loss was unknown.

Hartwick (1974) observed 56, 57, and 42 breeding pairs in 1970, 1971, and 1972, respectively, an average of 52 pairs per year. Groves (1982) reported the presence of 54 clutches in 1976 and 60 clutches in 1978. Although Groves did not indicate the number of breeding pairs in those two years, the number of clutches she observed suggests similar-sized oystercatcher populations on Cleland Island in 1976 and 1978 and 1970-72. L'Hyver (1985) observed 39 and 35 breeding pairs there in 1982 and 1983, suggesting a possible decline of 29% between 1970-72 and 1989. In addition, oystercatchers appeared to start laying eggs earlier in 1989 than in 1970-72 and 1982-83 (in Vermeer et. al. 1992). Vermeer et. al. (1992) noted that average hatching success ranged from 25% to 46 % during the same period, suggesting that the 39% success rate in 1989 was within the norm.

Table 2: Comparison of reproductive success of Black Oystercatchers at Cleland I (adapted from Vermeer et. al. 1992a)

Location	Year	No. of breeding pairs	No. of clutches	No. of eggs	Mean clutch size	% of eggs hatched
Cleland Is	1970	56	60	117	1.93	34
	1971	57	59	120	2.03	25
	1972	42	48	102	2.13	46
	1976	--	54	115	2.13	--
	1978	--	60	118	1.97	--
	1982	39	52	107	2.06	37
	1983	35	44	94	2.14	29
	1989	35	33	74	2.24	39
	2004	35	17*	17*	1.00*	--

\* 2004 survey was conducted only once during season, whereas data from previous studies was collected over entire breeding period

### *Glaucous-winged Gulls:*

A variety of historical records exist for Glaucous-winged Gulls on Cleland Island. Until this survey the most recent census was in 1989, following the Nestucca oil spill. At that time there was heightened concern about the impacts from the spill, particularly in light of an apparent declining trend in Glaucous-winged Gull populations elsewhere along the west coast of Vancouver Island. In addition, Black Oystercatcher researchers had observed a declining number of nesting oystercatchers on Cleland Is. and hypothesized that it was related to an increasing population of gulls nesting on the island. Records indicate that the population of Glaucous-winged Gulls increased from 500 in 1965 to 1500 in 1974-75 and to 1694 in 1989 (Vermeer et. al. 1992b).

Table 3: Comparison of the number of nesting Glaucous-winged Gulls on Cleland Island (adapted from Vermeer et.al. 1992b)

<b>Location</b>	<b>No. of pairs, 1967</b>	<b>No. of pairs, 1974-75</b>	<b>No. of nests, 1989</b>	<b>No. of nests, 2004</b>
Cleland Is.* (and Murre Reef)	500	1500	1694	1356

\*we are assuming that the historical survey area includes nests on Murre Reef as well

### *Common Murre:*

Between 1969-82, a small number of Common Murres were occasionally observed nesting on Cleland Island. Carter's (2004) recent report summarizes those observations. He believes that breeding likely occurred there annually between 1969-82. Three birds were seen in 1983, and none reported since then, although no detailed surveys were conducted. Reported numbers of murres at the colony ranged from 2-150, but only 1-8 pairs actually laid eggs (Carter, 2004).

## **Discussion:**

### *Black Oystercatchers:*

Black Oystercatchers (*Haematopus bachmani*) are the only year-round resident shorebird species along the Pacific Coast of North America. They typically inhabit exposed rocky inter-tidal areas that they depend on for food and nesting. The species is long-lived and monogamous. Breeding pairs establish well-defined territories and generally occupy the same territory year after year. Pairs nest on the ground just above the high-tide line and feed in the inter-tidal zone. Diet consists mostly of marine mollusks such as mussels, limpets and chitons. Nesting habitat ranges from mixed sand and gravel beaches to exposed rocky outcrops, however, in BC and Alaska, breeding pairs are most abundant on non-forested, low sloping islets dominated by shell or gravel beaches (Andres & Falxa 1995, Hazlitt 1999).

The Canadian Shorebird Conservation Plan identifies Black Oystercatchers as a shorebird species of high regional and national concern (Donaldson 2000). The global population is estimated to be about 11,000 individuals, of which >80% occurs in Alaska and BC (Andres & Falxa 1995). Even within their range however, their distribution is patchy and they can be uncommon. During the summer breeding period they are relatively dispersed and highly territorial, becoming more gregarious during non-breeding. The availability of suitable nest sites and rearing areas is likely a limiting factor for the species (Andres and Falxa, 1995).

Cleland Island is a globally significant nesting site for Black Oystercatchers. Previous studies found the island supported the highest known density of nesting Black Oystercatchers and the greatest overall number of nesting individuals within their range (Vermeer et. al. 1992a). Historically, Black Oystercatchers have been relatively well studied on Cleland Island. Nesting records go back to at least 1967. Between 1970 and 1989, the nesting population appeared to decline by 29 %. During the same period, the nesting population of Glaucous-winged Gulls on Cleland Island increased from about 500 pairs in 1967 (Campbell and Stirling 1967) to about 1500 pairs in 1974-75 (Campbell 1976) and to about 1700 pairs in 1989 (Vermeer et. al. 1992b). Conflicts between gulls and oystercatchers, including predation of eggs and young, likely increased as a result of higher nesting gull densities (Andres and Falxa, 1995). This is the first follow-up survey conducted since 1989.

Our results suggest that the Black Oystercatcher population on Cleland Island has remained remarkably stable. The number of oystercatcher nests (N=35) we observed were identical to those found during the last two surveys in 1983 and 1989. Nest records for Murre Reef are also similar between 1989 (N=9) and 2003 (N=8). These results correspond to recent findings elsewhere in Clayoquot and Barkley Sound, where surveys have demonstrated that Oystercatcher are occupying traditional nesting areas in apparently stable densities (Clarkson, in prep.). While the overall number of eggs observed during this survey was quite small (N=17), we should be careful not to draw too many conclusions from that. Oystercatchers will often lay replacement clutches if their initial attempts fail. On Cleland Is. replacement clutches have been documented as late as mid-July. Clutch size is highly variable and can be influenced by a variety of changing factors. Previous studies have shown that the average clutch size at Cleland Is. was 2.07 eggs. Of those, 34% hatched, and 12% fledged, which suggests that each pair only produces an average 0.25 young per year (Andres and Falxa, 1995). Predation is generally considered the major cause of mortality of eggs and chicks.

Low annual recruitment is typical for a K-selected species such as Black Oystercatchers. Although remarkably few young tend to survive to become adults, those that do have an annual survivorship of >90%, and may live up to 16 years or more (Andres and Falxa, 1995).

The most common predators likely to be found on Cleland Is. are Glaucous-winged Gulls, Bald Eagles, Northwestern Crows, Common Ravens and American Mink. We observed 2 crows and 1 bald eagle during both visits to the island. These numbers are similar to those sighted in 1989. No mink were observed, but past studies have documented them on the island. These observations should be considered as encouraging given the impacts of increasing populations of Bald Eagles, crows and various non-native predators on other seabird colonies. In many cases these increases are a result of human influences and are considered a threat to the integrity of these sensitive ecosystems.

#### *Glaucous-winged Gulls:*

There appears to be a decrease in the number of Glaucous-winged Gulls between 1989 (N=1694) and 2004 (N=1356). It is unknown whether this is significant and cause for alarm. Our results are close to those observed in 1974-75, which might suggest that the increased level of nesting in 1989 was an anomaly. The potential influence of human predation on the local nesting population is significant. Traditional egg harvesting continues on the island, but it is difficult to say at what level

and with what impact. Other predators are also abundant in the greater ecosystem although there doesn't appear to be a significant increase in the local Bald Eagle or crow population on the island, likely due in part to Cleland Island's lack of trees that would promote perching and nesting.

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