

FEATURE ARTICLES

TEMPORARY COLONIZATION OF CLELAND ISLAND, BRITISH COLUMBIA, BY COMMON MURRES FROM 1969-82

Harry R. Carter

1015 Hampshire Road, Victoria, BC. V8S 4S8

Abstract

Small numbers of Common Murres (*Uria aalge*) temporarily bred at Cleland Island on the central west coast of Vancouver Island, British Columbia, from 1969-82, but the circumstances surrounding this brief colonization event have not been previously assessed. This colonization, and breeding attempts at three other nearby sites (Florenca Island, "White" Islet, and Starlight Reef) between the late 1960s and early 1980s, may have reflected a temporary expansion of the murre population from Washington under suitable source population conditions (i.e., after a period of population growth in Washington) and suitable nesting habitat conditions at sites along the central west coast of Vancouver Island (i.e., availability of bare rock habitat on predator-free islands with low disturbance). However, long-term breeding did not develop at these colonies. Possible reasons for abandonment include: a) the relatively short period of a few decades of population growth at Washington colonies which ended abruptly in 1983 and was followed by population decline; b) limited suitable breeding habitats on the central west coast of Vancouver Island, contributing to small colony size without growth and sufficient recruitment; c) disturbance of breeding birds by humans and Bald Eagles (*Haliaeetus leucocephalus*); and d) mortality of breeding birds or their progeny from natural mortality, gill-net fishing, and oil spills.

Introduction

In British Columbia, Common Murres (Figure 1) breed primarily at Triangle Island near the northwest tip of Vancouver Island (Guiguet 1950; Drent and Guiguet 1961; Campbell et al. 1990; Rodway 1990, 1991; Carter et al. 2001). At this relatively large colony (about 4,100 breeding pairs in 1989), breeding occurs annually although reproductive failures have been recorded in some years (Vermeer et al. 1979; Rodway 1990). In the gap between Triangle Island and the next sizable murre colony to the south (i.e., Tatoosh Island, Washington), breeding or colony attendance without documented egg laying also have been recorded in some recent years by single pairs or small numbers at five other



Figure 1. Adult Common Murre with chick at Cleland Island, BC. 20 August 1969 (R. Wayne Campbell).

locations along the west coast of Vancouver Island: Sartine Island (1968, 1975), Cleland Island (1969-82), "White" Islet (1968-70; Figure 2), Florenca Island (1969), and Starlight Reef (1975, 1980). Historical breeding also was noted at Solander Island but without details (Brooks and Swarth 1925). While temporary attendance or breeding of hundreds of murres on Sartine Island was likely related to birds moving from the nearby Triangle Island colony (Hancock 1971), temporary breeding at Cleland Island and breeding attempts at three other sites on the central west coast of Vancouver Island (i.e., Clayoquot and Barkley Sounds) is unusual and not well understood. Formation of small colonies far from large colonies does not occur widely in California, Oregon, or Washington (Carter et al. 2001; Manuwal and Carter 2001). Unfortunately, few observations were made of these small breeding efforts on the central west coast of Vancouver Island, making it difficult to interpret how these colonies formed, and why they did not persist after 1982. In this note, I provide additional information on the breeding of Common Murres at Cleland Island and discuss possible explanations for temporary breeding at sites on the central west coast of Vancouver Island.



Figure 2. “White Islet” near Schooner Cove, BC., was one of three small islands temporarily occupied by breeding Common Murres along the central west coast of Vancouver Island. August 1969 (R. Wayne Campbell).

Cleland Island in 1979

On Cleland Island, breeding likely occurred annually between 1969 and 1982 and breeding was confirmed in 1969, 1970, 1973-77, 1979, and 1982 (Campbell et al. 1975, 1990; Campbell 1976; Rodway 1991; Carter et al. 2001). Murres were last seen at Cleland Island in 1983 (3 birds) and none were reported in 1984 or since then (Campbell et al. 1990, Carter et al. 2001). Although no detailed surveys have occurred over the past decade, none were seen on a specific survey for murres in 2004, suggesting that recolonization has not been attempted or occurred since 1983 (P. Clarkson, pers. comm.). Reported numbers of murres at the colony ranged from 2 to 150, but only 1-8 pairs laid eggs per year. No detailed observations of this colony have been reported in the literature. However, I made a series of counts of Common Murres at Cleland Island in 1979 during an overnight class field trip of the marine birds course of the Bamfield Marine Station, led by R.H. Drent and R.W. Campbell. Although not enrolled in this course, I accompanied the class to gain

access to Cleland Island to record information on the size of the murre breeding population and to record timing of breeding in 1979 for general application to other murre studies that I was conducting in Barkley Sound as part of my M.Sc. studies at the University of Manitoba.

On 12 July, numbers on “Murre Reef” varied between 59 and 106 birds per count on 21 counts made with a telescope from a distance of about 100 m between 1623 and 2200 h (PDT). The peak count was at 2100 h when 81 murres were in a main group and smaller groups of 6, 8, and 11 murres roosted among Brandt’s Cormorants (*Phalacrocorax penicillatus*). By the following morning (13 July), numbers were much reduced (range = 6-12 birds) during 7 counts between 0603 and 0730 h. Only 5-10 birds occurred in the main group and 1-3 roosted among cormorants or in intertidal areas. On both days, one small chick was observed, and 3-4 other sites were attended by murres that appeared to be incubating (i.e., birds in incubation postures during and between counts but eggs were not seen; Figure 3). On

12 July at 1515 h, the chick was fed one Pacific sand lance (*Ammodytes hexapterus*). This was the only chick-feeding observed during the observation periods noted. Variable numbers of murres at Cleland Island in 1979 and other years apparently were related to few breeding birds and variation in attendance with time of day by birds that were not actively breeding during counts. Between 1 and 4 pairs of actively-breeding murres at Cleland Island on 12-13 July 1979 was consistent with numbers reported in the late 1970s and early 1980s. The general timing of breeding of actively-breeding birds on this date (i.e., other birds may have laid earlier but failed or laid later) reflected egg-laying in June-July, which is consistent with the later timing of breeding in most years in Washington and British Columbia compared to California and Oregon (Manuwal and Carter 2001). In addition, attendance of potential nesting habitats or formation of colonies by murres is often influenced by the presence of Brandt's Cormorants in California and Oregon, which may afford some protection from predators or added stimuli for breeding at a new location (Carter et al. 2001; Manuwal and Carter 2001). Attempted breeding at "White" Islet, Florencia Island, and Starlight Reef may also have been associated with breeding or roosting Brandt's Cormorants which occur at these locations.

Disturbance from Gull Egg Harvesting

Breeding by Common Murres at Cleland Island was not recorded prior to 1969 and definitely did not occur in 1967 (Drent and Guiguet 1961; Campbell and Stirling 1968; Campbell et al. 1975; Rodway 1991; Carter et al. 2001). However, unpublished letters by S.J. Darcus to J.A. Munro in 1925 indicated that human disturbance by native peoples during gull egg harvesting or other activities likely occurred frequently at islands on the central west coast of Vancouver Island earlier in the 20th century, and may have contributed directly or indirectly to a lack of breeding until 1969. On 14 May 1925, Darcus mentioned that "... I have noted no California [Common] Murres in the [Barkley] sound this spring as yet. No doubt the species is getting scarce ... I had a letter yesterday from asst. commissioner R.S. Knight, RCMP [Royal Canadian Mounted Police], telling me that he had been instructed from Ottawa to send a man to Bamfield to enforce the Migratory Bird's Convention Act at Bare [Cleland] Island. As Bamfield is about 50 miles from Bare Island I have written to tell him that Tofino would be the best place to station him as it is only about eight miles from Bare Island. I expect to be at Tofino myself about June 7th and as I shall be visiting Bare Island [and] also some of the near-by rocks I may be able to assist the policeman in showing him around. The first week in June is the time the [Glaucous-winged] gulls [*Larus glaucescens*] deposit their eggs



Figure 3. Common Murre egg at Cleland Island, BC. 20 August 1969 (R. Wayne Campbell).

and then is when the raids are made..." On 21 July 1925, Darcus noted further that "...The Indians were inclined to be hostile about Bare Island. They posted a notice threatening to put us off the island, but I guess their courage failed them. The Indian store-keeper at Ahousat was particularly wrath, and, I hear, went to Victoria to seek legal advice. I think the protection has had a very good effect. There are about one hundred pairs of Leach's Petrel [*Oceanodroma leucorhoa*] nesting on Bare Island. The colony of Tufted Puffins [*Fratercula cirrhata*] is doing well, but I think the California Murres have ceased nesting there, as I could find no evidence of them this year, although there were hundreds of the species in the near-by waters." Breeding likely did not occur at Cleland Island in 1925 and birds seen at sea in July likely were post-breeding birds that had dispersed from southern colonies in California and Oregon, as later studies have suspected (Manuwal and Carter 2001).

Breeding between 1925 and 1969 also was not documented, although survey efforts were infrequent (Drent and Guiguet 1961; Campbell and Stirling 1968; Campbell et al. 1975). Cleland Island, "White" Islet, Florencia Island, and Starlight Reef are close to communities of native peoples, are accessible by canoe, and nesting habitats are accessible by foot. These four islands probably were visited regularly by native peoples for food gathering prior to 1925, although relatively large Glaucous-winged Gull colonies likely existed only at Cleland Island and Starlight Reef where greater gull

nesting habitat occurs. While gull egg harvesting likely declined after 1925, it has apparently continued at a lower level but it is unclear if such harvesting has disturbed breeding murrelets or has prevented recolonization. Few records of such harvesting exist to determine its frequency. In May 1975, while conducting seabird studies for the British Columbia Provincial Museum, I observed a local native person harvesting gull eggs at Cleland Island. Gull egg harvesting also occurred on at least two trips in June 2003 and occurred sporadically in the 1980s and 1990s (Ambrose 2003; P. Clarkson, pers. comm.). Increased interest by native peoples may result in greater food gathering (i.e., gull egg harvesting and other forms of harvesting such as intertidal harvesting) at Cleland Island in the future. To allow recolonization of Cleland Island by murrelets in the future, I suggest that food gathering activities at Cleland Island should not occur on "Murre Reef" or on the portion of Cleland Island within 100 m from "Murre Reef" during the months of May to September.

Connection with Washington colonies

While the source of colonists at Cleland Island was not determined, it is most likely that birds originated from the nearest colonies in Washington (e.g., Tatoosh Island), based on proximity to nearest colonies, timing of breeding, population growth in Washington, timing of the Cleland Island colonization, and timing of other breeding attempts on the central west coast of Vancouver Island. Few emigrants were likely produced at Washington colonies in the early 20th century because this population was greatly reduced at this time from murre egg harvesting, human disturbance, and oil pollution (Speich and Wahl 1989; Carter et al. 2001). However, in the 1950s to early 1980s, numbers of murrelets grew substantially at the Washington colonies and several were formed or first noted during this period, which would have provided greater potential for emigration movements of some birds to the central west coast of Vancouver Island (Paine et al. 1990; Speich and Wahl 1989; Wilson 1991; Carter et al. 2001). It was during this period that the Cleland Island colony formed and persisted annually, and smaller numbers attempted to breed at "White" Islet, Florencia Island, and Starlight Reef. After 1982, the Washington murrelet population crashed to much lower numbers, due to a combination of natural and anthropogenic factors, including warm water years, colony disturbance, and mortality from gill-net fishing and

oil pollution (Wilson 1991; Carter et al. 2001). No further breeding has been noted at these four locations on the central west coast of Vancouver Island since 1982, further suggesting a strong temporal connection with the status of Washington colonies. Little is known about changes in numbers of murrelets at Triangle Island prior to 1989 but numbers were not suspected to have changed dramatically over the past few decades (Rodway 1990; Carter et al. 2001). While a few individual murrelets could have emigrated to Cleland Island from Triangle Island or other colonies further afield, colony formations, intercolony visitation by immatures, and emigration movements usually occur near existing colonies (Manuwal and Carter 2001).

Factors affecting colony abandonment

While reduced numbers of emigrants from Washington likely led to lower recruitment at Cleland Island, it is not clear why local birds would abruptly stop breeding after 1982 and not recolonize afterwards. Strong El Niño conditions in 1983 likely affected prey resources which apparently led to temporary abandonment at Washington colonies and also may have affected Cleland Island foraging conditions (Wilson 1991; Carter et al. 2001).

However, poor foraging conditions in 1983 alone likely did not cause long-term colony abandonments in Washington or at Cleland Island. It seems that mortality may have caused loss of some or all of the few breeding individuals

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at Cleland Island or disturbance may have caused poor reproductive success which encouraged abandonment of Cleland Island. Loss of the constant presence of breeding birds likely resulted in loss of attendance by additional non-breeding birds attracted to the colony by conspecifics and Brandt's Cormorants. Natural mortality of all or some of the original breeding colonists may not have occurred until the late 1970s to early 1980s, given that many murrelets only live for 15-25 years (Hudson 1985). If no murrelets fledged from Cleland Island, none survived to breeding age, or none returned to breed at Cleland Island, then local recruitment from this colony may not have occurred, especially given the small colony size and the short breeding period. However, large numbers of Common Murrelets also were killed in gill nets in Barkley Sound, Juan de Fuca Strait, and in Washington in the late 1970s and early 1980s, which likely contributed to local population declines in Washington (Carter and Sealy 1984; Carter et al. 2001; H.R. Carter, unpublished data). No large oil spills with large seabird

mortalities were documented off Washington or the west coast of Vancouver Island in the 1970s or early 1980s (prior to 1984), but I noted three oiled murres in Barkley Sound in 1979-80 that were apparent victims of chronic oiling (H.R. Carter, unpublished data). Killing of even very small numbers of murres breeding at Cleland Island may have contributed to, or alone caused, a significant reduction or accelerated extirpation of the tiny local breeding population in Clayoquot and Barkley Sounds. Increasing numbers of Bald Eagles (*Haliaeetus leucocephalus*) since the 1980s also have affected breeding murres at colonies in Washington and Oregon, with disruptions from flyovers contributing to colony abandonments or local changes in nesting areas (Parrish 1995; Carter et al. 2001). Nest site relocations have occurred at Triangle Island since 2000 in apparent response to eagle flyovers, even though eagles have been present regularly since studies were first conducted in 1949, if not long before (C.J. Guignet, pers. comm.; M. Hipfner, pers. comm.). Murre nesting sites at “Murre Reef” are very exposed to flyovers by eagles, and single eagles have regularly perched on the high point of Cleland Island since at least the 1970s (H.R. Carter, pers. obs.; P. Clarkson, pers. comm.). However, given that it is likely that eagles were present when murres colonized and bred at Cleland Island, it is doubtful that eagle disruptions contributed significantly to colony abandonment or lack of recolonization.

Factors affecting Small Colony Size

Little suitable nesting habitat for murres in Barkley and Clayoquot Sounds also likely contributed to temporary formation of the Cleland Island colony and breeding attempts by only 1-2 pairs per year at Florencia Island, “White” Islet, and Starlight Reef. Suitable bare-rock nesting habitat for murres at Cleland Island is quite limited because most of the island is vegetated (Campbell and Stirling 1968). Murre breeding and attendance have been limited to “Murre Reef” and nearby intertidal rocks. Sufficient nesting habitat exists for only a small murre colony on Cleland Island, which may have contributed to low recruitment of additional breeding birds at Cleland Island and maintenance of a very small breeding population, which did not grow substantially in size between 1969 and 1982. In any case, this is the largest island with suitable murre habitat, active seabird colonies, and low levels of predation and disturbance in both Clayoquot and Barkley Sounds. Except for food gathering by native peoples

prior to 1925, it also was little visited by humans prior to the 1960s. Potential breeding habitats at “White” Islet and Florencia Island are much more limited and exposed which likely contributed to very short breeding attempts over only 1-3 years in 1968-70 prior to abandonment. At Starlight Reef, more potential nesting habitat is available and breeding attempts were noted over at least six years between 1975 and 1980. However, nesting areas are exposed and the areas used by nesting Brandt’s Cormorants are low lying and subject to waves during high seas. Overall, murres have attempted to breed in much of the available and little-disturbed nesting habitat that is free from mammal predators in Barkley and Clayoquot Sounds in the 1969-82 period. Short-term colonization occurred only at Cleland Island.

Possible Recent Human Disturbance

After initial detailed documentation of island wildlife and habitats in 1967 (Campbell and Stirling 1968),

Cleland Island became the first British Columbia Ecological Reserve in 1971. This status led to greater recognition of the biological values of this island and public access is now by permit only, which has led to greater protection from human disturbance. It also provided an opportunity for

various studies of seabird populations, Black Oystercatchers (*Haemotopus bachmani*), and plant life in the 1970s and 1980s, which were conducted by the British Columbia Provincial Museum, British Columbia Ecological Reserves, Simon Fraser University, Bamfield Marine Station, Canadian Wildlife Service, and other groups. I participated in several studies and trips at Cleland Island for the British Columbia Provincial Museum and Bamfield Marine Station in 1974, 1975, 1976, and 1979. Murres were present at “Murre Reef” on these trips and we were careful to avoid disturbing the birds during our island work, although they were aware of our presence on land some distance away (> 100 m). During boat landings on the only accessible beach, we approached closer than 100 m to “Murre Reef” but generally did not flush murres. On one occasion in May 1975, I recall a few murres leaving “Murre Reef” (although most stayed in place) when I approached the landing beach in a boat, but these individuals probably were not incubating at the time. Whether or not murres were greatly disturbed during other studies at Cleland Island is not known. However, if major disturbances did occur, this problem could have contributed to eventual murre abandonment of Cleland Island by 1983,

“...large numbers of Common Murres also were killed in gill nets in Barkley Sound, Juan de Fuca Strait, and in Washington in the late 1970s and early 1980s which likely contributed to local population declines...”

and may have contributed to a lack of recolonization for several years afterwards. However, no studies have occurred at Cleland Island since about 1990 until a brief visit in 2004 (P. Clarkson, pers. comm.). Florencia Island, "White" Islet and Starlight Reef occur within Pacific Rim National Park, which was established in 1970 (Hatler et al. 1978). Public access has not been allowed at these sites. Close approach by boats and brief seabird surveys have occurred on occasion but no murres have been recorded at these exposed sites, except in the years noted. At Starlight Reef, an egg was noted in 1975 but murres were not noted in August 1976, 1977, or 1978 when I made brief visits to the reef to survey and study Brandt's Cormorants (Carter and McIntyre 1976; R.W. Campbell, unpublished data). Another egg was laid in 1980, apparently reflecting another failed breeding attempt five years later by a single pair that possibly could have been the same pair from 1975. It seems suspicious that breeding attempts occurred at the start and end of almost annual visits at Starlight Reef but human disturbance during surveys was not a factor because murres were not present during surveys. In any case, future studies on Cleland Island and at other sites within Pacific Rim National Park should be specifically designed to avoid human presence near known murre nesting habitats, or where breeding attempts have taken place, in an effort to allow recolonization to occur in the future if and when conditions again permit. To allow for future recolonization, I suggest that research activities should not be conducted on "Murre Reef" or on Cleland Island within 100 m of "Murre Reef" during the months of May to September, without a specific permit.

Conclusion

Based on the above considerations, I suggest that breeding Common Murres on the central west coast of Vancouver Island in 1969-82 represented a temporary extension of breeding sites north from Washington, during a period that was favourable for such extension. After much population recovery in the mid- to late 20th century from earlier impacts, murres bred in the early 1980s in an almost continuous string of colonies from northern California to Tatoosh Island, Washington. A large gap then existed between Tatoosh Island and Triangle Island which apparently reflected changes in the availability of suitable nesting habitat and changes in prey resources (Carter et al. 2001). From 1969 to 1982, murres extended their breeding range from Washington into this gap. While this extension was temporary and abandonment may have been accelerated by human impacts, it is difficult to tell if the extension would have become permanently established or at least lasted longer in the absence of human impacts.

Acknowledgements

Valuable information on murres or comments on this paper were provided by R.W. Campbell, P. Clarkson, C.J. Guiguet (deceased), M. Hipfner, M.S. Rodway, and S.G. Sealy. Copies of letters by S.J. Darcus (fortunately rescued from disposal in the 1990s by G.W. Kaiser) were graciously provided by M. Ruth. My seabird studies in Barkley and Clayoquot Sounds were conducted through summer employment with the British Columbia Provincial Museum and as a M.Sc. graduate student at the University of Manitoba with fieldwork conducted through the Bamfield Marine Station. Graduate research was funded by Canadian Wildlife Service Wildlife Biology Scholarships to H.R. Carter and grants from the Natural Sciences and Engineering Research Council to S.G. Sealy. Field assistance at Cleland Island in 1979 was provided by J.M. Porter. I am grateful to R.W. Campbell, C.J. Guiguet, and S.G. Sealy for several wonderful opportunities in the 1970s to visit Cleland Island, "White" Islet, Florencia Island, and Starlight Reef.

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About the Author

Harry began his interest in seabirds through conducting seabird colony surveys on the BC coast in the summers of 1974-78 with the British Columbia Provincial Museum, under the supervision of Wayne Campbell and Charles Guiguet. In 1979-82, he conducted M.Sc.(Zoology) studies on Marbled Murrelets and Common Murres in Barkley Sound, BC, under the supervision of Dr. Spencer Sealy at the University of Manitoba. From 1983-2003, he worked chiefly in California studying seabirds through the Point Reyes Bird Observatory and Humboldt State University. Since 1996, he has worked on a two-volume compendium of information for the U.S. Fish and Wildlife Service on the biology and conservation of the Common Murre in California, Oregon, Washington, and BC. He also was a co-author of the Common Murre account for the Birds of North America. In 2003, Harry returned to BC where he is currently conducting private consulting related to seabirds on the west coast of North America.

"If you limit your choices only to what seems possible or reasonable, you disconnect yourself from what you truly want, and all that is left is a compromise"

- Robert Fritz