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Baeria Rocks

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ECOLOGICAL RESERVES COLLECTION
GOVERNMENT OF BRITISH COLUMBIA
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A list of sea bird nesting sites in Barkley Sound, British Columbia

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Provincial Museum and University of British Columbia field parties conducted bird and mammal investigations on islands in Barkley Sound from 1964 to 1970, inclusive. Fifty-five of approximately 155 islands, islets, and reefs were visited. Nesting sites of six species of "sea" birds, most of them previously unrecorded, are listed. Species are fork-tailed petrel, *Oceanodroma furcata*; boreal petrel, *Oceanodroma leucorhoa*; Brandt cormorant, *Phalacrocorax penicillatus*; pelagic cormorant, *Phalacrocorax pelagicus*; glaucous-winged gull, *Larus glaucescens*; pigeon guillemot, *Cephus columba*; Cassin auklet, *Ptychoramphus aleuticus*; rhinoceros auklet, *Cerorhinca monocerata*; and tufted puffin, *Lunda cirrhata*. Seaborne breeding concentrations of marbled murrelet, *Brachyramphus marmoratus*, are given.

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Introduction

The British Columbia Provincial Museum and the University of British Columbia have conducted insular investigations on birds and mammals along the British Columbia coast since 1937 on the Bardswell Islands; 1946-47 and the 1950's on the Queen Charlotte Islands; the Goose Islands in 1948; the Scott Islands, Bunsby Islands, Kyuquot Sound, and Tolino Inlet Islands in subsequent years. Quatsino and Nootka Sounds, bypassed in favour of more open shorelines, have yet to be worked. Islands in the Long Beach stretch between Cleland I. and Amphitrite Point, being worked by York Edwards and his Parks Branch staff in the 1960's, were also bypassed for that reason. In recent years the University of British Columbia has fielded parties doing specific area research on the Queen Charlotte Islands, Cleland I., and exploration on islands along the east side of Hecate Strait (1970).

Apart from 1966, the Provincial Museum continued investigations annually in Barkley Sound during the month of August from 1964 to 1970, inclusive, following a joint reconnaissance in part of the area in 1962 with Art Benson of the Canadian Wildlife Service. Investigations were then conducted solely by the writer until 1969. That year W. J. Schick and E. Lemko joined the staff and worked during the month of August in the Deer Group. In 1970 the museum fielded a three-man party, this time during the month of June, which it worked mainly in the Broken Group. Bristol Foster

and Phil Nott, further additions to the staff, rotated with Schick, Lemke, and summer assistant P. Riseborough on this project.

Wayne Campbell, of the University of British Columbia, joined the work on a one-day trip in August 1969, a four-day trip in July 1970, with a one-day banding excursion on August 24, 1970, accompanied by his wife and various students. Campbell's notes were utilized in the compilation of this list, especially in regard to Brandt cormorant (*Phalacrocorax penicillatus*) nesting on Great Bear Rock, and to other birds nesting on San Jose I., which was not visited by museum personnel.

Work by the museum was oriented essentially to small mammal investigations on the insular complex in Barkley Sound, where there are three main groups of islands. These are the Deer Group on the eastern side, the Broken Group in the central area, and a scattered north-western group that is unnamed as such on the charts. The latter begins with the George Fraser Islands off the mouth of Ucluelet Inlet and extends northeastward to Toquart Bay. In all there are more than 150 islands and large reefs in Barkley Sound, and a multitude of smaller ones.

In the course of our investigations, most of these have received at least cursory examination. However, only 32 have been worked intensively for small mammals, and consequently nesting sea birds, these mostly in the eastern and central groups of islands. An additional 12 islands and large reefs were landed upon and examined

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solely for nesting sea birds, and 11 others were examined from the boat without going ashore.

In the remaining mass of islands not closely examined, a few small or alternate sea bird nesting sites may have been overlooked. However, it is unlikely that large undiscovered rookeries exist in Barkley Sound. Under present circumstances it is unlikely that such rookeries can establish in proximity to the mainland of Vancouver I. and the closely associated islands leading from it. A very high, apparently stable population of mink (*Mustella vison*) throughout the islands precludes this possibility. It seems apparent the factors limiting the occurrence of nesting sea birds, particularly burrowing alcids and petrels in Barkley Sound, are the predaceous mink that over-run most of the islands. Possibly the racoon (*Procyon lotor*) and the black bear (*Ursus americanus*) are contributing factors on those islands close to the Vancouver I. shore. Main rookeries, apart from cliff-cave nesting pelagic cormorants (*Phalacrocorax pelagicus*), occasional isolated pinnacle nesting glaucous-winged gulls (*Larus glaucescens*), and pigeon guillemot (*Cephus columba*) are separated by at least one mile of ocean from nearest shores likely to be occupied by predatory mammals.

Methods

In most cases direct observation was made by landing upon the islands. Nests were counted from the sea where feasible (as with cliff-cave nesting cormorants). Estimates of nesting population were made by counting roosted and flying individuals in instances where landings were impossible or unnecessary. Nesting sites previously recorded in the area are included in this paper.

Since no species encountered was off range, unexpected, or of questionable identity, a minimum number of specimens was collected.

Nomenclature and systematic order follow the fifth edition of the *American Ornithologist Union Checklist of North American Birds* (1957). Position of islands follows co-ordinates listed in the 1966 *Gazetteer of Canada* (for British Columbia).

Account of the Species

FORK-TAILED PETREL: *Oceanodroma furcata*. Seabird Rocks, SW. of Pachena Bay, S.

of Barkley Sd., 48°125'NE. June 12, 1970, Foster and Guiguet. Island honeycombed with burrows of this and the following species, both uncovered from shallow burrows in a very few seconds after landing, indicating dense population. Fragile nature of this small rookery precluded extensive digging. Specimen of adult with downy young collected. *BCPM No. 11665* and *11666*. Species was not found nesting elsewhere in the Barkley Sound area.

BOREAL PETREL: *Oceanodroma leucorhoa*. Seabird Rocks, SW. of Pachena Bay, S. of Barkley Sd., 48°125'NE. August 19, 1943, and August 11, 1945, Pearse recorded eggs and young on the island (1961). June 12, 1970, Foster and Guiguet. Species account as with preceding. Brooding adult and fresh egg collected from burrow. *BCPM No. 11667*, egg not catalogued. Species was not found nesting elsewhere in the Barkley Sound area.

BRANDT CORMORANT: *Phalacrocorax penicillatus*. Great Bear Rock, W. side Loudoun Channel, Barclay District (Barkley Sd.), 48°125'NE. August 13, 1962, Hilliers, Benson, and Guiguet; August, 1969, Campbell, Campbell, and Dunnett; June 1 and 3, 1970, Lemke and Guiguet; July 24, 1970, Campbell, Hawes, and Hawes; August 25, 1970, Campbell, Shepard, Campbell, and Beaton.

Nonbreeding individuals and no nests present in August 1962, August 1969, and June 1970. Campbell (1970) recorded 61 nests containing none to five eggs on the southernmost of three reefs on July 24, 1970. No specimen was collected; photos were taken.

Campbell returned on August 25, 1970, and recorded a total of 107 nests containing 41 eggs and 130 young ranging from "just hatched to three-quarters grown." About 100 of these nestlings were banded by the party. Species was not found nesting elsewhere in Barkley Sound.

PELAGIC CORMORANT: *Phalacrocorax pelagicus*. Bordelais Islets, W. side of Trevor Channel, at S. end Barclay District (Barkley Sd.), 48°125'NE. August 13, 1965, Guiguet, three pairs were nesting on west side cliffs. June 5, 1970, Lemke and Guiguet. Four pairs in breeding plumage seen on high cliffs, one carrying nesting material. No nests examined. *Edward King Island*, W. side Trevor Channel, S. of Dianna I., Barclay District (Barkley Sd.),

48°125'NE. guet; June 1 Three caves utilized annually. Caves are located north central. The birds nest in times very close to the southeast central site, central site, 20 Imperial East District (Barkley Sd.) 1965-June 1966. Campbell, H. northwest site two or three not observed the cave. Trevor Channel, SV (Barkley Sd.) August 1970 and Riseborough. Caves on the 48°53'25"N. Nested three nests. *Swiss Boy* Channel, W. (Barkley Sd.) Schick and I Riseborough this island. Nests contained 1969. Rev. devoid of nests. *Baeria Rock* end, Barclay July 18, 1966. Lemke and Guiguet; July Hawes. Banded reefs, from another. The sections, the side. Woolf. tant steamer area held 2. 15, 1970. eggs. Egg-species was in 1970.

48°125'NE. August 1964–August 1969, Guiguet; June 1970, Foster, Lemke, and Guiguet. Three caves on the east side of this island are utilized annually by nesting pelagic cormorants. Caves are located at the southeast, central, and north central sections of the eastern shoreline. The birds nest on the sides of the caves, sometimes very close to high-tide mark. In 1970 the southeastern site harboured 18 pairs; the central site, three or four pairs; the north central site, 20 pairs. *Folger Island*, E. side of Imperial Eagle Channel near S. end, Barclay District (Barkley Sd.), 48°125'NE. August 1965–June 1970, Guiguet. July 24, 1970, Campbell, Hawes, and Hawes. A cave on the northwest side of this island annually harbours two or three pairs in breeding plumage. Nests not observed, birds seen entering and leaving the cave. *Fleming Island*, W. side of Trevor Channel, SW. of Tzartus I., Barclay District (Barkley Sd.), 48°125'NE. August 1967–August 1970, Guiguet; June 11, 1970, Schick and Riseborough. Cormorants in breeding plumage seen annually entering and leaving two caves on the west side of this island at Lat. 48°53'25"N. Schick and Riseborough recorded three nests in one cave and five in the second. *Swiss Boy Island*, E. side of Imperial Eagle Channel, W. of Tzartus I., Barclay District (Barkley Sd.), 48°125'NE. August 11, 1969, Schick and Lemke. June 11, 1970, Schick and Riseborough. Half way along the west side of this island about 50 pairs nesting in a cave. Nests contained large downy young in August 1969. Revisited in June 1970, the cave was devoid of nests and breeding cormorants. *Baeria Rocks*, Imperial Eagle Channel near N. end, Barclay District (Barkley Sd.), 48°125'NE. July 18, 1960, Wootton (1961); June 4, 1970, Lemke and Guiguet; June 15, 1970, Schick and Guiguet; July 25, 1970, Campbell, Hawes, and Hawes. Baeria Rocks consist of two unvegetated reefs, positioned north and south from one another. The southern reef is divided into three sections, the higher of the three on the northwest side. Wootton saw cormorants here from a distant steamer and assumed nesting (1961). This area held 28 pelagic cormorant nests on June 15, 1970. They contained from none to three eggs. Egg-laying apparently just began. The species was not using the northern reef for nesting in 1970. Campbell and Hawes counted 32

nests on the southern reef later (in July) and reported all empty or with broken egg shells only. From the evidence, human predation was suspected. *Dempster Island*, Broken Group, W. side of Imperial Eagle Channel, Barclay District (Barkley Sd.), 48°125'NE. June 12, 1970, Lemke and Guiguet. Three close together caves on the east side of this island harboured 18 inaccessible (heavy seas) pelagic cormorant nests. Birds were apparently incubating, some refused to leave the nest on shotgun blast. *Vancouver Island*, cave at head of bay between Keeha Bay and Deadman's Cove, S. of Barkley Sd., 48°125'NE. June 12, 1970, Foster and Guiguet. A pair of pelagic cormorant in breeding plumage flushed from a large cave by shotgun blast, was assumed to be nesting therein. *Cape Beal Light Station*, SE. entrance pt. to Barkley Sd., Barclay District, 48°125'NE. July 1947, Brooks (1961) reported 20 nests in a cave approximately 100 yards south of the lighthouse, July 6, 1959; Widdowson (1961) reported 14 nests at lighthouse itself; August 22, 1970, Foster reported birds in breeding plumage trading in and out of these areas, still carrying nesting material.

BLACK OYSTERCATCHER: *Haematopus bachmani*. *Sea Bird Rocks*, SW. of Pachena Bay, S. of Barkley Sd., 48°125'NE. June 12, 1970, Foster and Guiguet, six nests containing one to three eggs were observed without specifically searching for them, indicating a large nesting population for the island. More than 80 adults were present. *Bordelais Islets*, W. side of Trevor Channel, at S. end Barclay District (Barkley Sd.), 48°125'NE. August 1964–August 1969, Guiguet, species observed here annually from sea, obviously nesting, large young observed. June 5, 1970, Lemke and Guiguet, 12 freshly prepared nests, no eggs. Twenty adults on island. *San Jose Islets*, Trevor Channel, E. of Tzartus I., Barclay District (Barkley Sd.), 48°125'NE. August 25, 1970, Campbell, Hawes, and Hawes recorded two adults and one large young, on the easternmost of these islets. *Wizard Islet*, Satellite Channel, W. of Trevor Channel, Barclay District (Barkley Sd.), 48°125'NE. August 1964–August 1969, Guiguet. Pair observed nesting here annually, large young observed. June 5, 1970, Lemke and Guiguet, nest with three eggs, one pair only on islet. *Baeria Rocks (South)*, Imperial Eagle

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ley Sound upon which they were observed from the sea, but not checked out ashore.]

GLAUCOUS-WINGED GULL: *Larus glaucescens*. *Seabird Rocks*, SW. Pachena Bay, S. of Barkley Sd., 48°125'NE., August 19, 1943, August 11, 1945, Pearse (1961); June 12, 1970, Foster and Guiguet. Pearse banded nesting gulls on this islet in August 1943 and 1945. Foster and Guiguet estimated the population at 1,000 adult birds. Nests were very numerous and contained none to four freshly laid eggs. Nesting population estimated at between four and five hundred pairs. No whole count of nests was made. *Bordelais Islets*, W. side Trevor Channel, at S. end Barclay District (Barkley Sd.), 48°125'NE. August 1964–August 1969, Guiguet. June 5, 1970, Lemke and Guiguet. Large young observed from the sea annually in August. On June 5, 1970, 25 pairs were nesting on the island, egg-laying just begun, most nests empty or with only one or two eggs. Crow predation on eggs was apparent. *San Jose Islets*, Trevor Channel, E. of Tzartus I., Barclay District (Barkley Sd.), 48°125'NE. August 25, 1970, Campbell, Hawes, and Hawes recorded two nesting pairs on one islet, a nest with two young, and a single large young on the second islet. *Baeria Rocks (South)*, Imperial Eagle Channel near N. end, Barclay District (Barkley Sd.), 48°125'NE. July 18, 1960, Wootton (1961); June 4, 1970, Lemke and Guiguet; June 15, Schick and Guiguet; July 25, 1970, Campbell, Hawes, and Hawes. Wootton assumed breeding, based on distant observation of adults from decks of a steamer. Two hundred pairs were estimated to be present on June 4 (seas too rough to land). The June 15 party landed on the reefs after counting between 100 and 150 pairs. Nests were very numerous and most contained two or three freshly laid eggs. No whole count was made of nests. On July 25 the Campbell party landed and counted a total of 99 nests on the three sections making up the southern Baeria Rock. Nests were empty, or contained both eggs and downy young. *Baeria Rocks (North)*, co-ordinates as above. June 4, 1970, Lemke and Guiguet; June 15, 1970, Schick and Guiguet; July 25, 1970, Campbell, Hawes, and Hawes. Between 150 and 200 pairs estimated to be breeding by June 4 party, seas too rough to land. The June 15 party landed on the reef after again estimat-

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ing between 150 and 200 pairs. Birds were disturbed and in continual flight and landings. Nests were everywhere, most contained two or three freshly laid eggs, no whole count of nests was made. On July 25 the Campbell party counted 111 nests on this islet, mostly empty or with young, a few contained eggs. *Wower Island*, Broken Group, SW. end of Barclay District (Barkley Sd.), 48°125'NE. August 13, 1962, Hilliers, Benson, and Guiguet; July 25, 1970, Campbell, Hawes, and Hawes. Four breeding pairs were recorded in 1962; one nest and "probably others" in 1970. *George Fraser Island*, S. of mouth of Ucluelet Inlet, Clayoquot District, 48°125'NW. June 4, 1970, Lemke and Guiguet; July 23, 1970, Campbell, Hawes, and Hawes. A dozen birds roosted in pairs on these islands, preparing to nest; no nests observed during mammal-trapping operation. Birds observed carrying nest material at Janson I. on June 4. Campbell recorded one nest with three young on July 23, and "less than 10 pairs nesting, nests on rocky promontories" on west side of islands. *Starlight Reef*, E. side Felice Channel, Barclay District (Barkley Sd.), 48°125'NE. August 13, 1962, Hilliers, Benson, and Guiguet; June 4, 1970, Lemke and Guiguet; July 24, 1970, Campbell, Hawes, and Hawes. Glaucous-winged gulls nesting, large young observed from the sea on August 13, 1962. On June 4, 1970, the party unable to land, counted 150+ pairs of birds, obviously nesting or preparing to do so. July 24, 1970, Campbell got ashore and counted 159 nests, some empty, others containing eggs and young. *Great Bear Rock*, W. side Loudoun Channel, Barclay District (Barkley Sd.), 48°125'NE. August 13, 1962, Hilliers, Benson, and Guiguet; August 29, 1969, Campbell, Campbell, and Dunnett; June 4, 1970, Lemke and Guiguet; July 24, 1970, Campbell, Hawes, and Hawes; August 25, 1970, Campbell, Beaton, Campbell, and Shepard. Glaucous-winged gulls were recorded nesting here in August 1962 and 1969. The 1970 June 4 party, ashore on the northern section, examined 18 freshly prepared nests, three of which contained one to three eggs. About 300 adult birds were present on the two main islets making up this reef. The 1970 July 24 party recorded a total of 47 nests, containing mainly young birds. *Alley Rock*, W. side Loudoun Channel, Barclay District (Barkley

Sd.), 48°125'NE. August 13, 1962, Hilliers, Benson, and Guiguet; June 3, 1970, Guiguet and Lemke; July 25, 1970, Campbell, Hawes, and Hawes. Glaucous-winged gulls were recorded nesting here on August 13, 1962, no details given. On June 3, 1970, eight adult pairs were present on this reef but no evidence of nest-building was found when the party landed. On July 25, 1970, two nests were found, each containing young. [Note: A few other sites may be used in Barkley Sound from time to time by glaucous-winged gulls. These nesting birds, aptly termed "isolates" by Drent (1961), do not necessarily occupy the same site annually. Glaucous-winged gulls, reported by local residents to nest on Wizard Rock in Satellite Passage, and on a low, flat islet midway between Ohiat Islet and Helby I., were not observed doing so by field parties. In August, both islets are utilized as roosts by several species of gulls, sometimes numbering in thousands.

PIGEON GUILLEMOT: *Cephus columba*. *Seabird Rocks*, SW. of Pachena Bay, S. of Barkley Sd., 48°125'NE. June 12, 1970, Foster and Guiguet. Between 70 and 80 guillemots perched on this island. Adults on nests and eggs in heavy beach debris located upon landing, did not search further. Breeding population of about 70 pairs indicated. *Bordelais Islets*, W. side of Trevor Channel, at S. end Barclay District (Barkley Sd.), August 1964–August 1969, Guiguet; June 5, 1970, Lemke and Guiguet. Adults observed annually carrying feed ashore to these islets indicated feeding of young in nest. On June 5, 1970, party ashore was not able to uncover eggs in heavy talus in centre of island from which birds were seen to leave. At least eight pair were nesting on the western islet. *Swiss Boy Island*, E. side Imperial Eagle Channel, W. of Tzartus I., Barclay District (Barkley Sd.), 48°125'NE. August 21 and 24, 1969, Schick and Lemke. Two hundred guillemots frequenting the shores of this island in August indicate a breeding population. Young of year and adults observed here on the sea for a short period. Substantiation is required. *Baeria Reefs (South)*, Imperial Eagle Channel near N. end, Barclay District (Barkley Sd.), 48°125'NE. Lemke and Guiguet, June 4, 1970; Schick and Guiguet, June 15, 1970; Campbell, Hawes, and Hawes, July 25, 1970. Two pair observed copulating and courting on June 4, seas too

rough for landing. On June 15 party landed, after observing courting flight and copulation among 20 individuals roosted on island. Few suitable nesting sites located, nest and eggs not found. Only three birds were recorded here July 25, on sea, no nests found. *Baeria Reefs (North)*, co-ordinates as above; field parties as above. On June 4, 1970, six pairs of guillemots were seen leaving the central part of the rocks, seas prevented landing. On June 15, 1970, landed but guillemot nests were not found, number of birds present was unrecorded. On July 25, four birds were flushed from the island, still no nests. [Note: These islets are included as breeding sites for this species on the basis of observed courting flights and copulations. Substantiation is required.] *Cree Island*, Broken Group at S. side of Barclay District (Barkley Sd.), 48°125'NE. August 1965–August 1969, Guiguet; June 11, 1970, Foster and Guiguet. Guillemots have been observed entering and leaving nesting sites on the steep sides of this island each year. At least four pairs were nesting in burrows on the south side in June 1970. Nests were not excavated by the shore party. [Note: Guillemots were observed roosting on Sail, Wower, and on various other islands in the Broken Group, Deer Group, and the unnamed northern group of islands. Nesting may take place on some of these in situations inaccessible to mink. Further investigation is indicated on this species nesting in Barkley Sound.]

MARBLED MURRELET: *Brachyramphus marmoratus*. The breeding behaviour of this species is still largely unknown. However, there is no doubt that the waters of Barkley Sound are utilized by the marbled murrelet in its nesting behaviour. The presence of large numbers of paired adults early in June, and of adults and young of the year in August, makes these easily accessible waters an ideal launching area for future studies of this species.

In June, concentrations of paired adult birds have been recorded by museum parties in the following areas in Barkley Sound. Map co-ordinates are not listed, geographic nomenclature follows Canadian Hydrographic Marine Chart #3637.

June 2, 1970—30 pairs, scattered, between Forbes and the Beg Islands, 1 mile off shore.

June 4, 1970—concentration, 25 pairs, one-half mile east of George Fraser Islands.

June 4, 1970—concentration, 20 pairs half way between Chow Islands and Alley Rock.

June 6, 1970—concentration, 24 pairs in Trevor Channel, one-quarter mile north of Whittlestone Point.

June 7, 1970—concentration, 25 pairs, one-half mile east of Sanford I.

June 11, 1970—10 pairs scattered along east side of Flemming I., unspecified number observed off mouth of Bamfield Inlet, this date.

June 12, 1970—more than 100 pairs scattered between Cree I. in the Broken Group and Cape Beal, to the Seabird Rocks off Pachena Bay.

June 16, 1970—concentration of 50 adults, one-half mile east of the Trevor Channel side of Dodger Channel; marbled murrelet, some in pairs, scattered one-quarter mile off shore along entire east side of Flemming I. and Tzartus I.; no count taken, birds in sight continually; field notes indicate marbled murrelet the most numerous sea bird in area this date.

June 17, 1970—between 60–70 individuals scattered between Cree I. and Amphitrite Point.

In August, young are present on the sea in Barkley Sound in numbers and have been recorded as follows:

August 9, 1964—concentration, between 50–60 adults and young (mixed) in Trevor Channel off Aquilar Point.

August 8–9, 1967—scattered single adults with one young each, two young with egg tooth collected; total number not recorded; along west side of Flemming I.

August 10, 1967—"many" adults with young off west side of Sanford I.

August 1, 1968—"many" marbled murrelets in flight heard calling before daylight off Austin I.

August 2, 1968—three young of the year observed off Whittlestone Point on the east side of Trevor Channel.

August 7, 1968—young collected with parent in waters off west side of Diana I.

August 10, 1968—"large numbers of young" off east side of Edward King I.

August 14, 1968—six young with parents, some singles, off Fleming I.

August 4, 1969—10 young of the year and 60 adults concentrated off Cape Beal; another group of 14 adults with three young; also six adults without young in the same area.

August 7, 1969—two adults and two young collected off sea west of Tzartus I.

August 10, 1969—"many paired adults off east side of King Island, no young."

August 20, 1969—collected two adult and one young together, west of Tzartus I.

July 30, 1970—50–60 adults and 12 young off east side of Sanford I; scattered single young with pair of adults; other groups "ganged" up.

August 3, 1970—some accompanied one group of 3

August 4, 1970

August 20, 1970—murrelets between present in mix

August 24, 1970—between Folger

August 31, 1970—young of the parents and o

A possible breeding area of fresh water lakes

In the cooskaye, W. the presence Central Lake ing daylight cate that the with breeding surface at perhaps, the factor.

CASSIN'S Seabird Rockley Sd., 4 Although coming on the almost certainly in small numbers in Barkley Sound fragile rook obvious during night watch presence of the other nests was impossible, due to of time.

August 3, 1970—"many" young in singles, doubles, some accompanied by parents, some unaccompanied; one group of six young with two adults.

August 4, 1970—"many young" off of Cree I.

August 20, 1970—counted over 100 young marbled murrelets between Cree I. and Miller Reef; adults also present in numbers.

August 24, 1970—"many" young observed in area between Folger I. and Cape Beal.

August 31, 1970—concentration of 20 birds, half young of the year off Whittlestone Point, probably parents and offspring.

A possible tie-in with these concentrations of breeding marbled murrelets are nearby bodies of fresh water such as Sproat and Great Central Lakes.

In the course of nocturnal studies on young sockeye, W. E. Barraclough (1971) has recorded the presence of marbled murrelet on Great Central Lake at night. None is seen there during daylight hours, which may, or may not, indicate that this nocturnal occurrence is associated with breeding. Young sockeye are close to the surface at night, deep in the daytime, indicating perhaps, that food, not nesting, may be the factor.

CASSIN AUKLET: *Ptychoramphus aleuticus*. *Seabird Rocks*, SW. of Pachena Bay, S. of Barkley Sd., 48°125'NE, Foster and Guiguet. Although concrete evidence of this species nesting on the Seabird Rocks was not found, it almost certainly does so. The species is seen in small numbers annually during the summer in Barkley Sound. Digging of burrows on this fragile rookery was discontinued due to the obvious damage being done. It was believed a night watch would be sufficient to establish the presence of this species, and to census it and the other nocturnal nesters. Unfortunately, this was impossible to accomplish before publication, due to adverse weather conditions and lack of time.

RHINOCEROS AUKLET: *Cerorhinca monocerata*. *Seabird Rocks*, SW. of Pachena Bay, S. of Barkley Sd., 48°125'NE, Foster and Guiguet. This is the only island in the Barkley Sound area where concrete evidence of nesting was obtained for this species. Two incubating adults were uncovered in very short order, and it was obvious from burrows that an appreciable nesting population utilizes this island. More than 40 adults in breeding plumage were observed nearby. Two fully incubated eggs were collected.

Rhinoceros auklet young, numerous in Barkley Sound during late summer, probably come from Cleland I. and islands off the Washington coast, as well as from the Seabird Rocks.

TUFTED PUFFIN: *Lunda cirrhata*. *Seabird Rocks*, SW. of Pachena Bay, S. of Barkley Sd., 48°125'NE, Foster and Guiguet. In Barkley Sound found nesting only on this island. A burrow, excavated, contained an incubating adult and one egg. The egg was collected. A small nesting population is indicated, some 24 individuals were circling and on the sea in the vicinity of the island.

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