MARBLED MURRELET *Brachyramphus marmoratus*

Conservation Status

ALASKA: High **N. AMERICAN: High Concern** **GLOBAL: Endangered**

Breed	Eggs	Incubation	Fledge	Nest	Feeding Behavior	Diet
June-Aug	1	28-30 d	27-40 d	trees, ground, crevice	surface dive	fish, aquatic invertebrates

Life History and Distribution

The mysterious Marbled Murrelet *(Brachyramphus marmoratus)* perplexed ornithologists for 100 years because their nests could not be found. The first verified nest discovery was in a tree, in 1974. That discovery and subsequent records, confirmed the unique nesting habits of this small auk. Unlike most seabirds, they do not nest in colonies.

Nesting generally occurs in trees in forested areas or on the ground on islands and along coasts. They breed along the coast from the Aleutian Islands in Alaska, south to central California. Spring and summer records also exist in Alaska for Bristol Bay, the northern Bering Sea, and St. Lawrence Island.

During winter in Alaska, many birds move to protected waters, offshore areas, or unknown locations; some individuals remain near breeding areas. The winter range is not well documented, but known winter concentrations occur in Southeast Alaska, the Kodiak Archipelago, Cook Inlet, Prince William Sound, and some areas of the Gulf of Alaska.

Alaska Seasonal Distribution

AK Region	Sp	S	F	W
Southeastern *	C	C	C	C
Southcoastal *	C	C	C	C
Southwestern *	U	U	U	U
Central	-	-	+	-
Western *	+	+	+	-
Northern	-	-	-	-

C= Common, U= Uncommon, R= Rare, + = Casual or accidental, - = Not known to occur, * = Known or probable breeder, Sp= Mar-May, S= June and July, F= Aug-Nov, W= Dec-Feb.

Most nest sites consist of a mossy platform on a thick limb or broad trunk deformity in old-growth trees. All nests found from British Columbia to California have been in trees, but some ground nests have been located in Alaska. Today, approximately 260 nests have been found in North America, and thirty-three nests have been confirmed in Alaska (14 ground nests and 19 tree nests). Evidence of additional nesting has been recorded for Alaska, but nests were not found.

In its breeding plumage, the top of the head, back and wings are dark brown, while the throat, chest and abdomen are brown flecked with white and cinnamon, giving a "marbled" appearance. Males and females have similar coloring. The winter plumage is blackish-brown above with largely white shoulders (scapulars) and white underparts.

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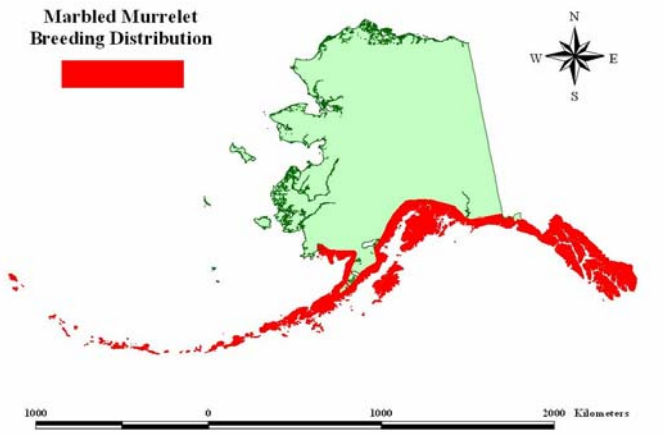
Kittlitz's Murrelets *(Brachyramphus brevirostris)* are closely related, similar in appearance, and overlap in some areas with the Marbled Murrelet. The bill of the Kittlitz's Murrelet is shorter and when flushed the tail shows white in the outer feathers. The Kittlitz's breeding plumage is more tawny or gray and mottled with more white.

Marbled Murrelets normally feed in nearshore marine waters, including shallow bays, fjords, and inlets. Fish and aquatic invertebrates are caught by underwater pursuit and feeding occurs day and night. Although large foraging groups may be attracted to sites where fish are concentrated, typically, they forage individually or in pairs. Their ability to locate small schools of fish may be why they are often the catalysts for formation of forage flocks.

A dramatic decline in the Marbled Murrelet population caused concern throughout its range and the Washington-Oregon-California population was federally listed as Threatened under the Endangered Species Act in 1992. The Canadian population in British Columbia, was assigned Threatened status in 1990. In Alaska, the Marbled Murrelet is considered a Bird of Conservation Concern by the U.S. Fish and Wildlife Service.

Population Estimates and Trends

Because of the difficulty in locating and following individual nests, Marbled Murrelets are monitored by surveys at sea. Monitoring the population in Alaska is further complicated because of the difficulty in distinguishing them from the Kittlitz's Murrelet. Many historical surveys did not distinguish between these two



Seabird breeding distribution maps created from data *in* Birds of North America, Nelson 1997.

Brachyramphus species. However, Marbled Murrelets typically comprised 90-99% of the *Brachyramphus* murrelets in Alaska.

The best available and most recent population estimate for Marbled Murrelets in North America is ~944,000 individuals. However, important areas lack recent data. Approximately 91% of the North American population breeds in Alaska. Southeast Alaska may support >70% of the North American population and ~79% of the Alaskan population. Most of the population estimates for Alaska were derived from surveys previous to 2000, and often from the 1970s-1990s. California, Washington, and Oregon comprise 2% of the total population, and British Columbia the remaining 7% of the North American population.

The most complete trend data for Alaska are from Prince William Sound, where the population declined 89% between 1972 and 2004. Trends in other regions of Alaska also showed declines. *Brachyramphus* Murrelet densities declined in Glacier Bay by 74% (1991-2000), along the Malaspina Forelands by 44% (1992-2002), and in Kachemak Bay by 52% (1988-2004). In the Kenai Fjords, murrelets declined 62% between 1976 and 1986, but then increased 10% per year from 1986-2002. No trend data are available for Southeast Alaska, which was last surveyed comprehensively in 1994.

Conservation Concerns and Actions

The loss of old-growth nesting habitat is believed to be a key factor in the decline of Marbled Murrelets in some areas. It is unknown if loss of nesting habitat is as important in Alaska as it is further south, because timber harvest has not been intensive in Alaskan areas where murrelet declines have been documented. Other factors may be contributing to the declines in Alaska. Documented sources of mortality include bycatch in gillnet fisheries and oil spills. Additionally, changes in oceanic conditions since the 1970s in the Gulf of Alaska, may have negatively affected the availability of forage fish for Marbled Murrelets. To raise chicks, they require energy-rich fish like juvenile herring *(Clupea pallasi)* and adult sandlance (*Ammodytes hexapterus).* In Prince William Sound, the crash of herring stocks in the early 1990s may have exacerbated the decline of Marbled Murrelets.

A 1990-1991 study of gillnet fisheries in Prince William Sound, estimated that between 450-1,470 *Brachyramphus* murrelets were killed annually as accidental bycatch. Estimates of gillnet mortality for other areas include (37 birds, Cook Inlet 2000) and (56 birds, Kodiak Island 2002). Gillnet fisheries occur widely in Alaska and Carter *et al.* (1995) suggested that many thousands of Marbled Murrelets may be killed annually in Alaskan fishing nets.

The 1989 *Exxon Valdez* oil spill, in Prince William Sound, Alaska, caused direct mortality of an estimated 8,400 *Brachyramphus* murrelets; most were Marbled Murrelets. This number represents the minimum mortality. Murrelets were difficult to find on the rocky shorelines and many of the unidentified small alcids were probably Marbled Murrelets. Throughout Alaska, they have also been killed by small oil spills.

Recommended Management Actions

- Establish an at sea monitoring program at select sites.
- Re-survey the entire Southeast Alaska sub-region using protocol similar to that used in 1994.
- Complete further compilation, synthesis, and analysis of data on population sizes and trends.
- Continue investigation of distribution and abundance of prey species and effects of oceanographic changes on availability.
- Work with state and federal agencies and fisheries councils to better understand and minimize negative impacts of fisheries throughout the species' range.
- Support efforts to minimize the incidence of fuel spills and chronic oiling.
- Investigate potential disturbance impacts from vessel traffic and tour boats.

Regional Contact

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References

Agler *et al.* 1998; Anderson and Piatt 1999; Armstrong 1995; Burger 2002; Carter and Kuletz 1995; Carter *et al.* 1995; DeGange 1996; IUCN Internet Website (2005); Kuletz 2005; Kushlan *et al.* 2002; Manly 2004; McShane *et al.* 2004; Mendenhall 1992; Nelson 1997; U.S. Fish and Wildlife Service 2006, 2002; 1992; Van Pelt and Piatt 2003; Wynne *et al.* 1992, 1991.

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