MARBLED MURRELET - BRACHYRAMPHUS MARMORATUS

Taxonomy: Kingdom: Animalia Phylum: Chordata Class: Aves Order: Charadriiformes Family: Alcidae Genus: Brachyramphus Species: B. marmoratus

Habitat:

Biomes: Breeds in coniferous forests near coasts, nesting on large horizontal branches high up in trees. Winters at sea. It nests in old-growth forests or on the ground at higher latitudes where trees cannot grow. Marbled murrelets are coastal birds that occur mainly near saltwater within 1.2 miles (2 km) of shore. From southeast Alaska southward, marbled murrelets use mature or old-growth forest stands near the coastline for nesting. These forests are generally characterized by large trees.

Distribution:

In US: Marbled murrelets occur in summer from Alaska's Kenai Peninsula, Barren islands, and Aleutian Islands south along the coast of North America to Point Sal, Santa Barbara County, in south-central California. Marbled murrelets winter mostly within the same general area, except that they tend to vacate the most northern sections of their range, especially where ice forms on the surface of the fiords. They have been recorded as far south as Imperial Beach of San Diego County, California.

In Other Countries: Siberia - VAGRANT

Holistic Description: A chunky Pacific seabird, the Marbled Murrelet is unique among alcids (puffin relatives) in nesting high up in large trees in coastal forests. Little-known until the past few decades, it now is thought to be seriously threatened by logging. The Marbled Murrelet is unique among members of the alcid family in its nesting habits. This small seabird nests in trees in coastal, older forests throughout most of its range in North America and Asia. Marbled Murrelets fly at high speeds, attend their breeding sites during periods of low light, and nest solitarily. These behaviors, combined with the challenges of capturing them at sea, have made this species difficult to study. Only in the last decade have some of its secrets been revealed; today more than 160 of its nests are known.

Species Richness: NO SUBSPECIES

Population Dynamic: The marbled murrelet is considered globally endangered, with some evidence of decline across its range over the last few decades. The biggest threat to the marbled murrelet was long considered to be loss of nesting habitat (old-growth and mature forests) to logging. Additional factors including high predation rates due to human disturbances and climate-driven changes in ocean conditions are also considered important now. CHECK THREATS.

Evolution and Systematics:

Evolution: Brachyramphus thought to be one of oldest alcid genera, having evolved during late Miocene, 7–12 million years ago. Many subfossil remains of Marbled Murrelets dating from 1,600–4,000 yr before present are known from numerous archaeological digs along West Coast of North America.

Systematics: The three species share a unique characteristic of molting from cryptic mossy brownish Alternate plumage to black-and-white Basic plumage. Although B. marmoratus and B. perdix were classified as conspecific for a half-century, the former actually is sister to B. brevirostris.

Number of Species: NO SUBSPECIES

Number of Genera: NO SUBSPECIES

Physical Characteristics:

Size and Length: Length: 9.4-9.8 in (24-25 cm) Weight: 9.1-12.6 oz (258-357 g)

Wingspan: 41 cm (16 in)

Coloration: Breeding adult sooty brown on upperparts, mottled brown on underparts. Nonbreeding adult with blackish upperparts, white underparts. White extends up sides of head, almost all the way around the nape.

General Body Features: Small plump waterbird. Short, pointed bill. Short, pointed tail.

Special Features of the Body: Most seabirds are white on the bottom to blend in with the surface of the ocean when seen from below and dark on the back to blend in with the surface of the ocean when seen from above. During the non‑breeding season, murrelets hold to that pattern. But during the nesting season, they turn reddish brown all over with a marbling of white spots, perfectly blending in with the sun dappled shadows of the redwood canopy. The chicks are similarly well camouflaged. **Body shape and long, narrow, pointed wings allow for agile and rapid pursuit of prey.**

Special Features of the Head and Sensory Organs: The short neck and torpedo-shaped body minimize drag underwater Focusing is done not through changes in the shape of the cornea, but by relatively dramatic changes in the lens itself. To adjust to low light levels, pupils tend to be large and the retina packed with high numbers of rods. These rods enhance motion detection in low light levels.

Dentition: BEAK/LAMELLAE/GIZZARD

Special Features of the Limbs and Digits: Their feet, placed well to the rear, make walking on land awkward, but are ideally suited to helping the bird maneuver underwater. The outer contour feathers present a smooth surface important for minimizing drag when flying underwater. At depth, water pressure squeezes the air from the downy feathers, reducing buoyancy, and making underwater flight more efficient.
Any Special Internal Anatomy: Marbled Murrelets have a dense layer of overlapping waterproof feathers that keep the bird dry, preserving the insulating value of underlying down. Murrelet respiratory systems are very efficient at delivering oxygen to muscles. They have a high percentage of red-blood cells and oxygen transporting hemoglobin molecules in their blood. Their muscles are heavily infused with capillary blood vessels that transport oxygen-rich blood to the individual muscle cells. The flight muscles of Alcids contain a large proportion of aerobic (oxidative) muscle fibers and oxygen-carrying myoglobin. These fibers are capable of producing rapid, powerful wing beats for aerial flight, and storing large quantities of oxygen for increased aerobic capacity during wing propelled diving.
Sexual Dimorphisms: Quite literally, there is no difference between sexes. They are sexxually monomorphic in characters and have no difference in linear measurements. The female has averaged slightly larger at 222.7g compared to 217.0g for males, but that has been attributed to skewed data and averages.
Differences Between Juvenile Stage and Adult: Similar to non-breeding adult, but underparts lightly speckled, not clean white.

Behavior:

Diurnal, Nocturnal, or Crepuscular: Diurnal
Activity: Dives underwater to capture prey, using its wings to swim. The marbled murrelet feeds at sea both in pelagic offshore areas and inshore in protected bays and fiords. The bird has not been known to wander from the Pacific coast of North America, all inland and eastern Brachyramphus records being of the closely related long-billed murrelet. The nesting behavior of the marbled murrelet is unusual, since unlike most alcids it does not nest in colonies on cliffs or in burrows, but on branches of old-growth and mature conifers such as western hemlock, Sitka spruce, Douglas-fir and coastal redwood, as far as 80 km inland.
Locomotion: Not considered agile on land, although nesting birds can walk along tree limbs and hop from one limb to another in nest tree. Grounded individuals may walk hundreds of meters on ground in search of suitable launching areas. Not known to climb. Not considered agile on land, although nesting birds can walk along tree limbs and hop from one limb to another in nest tree. Grounded individuals may walk hundreds of meters on ground in search of suitable launching areas. Not known to climb. Spends most time at sea swimming, loafing, or resting on ocean surface. Sits on water with head drawn back, neck compressed, and tail cocked. When foraging or moving, head raised higher, and short neck more apparent. Dives underwater to forage by using wings to propel itself.
Communication and Perception: Common call is a smooth "keer," sometimes uttered as two syllables. Also issues a short, forceful whistle-like note at the nest.
Home Range: No information, although pairs may have terrestrial home ranges, including >1 nest site that they maintain throughout year. Birds return annually to nesting areas and sometimes reuse historic nest sites. Activity below canopy observed to increase at nest sites that recently failed in Alaska; could be form of territoriality.
Degree of Sociality: Nests solitarily, but usually occurs in groups in forest nesting habitat. Socializes in groups of up to 12 individuals during dawn display flights over forest nesting grounds. Sociality at ground-nesting sites unknown. On water, where maintaining secrecy to avoid predation is not as important as in forests, highly social, especially in winter and in northern portion of range.
Level of Aggression: Limited information on physical and communicative interactions. At nest sites in forests, birds observed chasing one another or creating loud sounds, like jet, during shallow or steep dives directed at another individual. Also chase one another at sea.
Migration: Revealed seasonal shifts in distribution consisting primarily of small-scale migratory movements. In these limited movements, individuals move seasonally from outer coastal to protected waters (i.e., into Puget Sound), from inland waters to unknown locations, or south from breeding areas.

Predators:

Predators: Common Ravens, Steller's Jays, Sharp Shinned Hawks, Peregrine Falcons, Northern Goshawks, Bald Eagle, Common Crows, Great-Horned owl, Cooper's Hawk, Mice, Squirrels, Western Full, and northern Fur Seal.
Anti-Predator Defenses: Avoids detection through behavior on nest and at nest site, and via cryptic plumage. In response to calls or presence of predators, adults and chicks often flatten themselves against tree branch, holding their backs and heads low and remaining motionless. Will defend against predators that have found a nest by standing erect, turning to face the intruder, and jabbing at it with bill.

Diet and Nutrition:
Adult Diet: BREEDING SEASON: Small schooling fish, including Pacific sand lance, northern anchovy, Pacific herring, capelin, surf smelt, and viviparous seaperch. WINTER AND SPRING: Euphausiids, mysids, gammarid amphipods, capelin, smelt, and herring are dominant prey. Also known to consume Pacific sardine, walleye pollock, Pacific sandfish, rockfishes, codfishes, pricklebacks, squid, shrimp, and sockeye and Kokanee salmon from freshwater lakes.
Juvenile Diet: ^^^^^^^
Special Adaptations for Getting Prey: Forages mostly individually and in twos throughout year; aggregations most common during nestling period, and single birds more common in winter in some areas. Forages day and night.
Reproduction:
Mode of Reproduction: Monogamous
Mating System: Suspected to be socially monogamous.
Mating Season: July to April
Courtship: Court at sea in early spring, when some adults are still in winter plumage, and throughout summer. Courting behavior also seen in winter. During courtship, male and female join closely together, extend their necks vertically and point their bills in air, partially lift their breasts out of water, and swim rapidly forward and together for as long as 30 s. Pairs also dive synchronously into water and surface within 1–3 s next to one another, suggesting that they remain together underwater. They often resurface and repeat bill-posturing
Territoriality: HOME RANGE
Mating: Copulation rarely observed; occurs both in trees and on water. Before and after copulation, one or both birds usually vocalize with emphatic, nasal eeh-eeh call.
Nesting: In areas where they nest on ground, suitable nesting habitat consists of rock scree slopes, cliffs, and boulder fields near ocean. Nests on top of rocks, in rock cavities, or crevices in the open or under vegetation. **At tree-nesting sites in North America, suitable habitat consists of large-diameter limbs or platforms created by normal tree growth, disease, mistletoe, deformed branching, collections of needles and debris, or other factors in large conifers. Does not add material to nest. Nest consists of small depression in rock or soil on talus slope or cliff, or in moss or duff on tree platform or tree root. Method, time of day, and length of time for creation unknown.**
Egg-Laying: Egg Shape: Subelliptical Egg Length: 59.8 mm Egg Width 37.6 mm Egg Mass: 36-41 g Egg Color: Pale olive green to greenish yellow background color; nonglossy; covered with irregular brown, black, and purple spots, which are more prevalent at larger end of egg. **Murrelet eggs are also perfectly suited to their canopy environs, colored jade green with dark speckles.** Egg Texture: Smooth and nonglossy to slightly glossy. Clutch Size: 1 egg Incubation Period: 28-30 days
Hatching and Incubation/Gestation: Semiprecocial; mass 32.0–34.5 g. Fully feathered and covered with thick yellow down dotted with brown and black spots. Spots on head are concentrated in large patches, and down on belly is pale gray. Beak black, feet dark gray. hicks are vulnerable on nest, especially during first 6 d, when predation rates are high and their lack of agility increases their chances of falling from tree nests.
Development: Covered in down, can walk, but stays in nest.
Parental Care: Adults brood chick for only 1–2 d after hatching. During brooding, adults are active and restless, regularly standing, turning, and repositioning themselves on chick. Both adults feed young, although they rarely arrive at nest together. Generally carry single fish in bill, holding it crosswise just behind operculum. After arriving on nest limb, adult carrying fish often remains frozen on landing pad before approaching nest. After approaching chick, adult stands motionless as chick energetically strokes adult's throat and beak with its beak.
Lifespan: Around 5 years old, up to 10 years old.
Conservation:
Official Federal Status: Endangered
Special Statuses in Individual States: NONE
Threats: There is little information on Marbled Murrelet population trends, but they appear to be a species in decline. The North American Waterbird Conservation Plan estimates a continental breeding population of 300,000-800,000 birds, rates the species a 15 out of 20 on the Continental Concern Score, and lists it as a Species of High Concern. Populations of Marbled Murrelet in Washington, Oregon, and California, are on the 2014 State of the Birds Watch List, which lists bird species that are at risk of becoming threatened or endangered without conservation action. The species is listed as Endangered on the IUCN Red List, and as Threatened under the Endangered Species Act by the U.S. Fish and Wildlife Service. Logging and development of forested nesting habitat are considered the greatest threats to this species. Significant portions of nesting areas have already been lost. Oil spills and entanglement in gill-nets are also major risks. CHECK POPULATION DYNAMIC.

Conservation Efforts: ^^^^^^

Extra Facts:

1. The Marbled Murrelet usually nests in trees greater than 200 years in age.
2. Though the Marbled Murrelet was first described in 1789, a nest site of the species was first discovered and formally documented only in 1974. The egg, however, was known in 1898, when a bird was shot that contained a complete egg in its oviduct.
3. The Marbled Murrelet was once known as the "Australian Bumble Bee" by fishermen and as the "fogbird" or "fog lark" by loggers.
4. The oldest known Marbled Murrelet was at least 10 years old when it was recaptured and rereleased during banding operations in British Columbia.
5. The Marbled Murrelet was once known as the "Australian Bumble Bee" by fishermen and as the "fogbird" or "fog lark" by loggers.
6. Though it was first described in 1789, a nest site wasn't discovered until 1961 by ornithologists in Asia; a North American nest was not found until 1974.
7. The egg, however, was known in 1898, when a bird was shot that contained a complete egg in its oviduct.
8. A group of auks has many collective nouns, including a "colony", "loomery", and "raft" of auks.

Notable Species: NONE