Long-billed Murrelet Madara-Umisuzume (Jpn) *Brachyramphus perdix (marmoratus)*

Morphology and classification

Classification: Charadriiformes Alcidae

Some authors advocate that Asian population of Marbled Murrelets should be separated from that of North America and given species status (Friesen et al. 1994). The Asian population are definitely heavier with a longer bill.

Fig. 1. Heads of Long-billed Murrelet (left) and Marbled Murrelet (right) in winter plumage. Note bill length and plumage coloration.

Wing length (North America):	♂ 128-140mm	♀ 122-139mm
Wing length (Asia):	♂ 136-147mm	♀ 130-145mm
Culmen length (NA):	♂ 13.2-17.4mm	♀ 13.7-17.6mm
Culmen length (Asia):	♂ 18.9-22.2mm	♀ 18.0-21.0mm
Tarsus length (NA):	♂ 15.1-17.6mm	♀ 13.9-17.3mm
Tarsus length (Asia):	♂ 17.0-18.7mm	♀ 16.8-22.2mm
Weight (NA):	♂ 196.2-252.5g	♀ 188.1-269.1g
Weight (Asia):	268-357g	

The measurements are after Sealy 1975, Shibaev 1990, and Kuroda & Kakizawa 1982.

Appearance:

Male and female Long-billed Murrelets are similar in summer and winter plumage colorations. They have a white band at the base of the wing in the summer plumage. They are brownish black on the upperpart and dotted with black flecks from the throat to the abdomen. The density and shades of this fleck vary depending on the individual and age. I have once seen a Long-billed Murrelet similar in plumage coloration to Scaly Thrushes (*Zoothera dauma*). In the winter plumage the underpart is white, but the upperpart is almost the same as in the summer plumage.

Photo 1. Long-billed Murrelet that died immediately after rescued on Maehama beach of Shari Town on September 12, 2004.

Vocalization:

Long-billed Murrelets whistle like "Phee, phee", which is reminiscent of Bullfinch calls. They give even shriller calls for a longer time like "Hifee, hifee" when they call other individuals. In the display, on the other hand, they utter "Fihee, fihee" together.

Distribution and Habitat

Distribution:

In the breeding period, Long-billed Murrelets are distributed in the Russian Far East seaboard from Primorsky Province to the Kamchatka Peninsula, Sakhalin Island, the Kurile Islands and Japan (Hokkaido). In Sakhalin they were confirmed to breed in 35 sites (Konyukhov & Kitaysky 1995). They go down as south as southern Honshu (the largest main island of Japan) in winter. In North America, on the other hand, Marbled Murrelets (*Brachyramphus marmoratus*) breed in the North Pacific seaboard from California to Alaska including the Aleutian Islands.

Breeding habitat:

In Sakhalin Island, Long-billed Murrelets breed in coniferous forests and mixed forests of broad-leaved and coniferous trees of lowlands and mountains at a distance of 0-30km from the coast (Nechaev 1986). In Japan, on the other hand, there is only one breeding record from the foot of Mt. Mokoto in Hokkaido in 1961 (Sekine 1987). It was reported that a Long-billed Murrelet was captured as it was incubating in a nest on the ground in a forest about 20km inland from the Sea of Okhotsk. Mt. Mokoto is covered with a mixed forest composed primarily of spruce (*Picea glehnii*) and birch (*Betula ermanii*). Mosses and *Usnea* lichen grew on the lateral branches of conifers. This old report indicated that the nest lay on the ground and contained three eggs. However Long-billed Murrelets are known to lay a single egg in a nest on large branches of tall coniferous trees. Since the description of the report does not match the nesting habits of this species, two possibilities are considered; the reported nest had not belonged to this species, or had fallen off a nearby tree if it was really the nest of this species.

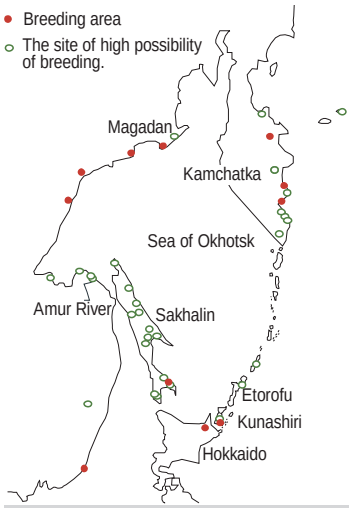

Fig. 2. Distribution of Long-billed Murrelets.

Life history

Breeding system:

Long-billed Murrelets are assumed to be monogamous.

Nest:

Marbled Murrelets in North America make a hollow on the moss-covered lateral branch of a large coniferous tree using their own weight and lay an egg in it. In a treeless region, however, they lay eggs in a crevice of a rock on the ground.

Most information on Long-billed Murrelets is fragmentary, but the four nests discovered in Russia were all built in larch forests. The nest found in the Kukuchtui River valley near Okhotsk City 6km from the coast was built on a pile of several moss-covered branches of a deformed larch at a height of 7m above the ground. The one discovered in Sakhalin was built in the broken treetops at a height of 5m above the ground at a distance of 2km from the coast.

Egg and incubation period:

The clutch size of Long-billed Murrelets is one egg. The egg is 56-66mm by 39mm in size and about 50g in weight. In Marbled Murrelets, the incubation period is 28-30 days. Males and females alike incubate eggs. Incubation is changed at daybreak every 24 hours. When parent birds return to the nest, they give sharp shrills while flying. In Russia, Long-billed Murrelets call from five to seven o'clock in the morning but hardly ever after eight (Necheav 1986). It is assumed, therefore, that they return to the nest in the early morning.

Nestling period and fledging:

Hatching period can be roughly estimated from the period that parent birds carry food to the nestlings. In the southern part of the breeding range, the nestling period was from early June to late July, and in the northern part, parent birds carried fish from late July to late August (Shibaev 1990).

In Marbled Murrelets, nestlings fledge 27-40 days after hatching, weighing 58-71% of adult weight. In Japan, the nestlings have probably fledged by late August because four out of five birds were juveniles that were captured on the coast of Koshimizu Town, northeastern Hokkaido on August 25, 1982. It is assumed that the young leave the nest directly for the sea at fledging.

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Diet and foraging behavior

Long-billed Murrelets usually forage alone or in a pair in the breeding period. They feed in the area from 200-300m to 2-3km off the southwestern coast of the Sea of Okhotsk (Babenko & Poyarkov 1987). In the Amur lagoon, they feed in the brackish area at a depth of 1-10m about 5-10km from the shore (Shibaev 1990). In Japan, they feed in the breeding period around the Shiretoko Peninsula, northeastern Hokkaido (Rusha Bay, the coast of Koshimizu, Maehama of Shari Town and Minehama of Rausu Town). These are relatively shallow sandy seafloor areas. They are also a suitable habitat for sand lance which is the staple food of Long-billed Murrelets.

Topics of ecology, behavior and conservation

Courtship display

Two birds swim side by side moving the bills up and down. They occasionally dive synchronously or take flight as if startled and one of them chases after the other. While calling each other, two birds swim close together, moving their bills up and down simultaneously and one of them swim around the other.

Findings of study up to date

I started to search for the nesting grounds of Long-billed Murrelets and study their distribution in the sea in 1998. I could observe courtship displays as well as seven birds in the vicinity of Rusha in the central part of the Shiretoko Peninsula in 1998. So I expected them to breed somewhere in the peninsula. But it became difficult even to sight them afterwards.

Photo 1. Long-billed Murrelet in summer plumage off the estuary of the Rusha River, northeastern Hokkaido in 1998.

I resumed the study in earnest in 2007 when I received a subsidy from Patagonia. I found a bird took flight off Rausu Town near Shiretoko Point and head south along the coast on 29 April. On 30 April, a bird was swimming in an area about 2km off Minehama of Rausu Town. On 29 July, two birds were showing a courtship display in an area about 4km off Minehama of Rausu Town. However, no Long-billed Murrelets could be found around Rusha on the Shari (west) side of the Shiretoko Peninsula where they were frequently observed in 1998.

"No-visa exchange of specialists" gave me an opportunity to study Long-billed Murrelets in the Northern Territories in 2002 and 2003, when seven and five birds were observed in Etorofuto and Kunashirito Islands, respectively. I obtained some information suggesting their breeding. For instance, some local Russian residents told me that they saw Long-billed Murrelets flying inland from the coast, or heard them calling inland. Although observing from the sea, there were many large conifers with mossy branches suitable for their nesting in the forests. Especially, the larch forests at the foot of Mt. Chacha in the northern part of Kunashirito and Etorofuto are favorable for the nesting of this species. It is highly probable, therefore, that Long-billed Murrelets still breed in these forests.

Destruction of the breeding grounds

In Sakhalin Island which is the largest breeding ground of Long-billed Murrelets, however, deforestation and large-scale development such as oil field development are underway, which may deteriorate their habitat. In Kunashirito and Etorofuto Islands, economically developing Russia has been advancing development as well, which has caused concern for environmental disruption.

If Long-billed Murrelets are confirmed to breed in the Northern Territories and Hokkaido in the future, they will be a symbol of the conservation of an ecosystem including the sea and forests. I would do anything to locate the nesting grounds and clarify the detailed ecology of Long-billed Murrelets to accelerate the environmental conservation.

Literature

Babenko VG. & Poyarkov ND. 1987. Short data on rare species. Marbled Murrelet on the south-east coast of the Sea of Okhotsk. Ilfyashenko VY. ed. Problems of rare animals protecture. 149-151. (in Russian)

Fresen VL., Baker AJ. & Piatt JF. 1994. A molecular investigation of evolutionary relationships within the Alcidae (abstract). Pacific Seabirds 21:39.

Konyukhov NB. & Kitaysky AS. 1995. The asian race of the marbled murrelet. Ecology and conservation the Marbled Murrelet. Diane Publishing Co. USA. 23-29.

Kuroda N., Kakizawa R. & Sekine M. 1993. The Marbled Murrelet in the Okhotsk coast in Hokkaido. (Abstract of the annual conference of The Ornithological Society of Japan). Tori 32:175. [J]

Nechaev VA. 1986. New data on the seabirds of Sakhalin Island. Livtinenko NM. ed. Seadbirds of far East. Vlandivostok, USSR: Akademia Nauk, SSSR. 71-81. (In Russian; English translation by Siegel-Causey, D.).

Sealy SG. 1975. Egg size of murrelet. Condor 77:500-501.

Sekine M. 1987. On the ecology and the breeding of the Marbled Murrelet in Koshimizu Town, Hokkaido. Wild birds of Koshimizu. Koshimizu-cho the board of education. 135-140. [J]

Shibaev YV. 1990. Marbled Murrelet. Flint, VE. & Golovkin, AN. eds. Birds of the USSR: Auks (Alcidae). 82-88. (in Russian)

Languages of literature cited other than English: [J] in Japanese, [J+E] in Japanese with English summary.

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Ten years have already passed since I started to study Long-billed Murrelets. I have always wanted to discover their nesting grounds as a first step toward the conservation, but nowadays it is not easy to find Long-billed Murrelets even at sea. I might have made a contribution to their conservation, if I had begun to study them 20 years or more earlier. For all that, I would still like to carry on with the study, expecting a miraculous result like a come-from-behind home run in the bottom of the ninth inning. Maho Hidaka and Kuniko Ohtsuki translated some English materials for this manuscript. I wish to express my appreciation for their assistance.

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