

**MARBLED MURRELET FLIGHT BEHAVIOUR AT A PRESUMED NESTING AREA
IN THE CAREN RANGE, NEAR SECHELT, BRITISH COLUMBIA**

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INTRODUCTION

The Marbled Murrelet (Brachyramphus marmoratus) is unique among North American seabirds in nesting on horizontal limbs of large trees in old-growth conifer forest (Marshall 1988, Singer et al. 1991). This dependence on old growth, combined with extensive logging, has caused population declines of murrelets (Rodway 1990), and it is currently considered a threatened species in Canada (Munro 1991).

The Caren Range, located on the Sechelt Peninsula northwest of Vancouver, British Columbia, contains a tract of subalpine old-growth forest at altitudes between 750 and 1200 metres. This forest contains trees which are believed to be among the oldest in Canada. A stump of a yellow cedar (Chamaecyparis nootkatensis) which was growing in the Caren Range until it was cut in 1984 was found to be 1,717 years old. (The previous record was of a tree over 1600 years old from near Campbell River on Vancouver Island). The Caren Range forests belong to the Mountain Hemlock biogeoclimatic zone (Krajina 1965) and straddle the Strait of Georgia Ecoregion and the Lower Mainland Ecoregion (Demarchi et al. 1990).

Logging, only recently, has reduced the old-growth forest to about 780 hectares in area. Because these forests were within the historical range of the Spotted Owl (Strix occidentalis), an endangered species in Canada (Munro 1991), it is possible that this owl still occurs in the area despite the lack of recent records. It was also considered very likely that Marbled Murrelets nest in this forest. This inspired a search for breeding murrelets beginning in 1991.

TIMING AND SEASONAL VARIATION OF FLIGHT ACTIVITY

On June 10, 1991, during a field transect I was making through the old-growth forest, I flushed two Marbled Murrelets from trees on the edge of a small lake. The birds flew off rapidly, giving their high-pitched "keer" call. The time was just prior to 6:00 A.M. Several return visits to the lake on subsequent days at the same time produced no sightings.

On June 28, 1991 at 4:38 A.M. (25 minutes before sunrise), I heard a single Marbled Murrelet calling as it circled over the old growth forest about 0.4 km from me, some 3 km from the lake where the first sighting was made. I was sitting at the height of land on an old logging landing. A few seconds later, I heard the wingbeats of a murrelet as it flew by me, very low over the clearcut, on its way to Sechelt Inlet. At 5:02 the same morning, I heard a second murrelet calling over the forest.

On July 6, 1991, together with five Canadian Wildlife Service

biologists, I saw and heard some 14 Marbled Murrelets in and around the old-growth forests on both sides of the Caren Range. With all these observers, it was possible to focus on the areas of greatest activity. By July 10th, I had found what I believe was a nesting area of Marbled Murrelets, and on that day, with another local observer, I observed my first tree landing in old-growth mountain hemlock (*Tsuga mertensiana*) trees on the edge of a 5 km² clearcut.

During the rest of July, I saw six more Marbled Murrelet tree landings, all in ancient mountain hemlock trees during morning observations. During two of these, I was accompanied by other observers (Ervio Sian and John Field). I also heard possibly another three landings at dusk. Three mountain hemlock trees were climbed, but no nests were found.

Between July 10th and the end of the month, we spent 14 mornings and 3 evenings observing at the centre of murrelet activity at the Caren Range old growth site. The level of activity observed on the mountain ranged from a low of 15 detections on a sunny morning following a full moon to more than 100 on a damp rainy morning when there was mist in the trees. In early August, murrelet activity in the Caren Range declined sharply. From a high of 83 detections on July 27, the level fell to 8 detections on August 1.

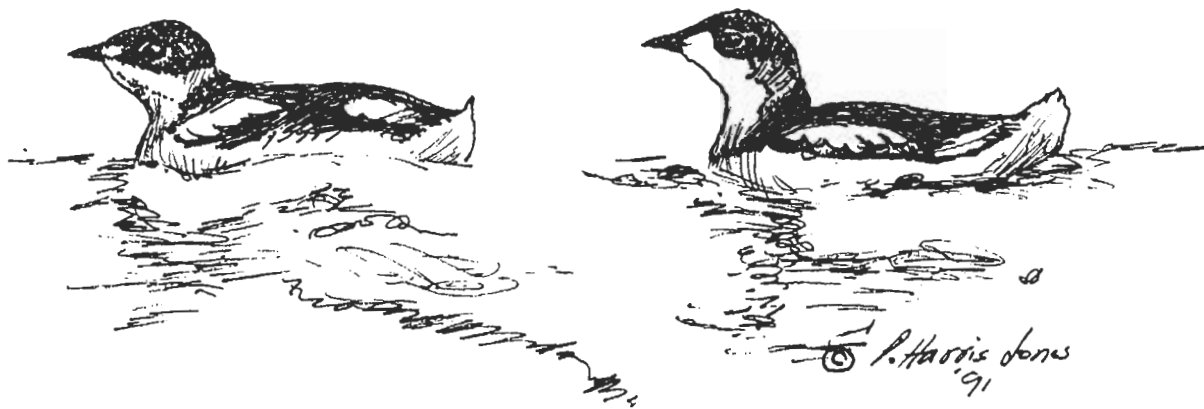


Figure 1. Marbled Murrelets on the water, in winter plumage. (Sketch by Paul H. Jones.)

FLIGHT BEHAVIOUR PATTERNS

Some information on flight behaviour of Marbled Murrelets around nesting areas has been published recently by Eisenhower and Reimchen (1990) and Manley et al. (1992). However, because the breeding biology of the species is still so poorly known, the following observations may be of interest.

During the hour before sunrise in July, considerable variation in murrelet activity was noted. Eight observers made detailed notes of the birds they saw and heard in the vicinity of the old-growth forests. The following notes relate to the morning observations made by me and others in the Caren Range.

Despite the variability in Marbled Murrelet behaviour, there was a consistent pattern in the manner in which murrelets left and returned to the forest, particularly during the hour before sunrise. Birds were heard leaving the forest at daybreak (mostly between 4:30 and 4:40 A.M.) without any vocalizing, only the wingbeats being audible. While lying on the forest floor, where there was little if any underbrush or low branches, I heard wingbeats of birds travelling through the trees, perhaps 6 to 7 metres off the ground, on their way out to the road or clearcut or lake opening from as far as 100 metres away in the forest. From here the birds would make their rapid descent, presumably to Malaspina Strait or to Sechelt, Narrows, or Salmon Inlets. The trip would take them perhaps three or four minutes. This would be followed, it is surmised, by a period of fishing and the return to the Caren Range over a prescribed route with fish to feed the young. Thus, a full 35 or 40 minutes elapsed before there was a second noticeable peak of activity as the murrelets returned to the forest to feed their young. The birds fell silent as they reached the presumed nesting trees. They could be seen circling, diving into the canopy, or flying to other parts of the forest. Again, there was a short lull as the feeding or exchange of adult birds took place, and then there was a further burst of activity as the birds left the trees and made their way down to their feeding grounds. This final departure was delayed for up to an hour after sunrise on damp, misty days.

I took special care not to stand up or move around during periods of murrelet activity. Most other observers also followed this practice. Our observations were made from relatively concealed positions, and at no time did any of us feel that our presence was affecting the birds' behaviour. On one occasion, I saw a large owl, probably a Barred Owl (*Strix varia*), fly across the road where I was making my observations during a period of heavy murrelet activity. Suddenly the murrelets became silent, and not one appeared for a full 10 minutes after the owl was seen.

No murrelets were actually observed carrying fish into the Caren Range old-growth forests, but this may have been overlooked because most of the observations were made without binoculars.

At 3:45 A.M. on July 13, 1991, at an altitude of about 150 m above sea level, I heard Marbled Murrelets some 60 m above me, in total darkness, flying toward the Caren Range old growth forest, which they would reach well before daybreak.

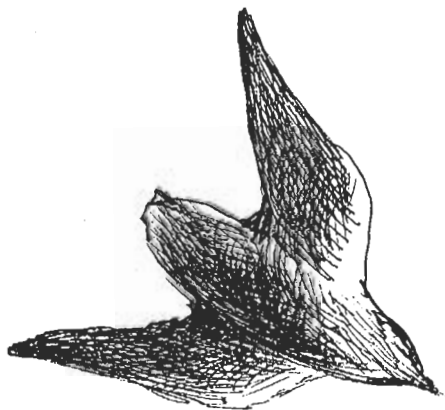
The wingbeats of Marbled Murrelets are audible for a distance

of as much as 50 m in calm conditions. Their rapid flight, their speed, and their stiff wing feathers cause considerable air turbulence during flight. The "swooshing" descent flight of murrelets into the trees was heard on three occasions, twice at dusk and once half an hour before sunrise.

Marbled Murrelets appear generally to fly into the trees by swooping upward at the last moment from a fairly low angle of approach. They also appear to drop sharply from their nesting/roosting sites before becoming fully airborne. One murrelet was, however, observed descending to a branch from full flight by stalling about 40 m from the tree and dropping at a 15-degree angle to the branch. Two birds which I saw landing in the same tree, seconds apart, made a noise like two baseballs being caught as they flew in through the branches. In this case, the landing was fairly direct with little "swoop-up". Tree landings are made at high speed, and according to Canadian Wildlife Service employees (pers. comm.), Marbled Murrelets caught in mist nets at sea during 1991 showed signs of torn and ruptured webs on their feet, which may well have been suffered during rough tree landings.

CONSERVATION OF MURRELET HABITAT

An organization called the Friends of Caren has been formed to lobby for the preservation of the remaining old-growth forest in the Caren Range. For information, write the Friends of Caren, Box



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Figure 2. Marbled Murrelet in flight. (Sketch by Paul H. Jones.)

272, Pender Harbour, B.C. V0N 2A0. A videotape of Marbled Murrelets flying into and around the Caren Range forests, produced by Arnold Skei of Sechelt, may be purchased from the Friends of Caren.

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EDITOR'S NOTE: On August 7, 1993, Paul Jones and three other observers discovered the first known active Marbled Murrelet nest in Canada in a yellow cedar in the Caren Range. The chick was estimated to be 15 days old on the date of discovery, and it later fledged successfully. A detailed account of this nesting record has been published by the Vancouver Natural History Society (Discovery 22(4):147-150, 1993).