



The Long-billed Murrelet (*Brachyramphus perdix*) in North America

In Brief

The recently-split Long-billed Murrelet (*Brachyramphus [marmoratus] perdix*) occurs primarily in Asia but has been found with increasing frequency in North America. Many of the early North American records were from inland sites, but recently this pattern has started to shift so that a growing proportion of sightings are from along the Pacific Coast. Much of this “change” is likely a reflection of increased observer awareness. Unlike *perdix*, nominate *B. [m.] marmoratus*—the Marbled Murrelet—has not strayed eastward in North America. This difference can be explained by the distinctly more sedentary nature of *marmoratus*. Inland and eastern records of Long-billed Murrelets have been almost entirely from early July through late December, with peaks between early July and late August and between late October and early December. The seasonal distribution of *perdix* along the Pacific Coast is not yet clear.

Identification criteria for birds in basic plumage are currently being refined: differences in facial and neck patterns are reliable, whereas bill length may be difficult to use in the field. Criteria for field identification of alternate plumaged birds are more uncertain. Body color and face pattern may prove useful.

Long-billed Murrelet (left) showing the small whitish ovals on each side of the nape, typical of *perdix*. Photographed at Cedar Key, Florida, in March 1994.

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DURING AUTUMN 1979, a bird not previously recorded in North America was shot by a hunter at the Lake of Two Mountains north of Montreal, Quebec.† The specimen was sent to Dr. Spencer Sealy, who spent months establishing the identification. His provocative findings were published in Sealy et al. (1982). There was, however, no murmur of excitement among North American birders. Indeed, there was little initial reaction at all. This unheralded addition to the known North American avifauna was a Long-billed Murrelet (*Brachyramphus [marmoratus] perdix*), also known as the “Asiatic Marbled Murrelet.”

Over the last five years, however, the Long-billed Murrelet has burst from relative obscurity into the forefront of birding consciousness. Much of the rise in awareness resulted from the review by Sealy et al. (1991) of this bird’s

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† The Quebec record had been the earliest known record until the recent publication of an 1845 specimen from Alaska (Konyukhov and Kitaysky 1995) and an Alaskan specimen from 1897 found by the author at the Field Museum of Natural History.

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occurrence in North America and the identification discussion by Sibley (1993). As of January 1997, there were 36 confirmed records of *perdix* in North America and another three records that are likely of this species.

Status and Distribution

The normal range of the Long-billed Murrelet is thought to be entirely within Asia. The species is known to breed in Russia on the Kamchatka Peninsula, the Kuril Islands, and Sakhalin Island, and along the western shores of the Sea of Okhotsk and the Sea of Japan south to Olga Bay (Labzyuk 1987, Konyukhov and Kitaysky 1995). It also breeds in Japan on eastern Hokkaido (Brazil 1991). Breeding also has been suspected just west of the Aleutians on the Commander Islands, from which there are at least a couple of summer records (Taczanowski 1893, Hartert 1920). In winter, most of the population is found in Japan around Hokkaido and northern Honshu (Brazil 1991), but individuals have been found as far south as South Korea (Shibaev 1990) and Amami-O-Shima and Kume-Jima

in the Nansei Shito Islands of southern Japan (Brazil 1991). Some birds may winter as far north as Sakhalin Island (Nechaev 1986).

The Marbled Murrelet (*B. marmoratus*) is known only from

North America, excepting two records from extreme eastern Siberia (Kozlova 1957, Bent 1963). It breeds from the Aleutian Islands, the Alaska Peninsula, and southern coastal Alaska south to Santa Cruz County in central



The breeding range of the Long-billed Murrelet is in eastern Siberia and northernmost Japan (map). The limits of this range are imperfectly known.

The "Long-billed" Murrelet (*Brachyramphus perdix*) was recently split from *B. marmoratus*, the Marbled Murrelet. The former is a very rare visitor to the ABA Area from Asia. This Long-billed Murrelet in basic plumage was photographed on 16 November 1995 in Puget Sound near Edmonds, Washington. Characters used to identify it include the lack of a white collar, small whitish oval on the side of the nape, and relatively little blackish extending down onto the shoulder.



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California (AOU 1983). During fall and winter, *marmoratus* occurs somewhat regularly south to Santa Barbara County, California (Lehman 1994), and has been seen as far south as Ensenada, Baja California, Mexico (Erickson et

al. 1995). To date, this murrelet has not been identified east of its breeding range, which extends in places about 65 miles inland (Carter and Sealy 1986, Skriletz 1996).

Unlike *marmoratus*, the Long-

billed Murrelet has been seen in the interior of North America and along the Atlantic and Gulf coasts. Indeed, most *perdix* records to date have been from areas east of the nominate bird's range (sidebar). This pattern is



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somewhat surprising and raises two important questions: why are so many Long-billed Murrelet records from interior and eastern North America, and why does *perdix* and not *marmoratus* occur at these unusual locations?

The first question is easier to answer: obviously out-of-place birds get far greater attention from observers than birds that are similar to what is expected. In other words, a *Brachyramphus* murrelet in Colorado will be scrutinized much more closely than one along the coast of Oregon. The former bird is more likely to be photographed, its apparent plumage anomalies have a greater chance of being noticed, and more effort is put into determining (sub)species. The murrelet that is

swimming in the Pacific is far more likely to be passed off as "just another Marbled Murrelet." Because of this observer bias, 17 of the first 20 *perdix* records were from inland or eastern areas (excluding the two others that were discovered much later as specimens in museums). As the result of increasing birder awareness, however, some Long-billed Murrelets are now being identified along the Pacific Coast of North America, and over half of the sightings since June 1994 have been coastal.

An apparent "shift" in occurrence resulting from a change in observer awareness has happened before. Many birders will recall the first North American Slaty-backed Gull (*Larus schistisagus*)

found south of Alaska. This bird was seen, to everyone's astonishment, near St. Louis, Missouri (Goetz et al. 1986). St. Louis is a place, however, where a black-backed gull gets lots of attention. Three of the next four Slaty-backed seen in the Lower 48 States were also far from the Pacific Ocean. Since then, the majority of Lower 48 Slaty-backed have been in Washington and Oregon (Mlodinow and O'Brien 1996), and this species has been shown to be rare-but-regular in winter near Boundary Bay in southern British Columbia (Bowling 1996).

Why has *perdix* strayed eastward in North America whereas *marmoratus* has not? The answer probably relates to the Marbled



Florida's third Long-billed Murrelet was well watched for almost two weeks during March 1994 at Cedar Key. It shows the lack of a white collar and a limited area of dark feathering below the eye, giving the bird a straighter line along the side of the face and neck. These characters, in combination, give the bird a look more reminiscent of a Xantus's Murrelet or even of a Pacific Loon, rather than of a Common Murre. In addition, the overall color is typically paler brown than in Marbled Murrelet.

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Murrelet's sedentary nature. Marbled Murrelets winter within much of their breeding range, including many areas in Alaska. Wintering birds are typically found no farther than 200 miles south of the southern end of their known breeding range in Santa Cruz County, California, and the southernmost record is only about 450 miles south of Santa Cruz County (Erickson et al. 1995). On the other hand, Long-billed Murrelets retreat from nearly their entire breeding range (Konyukhov and Kitaysky 1995), regularly winter as far as 500 miles south of the usual nesting range (Brazil 1991), and have been found approximately 1,400 miles south of Olga Bay, Russia, the most southerly known breeding site (Brazil 1991).

*This pair of Marbled Murrelets in basic plumage, photographed in Del Norte County, California, August 1994, shows the characteristic white collar of that species. They also lack the whitish oval on the nape typical of *perdix*. Their upperpart coloration averages darker than that of many Long-billed Murrelets.*

The Long-billed Murrelet's peregrinations across North America are not unique among Pacific alcids. The Ancient Murrelet (*Synthliboramphus antiquus*) breeds on both sides of the Pacific Ocean and has wandered inland in North America many times. Records of Ancient Murrelets away from the Pacific states and provinces have come from Alberta, Idaho, Nevada, Montana, Wyoming, Utah, Colorado, New Mexico, Manitoba, Minnesota, Nebraska, Wisconsin, Illinois, Indiana, Ontario, Michigan, Ohio, Louisiana, Quebec, Pennsylvania, Massachusetts, and New York (DeSante and Pyle 1986; *American Birds/ National Audubon Society Field Notes* vols. 40-47).

The seasonal distribution of the Long-billed Murrelet away from the Pacific Coast seems fairly clear. Interior and eastern records of *perdix* fall almost entirely between early July and late December, although there is one March record from Florida. Within this time-frame, there seem to be two somewhat broad peaks: early July through late August and late October into early December. The first of these periods occurs immediately after breeding but before prebasic molt usually takes place (Kuzyakin 1963, Sealy 1974, Sealy 1975, Sealy et al. 1982, Carter 1984). Many of the late summer and early fall sightings, however, involve birds said to be in basic (non-breeding) or partial basic plumage. In reality, these



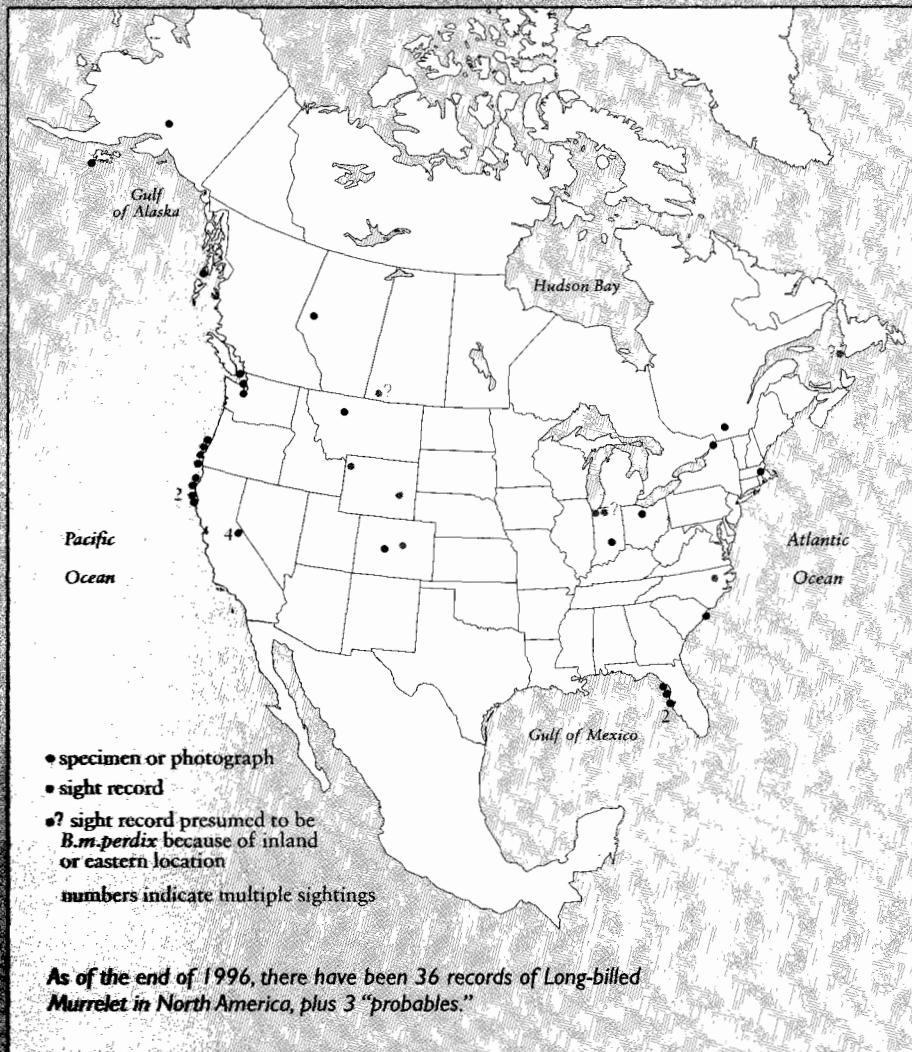
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Long-billed Murrelet Records and Reports in North America

Confirmed Perdix Records*

1. *Near Kodiak Island, Alaska, January 1845:* Specimen from Zoological Institute in St. Petersburg, Russia (Konyukhov and Kitaysky 1995).
2. *Howkan, Alaska, 28 February 1897:* Specimen (#39627) in basic plumage, found by the author at Field Museum of Natural History, Chicago.
3. *Just north of Montreal, Quebec, 11 November 1979:* Shot by hunter; in nearly complete basic plumage (Sealy et al. 1982).
4. *Mono Lake, California, 9 August 1981:* Found freshly dead; in alternate plumage (Jehl and Jehl 1981).
5. *Lake Lemon, Indiana, 1 December 1981:* Found shot; in basic plumage (Mumford 1982).
6. *New Aspen, Colorado, 22 August 1982:* Found alive on rural road but succumbed next day; in alternate plumage (Sibley and Rankin 1989).
7. *Middleburg, Massachusetts, 17 September 1982:* Brought in by house cat; in nearly alternate plumage (Anderson 1982).
8. *Mono Lake, California, 29 July 1983:* Found dead and partly mummified; in alternate plumage (Sealy et al. 1991). This is the same bird reported incorrectly as 29 September 1983 by Gaines (1988) and McCaskie et al. (1988).
9. *Mono Lake, California, 2 August 1983:* Found freshly dead in alternate plumage (Sealy et al. 1991).
10. *Mono Lake, California, 6 August 1983:* Found freshly dead in alternate plumage (Sealy et al. 1991).

*Although the author is satisfied with the veracity of all records listed as "confirmed," readers should note, however, that many of these sightings have not yet been reviewed by the appropriate state and provincial bird records committees. Among the Pacific Coast states, only Washington has reviewed all Long-billed Murrelet reports. Most inland and eastern North American reports have been reviewed only as "Marbled Murrelets," and issues regarding Long-billed versus Marbled have not taken place in many cases.



11. *Redwood Lake, Denali National Park, Alaska, 27 August 1983:* Partial carcass, recently dead, in alternate plumage (Sealy et al. 1991).
12. *New Michigan City, Indiana, 2 December 1984:* Live bird in basic plumage (Peterjohn 1985; K. Brock, pers. comm.).
13. *Honeymoon Island, Florida, 27 December 1986:* Recently dead bird in basic plumage (Hoffman and Woolfenden 1988).
14. *Shoshone Lake, Yellowstone National Park, Wyoming, 30 August 1992:* Live bird in basic plumage, closely observed (Kingery 1992). Rejected by Wyoming Bird Records Committee. Description, however, is very good and clearly depicts *perdix* (Wyoming Bird Records Committee files). Given that Sibley (1993) had yet to be published, observers were unlikely to be aware of pertinent field marks.
15. *Southwest of Lopez Island, Washington, 12 August 1993:* Live bird photographed in San Juan Islands; in mostly basic plumage (Skrilletz 1996).
16. *Corruwall, Ontario/Massena, New York, 11-30 October 1993:* Photograph of live bird in basic plumage (Sibley 1993, Ridout 1994).
17. *Mullet Key, Florida, 4 December 1993:* Recently dead (Muschlitz 1995).
18. *Cedar Key, Florida, 16-28 March 1994:* Photograph of live bird in basic plumage (Muschlitz 1995).

19. *Saskatoon Lake, Alberta, 2 July 1994*: Found freshly dead on lake's southeast shore; in alternate plumage (Moore 1995, Hudon and Sherrington 1996).
20. *Casper, Wyoming, 23 July 1994*: Live bird in basic plumage. Drawings submitted to Wyoming Bird Records Committee establish this bird as *perdix* (Kingery 1994; Wyoming Bird Records Committee files).
21. *Olympia, Washington, 12 August 1994*: Videotape of live bird in basic plumage (J. Skirletz, pers. comm.).
22. *South of Coos Bay, Oregon, 13 August 1994*: Photograph of live bird partly in basic plumage (C. Strong, pers. comm.).
23. *Near Lake Earl, California, 26 August 1994*: Live bird in mostly basic plumage along coast of Pacific Ocean in Del Norte County (Harris 1996).
24. *Huntington Beach State Park, South Carolina, 19 November 1994*. Photograph of live bird in basic plumage (Davis 1995).
25. *St. Petersburg, Florida, 28–30 November 1994*: Found alive, later succumbed, in basic plumage (Wamer and Pranty 1995).
26. *Jordan Lake, North Carolina, 9–11 December 1994*: Live bird in basic plumage. Davis (1995) theorized that this bird was the same individual seen in South Carolina on 19 November 1994. Given the number of records from fall and winter of 1994, I consider this scenario unlikely.
27. *Near Point Arena, California, 25 June 1995*: Live bird in partial basic plumage observed nearshore in Pacific Ocean (C. Strong, pers. obs.).
28. *Near Dry Lagoon, California, 22 July 1995*: Live bird in mostly basic plumage observed nearshore in Pacific Ocean off Humboldt County (Harris 1996).
29. *Near Big Lagoon, California, 22 July 1995*: Live bird in mostly basic plumage observed nearshore in Pacific Ocean off Humboldt County. Not believed to be the same individual seen off Dry Lagoon on same day (Harris 1996).
30. *Edmonds, Washington, 16 November 1995*: Live bird photographed in basic plumage in Puget Sound (Mattocks and Aanerud 1997).

31. *North Jetty of Humboldt Bay, California, 7–9 December 1995*: Live bird photographed in basic plumage (Bailey and Singer 1996).
32. *Near Coos Bay, Oregon, 15 July 1996*: Live bird photographed one-half mile offshore (C. Strong, pers. comm.).
33. *Near Bandon, Oregon, 14 August 1996*: Live bird seen about 600 yards offshore (C. Strong, pers. comm.).
34. *Off Winchuck River mouth, Oregon, 30 August 1996*: Live bird photographed about 800 yards offshore (C. Strong, pers. comm.).
35. *Chatfield Reservoir, Colorado, 2 November 1996*: Live bird in basic plumage seen by many observers (D. Nelson, pers. comm.).
36. *Beaver Creek Reservoir, Ohio, 12–18 November 1996*: Live bird photographed in basic plumage and seen by many observers (Fazio 1996).

"Marbled" Murrelet Records Suspected to be *Perdix*

1. *Off Little Codroy River, Newfoundland, 15 July 1989*: Alternate-plumaged bird observed alive in Atlantic Ocean (Mactavish 1989).
2. *Cypress Lake, Saskatchewan, 22 October 1989*: Live bird seen but not photographed. Details currently not available (Koes and Taylor 1990)
3. *Michigan City, Indiana, 19 November 1994*: Basic-plumaged bird in flight over Lake Michigan (K. Brock, pers. comm.).

Other Report

Red Rock Reservoir, Iowa, 12 December 1991: A live bird believed to be a basic-plumaged Marbled Murrelet was reported in *Iowa Bird Life* (Dinsmore 1993). This bird was accepted by the Iowa Ornithologists' Union Records Committee (T.H. Kent, pers. comm.). Several features in the published description, however, are not consistent with Marbled Murrelet. The bill was said to be "almost equal to the length of the head." A bill of this length would eliminate both *marmoratus* and *perdix*. Furthermore, the bird was described as having a collar, which would eliminate *perdix*. For the purposes of this article, this record is not considered a definite Marbled Murrelet.

individuals may have been juveniles. The second period may involve birds that have completed their molt before leaving the breeding area (Sealy et al. 1991).

The seasonal distribution of *perdix* along the Pacific Coast of North America currently matches the pattern of records in interior and eastern North America: nine records lie between late June and late August, two are from mid-November into early December, one is from January, and one is from February. This pattern is biased, though, because most coastal sightings currently come from Marbled Murrelet researchers, and their field work is largely in summer and early fall. One would expect that some of these coastal *perdix* are remaining well into the winter and spring. With non-researchers increasing their efforts to identify Long-billed Murrelets, more reports from January into spring are likely to accrue. In Japan, sightings of *perdix* away from the breeding grounds occur mostly between November and March, with some as early as July, and others as late as May (Brazil 1991). A similar seasonal distribution may eventually be found along the North American Pacific Coast.

Dr. Steven Feldstein reviewed interior and eastern Long-billed Murrelet sightings to search for a connection between these records and weather phenomena. No such correlation was sought for coastal records because of the biases in these records. Feldstein found that the majority of mid-fall to mid-winter *perdix* records have been associated with storms that occurred off the east coast of Asia between Japan and the

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Marbled Murrelets in juvenal and basic plumage may project a Common Murre-like pattern of black and white, as does this juvenile Marbled photographed in the hand in Humboldt County, California, October 1979. This individual shows the white collar and substantial dark coloration below the eye typical of marmoratus.

Kamchatka Peninsula within two to three days of each record. This correlation seems quite plausible and may well be correct, but it did not meet statistical significance. A similar finding exists for Ancient Murrelets, a species for which inland records seem to be related, at least in part, to fall storms moving inland from the Gulf of Alaska (Munyer 1965, Verbeek 1966, Sealy and Carter 1980). Feldstein also discovered that the pattern of mid-tropospheric atmospheric circulation (approximately three miles above the surface) is significantly correlated with inland and eastern *perdix* records during the mid-fall to mid-winter period. These records of Long-billed Murrelets are much more likely to occur when the mid-tropospheric

circulation tracks from the Gulf of Alaska and North Pacific into the Alaskan interior.

There is another correlation between weather and Long-billed Murrelet vagrancy: the Aleutian Low strengthened just about the same time Long-billed Murrelets started to appear in North America. The Aleutian Low is an area of time-average low barometric pressure centered near the Aleutian Islands. The Aleutian Low was found to be considerably stronger from 1977 through 1988 when compared with the preceding 50+ years (Trenberth 1990). This low seems to have continued to be stronger than average through at least 1995 (S. Feldstein, pers. comm.). Long-billed Murrelets started to appear regu-

larly in North America in 1979.

Is there really a connection between the Aleutian Low deepening and *B. perdix* records in North America, or is this just a coincidence? Time may tell, but there are plausible ties between the two. The more powerful Aleutian Low causes North Pacific air and water temperatures to drop while warmer and moister air is sent into Alaska (Trenberth 1990). These changes could easily alter the distribution and abundance of the murrelet food supply and thereby change the size and distribution of the Long-billed Murrelet population.

Importantly, no association between anomalous weather patterns (e.g., storms, changes in mid-tropospheric circulation) and

The white oval on the nape, lack of white collar, and dark brown color to the upperparts are evident on this Long-billed Murrelet near Coos Bay, Oregon, 13 August 1994. The line between the areas of dark and light on the side of face is not as straight on this individual as on some other pernix, but the lack of a white collar still imparts a straighter look.



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late-summer and early-fall inland *pernix* records was found. Presumably, this is because wind activity averages considerably weaker at these times. Interestingly, Feldstein also found no significant correlation between the occurrence of El Niño or La Niña* conditions and inland or eastern Long-billed Murrelet sightings.

Identification

Sibley (1993) was the first recent author to publish field characteristics for identifying Long-billed Murrelets. His comments were

* El Niño corresponds to warmer-than-average central and eastern equatorial Pacific Ocean surface temperatures. La Niña corresponds to cooler-than-average central and eastern equatorial Pacific Ocean surface temperatures.



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The typical upperpart coloration of *marmoratus* is blackish-brown or very dark brown, whereas most but not all *pernix* tend toward a paler ashy-brown or pale milk-chocolate. This Marbled Murrelet also shows the more extensive dark shoulder bar typical of this species. Caution is warranted, however, with this latter field mark, because there is some overlap in the apparent size and shape of this dark extension, which may vary depending on how the bird is sitting on the water. Photographed in Del Norte County, California, August 1994.

based on careful observation of the live *perdix* at Cornwall, Ontario/Massena, New York, in 1993, and on the study of two basic-plumaged *perdix* specimens. Further work was done by Erickson et al. (1995), Konyukhov and Kitaysky (1995), and Fazio (1996). In addition, I studied five Long-billed Murrelet specimens at the Field Museum of Natural History and compared them with the collection's many Marbled Murrelets. All five specimens at the Field Museum were in basic plumage. Four were collected in Japan during December or January. Another bird was labeled *B. marmoratus*, but showed all the important features of *B. perdix*. This bird was collected on 28 February 1897 near Howkan, Alaska.

Features that are consistently different between basic-plumaged (and probably juvenal-plumaged) *B. perdix* and *B. marmoratus* are as follows:

1. *B. marmoratus* has a white collar that extends almost entirely around the hindneck. *B. perdix* lacks this collar. The collar was absent in the Field Museum *perdix* specimens.
2. Many *perdix* have a faint whitish oval on each side of the nape. Apparently, *marmoratus* never have this mark. These ovals would not be easily confused with a collar. Two of five Field Museum specimens showed these ovals. No Marbled Murrelets had this mark. For a good comparison of the *marmoratus* collar versus the *perdix* nape spots, see photos in Skritletz (1996).
3. *B. marmoratus* has substantially more black below the eye than does *perdix*. This character combined with the lack of a collar gives *perdix* a much straighter line along the side of the face and neck. This difference was obvious in the Field Museum specimens.
4. *B. perdix* has less black extending down onto the shoulders. Sibley (1993)

first commented on this mark, and Erickson et al. (1995) and Fix (pers. comm.) supported his conclusions. The photos in Fazio (1996) and Bailey and Singer (1996) are also supportive, as is the photo in Muschlitz (1995) of the 1994 Cedar Key, Florida, bird. Among the Field Museum specimens, four *perdix* lacked this mark, and all *marmoratus* had it to at least some degree. One of the *perdix* specimens from Japan, however, had a black shoulder stripe that was prominent enough to overlap with some *marmoratus*. Observers should also note that this characteristic can be difficult to judge in the field, depending on how the bird is sitting in the water. Nonetheless, a murrelet that clearly lacks a shoulder bar should be a Long-billed.

The above four marks, in combination, create a different appearance in basic-plumaged *perdix* and *marmoratus*, and photos bear this difference out. On first glance, *marmoratus* projects a Common Murre (*Uria aalge*)-like pattern of black and white. *Perdix*, on the other hand, is more likely to be compared with a Pacific Loon (*Gavia pacifica*) in basic plumage or with a Xantus's Murrelet (*Synthliboramphus hypoleucus*). Other marks also exist that may prove to be of some use.

These include the following:

1. The bill is longer in *perdix*. The difference averages 30 percent, but the extremes almost overlap. Additionally, *perdix* is larger-bodied, thus further diminishing the appearance of being longer-billed. Consequently, bill length is probably somewhat difficult to use in the field, especially on a lone bird (Sealy et al. 1982, Sibley 1993, Erickson et al. 1995).
2. Bill shape may prove useful. The drawings in Sealy et al. (1991) and Konyukhov and Kitaysky (1995) show *perdix* as having a deeper bill with a distinct gonydeal angle that is absent in their depictions of *marmoratus*. The five *perdix* in the Field Museum

all showed strong gonydeal angles, and the gonydeal angle in the *marmoratus* specimens tended to be much less pronounced or absent. There were several *marmoratus*, however, that matched some *perdix*. D. Fix (pers. comm.), who has seen several *perdix* and studies *marmoratus*, believes that bill shape is probably not useful in the field. Further work is needed.

3. D. Fix (pers. comm.) suggested that some *perdix* may have a brownish cast to the upperparts that *marmoratus* lacks during the advanced stages of prebasic molt and in basic plumage. Four of the five Field Museum *perdix* specimens were clearly paler than any *marmoratus* specimen. The fifth *perdix* specimen (the one from Alaska) was a bit darker, but still paler than a substantial majority of Marbleds. The typical basic-plumaged *marmoratus* appeared to be very dark brown on the specimen tray—almost the color of dark chocolate. The *perdix* specimens tended toward a more ashy brown. In the field, this difference could easily translate into Marbled Murrelets appearing blackish and Long-billed Murrelets looking brownish. This difference was noted on the *perdix* found at Cedar Key (Muschlitz 1995) and in 1996 at Beaver Creek Reservoir, Ohio (Fazio 1996).
4. Body size and its effects on flight may be of help in identification. *B. perdix* averages 25 percent heavier than *B. marmoratus* (Nettleship 1996). D. Fix (pers. comm.) believes that this difference translates into a distinctly heavier flight with slower wingbeats in *perdix*.

Suggested field marks that do not appear valid are as follows:

1. Sibley (1993) thought that *perdix* might be darker above the gape. Konyukhov and Kitaysky (1995) support this contention, but other authors have reviewed a series of specimens and found seemingly complete overlap. I also found extensive overlap in the Field Museum specimens and support the conclusion of Erickson et al. (1995) and Fazio (1996) that this trend may not even be strong enough to be suggestive. For a photo of a dark-lored *marmoratus*, see Armstrong (1990).

2. It has been suggested that the Long-billed Murrelet has more prominent eye-crescents (Sibley 1993). Though there may be some average difference, this mark does not seem reliable enough for field use (Erickson et al. 1995, Fazio 1996). In museum specimens, this character is difficult to assess, but at least one *marmoratus* had very prominent eye-crescents, whereas none were clearly visible on the *perdix* specimens.
3. According to Konyukhov and Kitaysky (1995), all *marmoratus* have dark below the gape, whereas *perdix* is usually white or occasionally light gray. In the Field Museum specimens, all five *perdix* had completely white chins. Some *marmoratus*, however, were also entirely white-chinned, and many had a very limited area of dusky marking immediately proximal to the lower mandible. These birds would undoubtedly appear white-chinned in the field. Indeed, few nominate Marbleds had enough dark on the chin for it to be apparent in the field except under exceptional circumstances. Also, note

California now has approximately nine records of Long-billed Murrelet, the first four of which came from the state's interior at Mono Lake. There are now some five records from along the state's coast, including this bird at Humboldt Bay, 7-9 December 1995. It shows the typical lack of a white collar, little or no dark feathering extending down onto the shoulder, and brownish upperparts.

that the superb photo on the cover of Ralph et al. (1995) shows a *marmoratus* in basic plumage with an obviously white chin.

4. According to Konyukhov and Kitaysky (1995), *perdix* has a narrow white marginal-stripe on the outer vane of the outermost tail feather (rectrix), whereas *marmoratus* has no white in the tail. All five Field Museum *perdix* specimens lacked this mark, drawing into question its validity.

As much as the identification of basic-plumaged Long-billed Murrelets still needs to be refined, separation of alternate-plumaged birds has hardly been addressed at all. Among published works, the only commentary on this issue is in Dement'ev and Gladkov (1951), who suggest that alternate-plumaged *perdix* is more of an ochre-brown compared with the warmer cinnamon-brown of *marmoratus*. This remark is support-

ed by D. Paulson (pers. comm.), who examined a number of specimens of Long-billed Murrelets in alternate plumage and found that the feather edgings are "clay-colored" in *perdix*, "rufous" in *marmoratus*. He also noted that *perdix* has a throat that is distinctly pale, thus creating a capped effect. By comparison, the throat of a Marbled Murrelet varies from dark brown to white-flecked. The contrast between cap and throat is, therefore, much less in *marmoratus*. Unfortunately, a molting *marmoratus* might appear somewhat like an alternate *perdix* with regard to this character, as might a first-alternate (first-summer) *marmoratus* (this species often does not acquire full alternate plumage in its first year; J. Dunn, pers. comm.).



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Conclusion

Brachyramphus perdix has long languished in obscurity, first under the names "Temminck's Guillemot" and "Partridge Murrelet" (hence *perdix*), and then as a subspecies of Marbled Murrelet, when it was referred to mostly as "Asiatic Marbled Murrelet." In 1997, however, *perdix* achieved species status under the name Long-billed Murrelet.

More widespread awareness of this taxa among birders, which began with Spencer Sealy in 1979, has blossomed. Today we know something of the Long-billed Murrelet's status and distribution in North America, and we also understand how to identify this species, at least in basic plumage. There is, however, more to learn. Birders along the Pacific Coast should, with caution, start to ac-

tively search for Long-billed Murrelets. This species probably occurs there more frequently than we currently realize. Birders elsewhere on the continent need to make sure that all of their *Brachyramphus* murrelets are Long-billed and not Marbled. Perhaps a decade from now we will more fully understand where and when Long-billed Murrelets occur in North America.



MIKE DANZENBAKER

This juvenile Marbled Murrelet imparts a "Common Murre look."
It was photographed on Monterey Bay, California, in early July 1995.

Systematics of the Marbled Murrelets

The taxonomic ride through history of the Marbled Murrelet (*Brachyramphus marmoratus*) has been a little bumpy. Populations from North America and from Asia were originally described as distinct species in the middle of the 19th century. Of course, almost everything pre-Darwin (i.e., before there was a sound scientific basis for classification) that looked even vaguely different was described as a distinct species. Nevertheless, Robert Ridgway (1919), dean of American bird taxonomists, treated these forms as full species. This treatment was the status quo for a short while.

The keepers of the official taxonomy and nomenclature of North American avifauna, the American Ornithologists' Union (AOU), had no reason to consider the species-level taxonomy of the Marbled Murrelets because *perdix* was thought to be unrecorded in North America until 1979. Long after the first records, the AOU refrained from comment, instead following such authorities as James L. Peters (1934) and Charles Vaurie (1965), who, unlike Ridgway, treated *perdix* and *marmoratus* as conspecific. Given recent studies, summarized below, the AOU Check-List Committee (1997) has elected to treat these forms as distinct species.

With the increased interest in both *marmoratus* (because it was recently listed as a Threatened Species under the U.S. Endangered Species Act) and *perdix* (be-

cause of the now 35+ North American records), efforts to determine their evolutionary and taxonomic relationships were redoubled. First among these efforts was a study by Jay Pitochelli and colleagues (1995) that examined divergence among Alaskan populations of nominate Marbled and Kittlitz's (*B. brevirostris*) Murrelets, including both ground-nesting and tree-nesting individuals of the former. They found no differences in external measurements, skeletal characters, and mitochondrial DNA (mtDNA) restriction fragments between Marbled Murrelets that chose different nest sites. All Marbled Murrelets were easily distinguished, however, from all Kittlitz's Murrelets, strongly supporting continued recognition of Marbled and Kittlitz's Murrelets as full species.

The first molecular study to include samples from Asian and North American populations of the Marbled Murrelet was published by Robert M. Zink and colleagues (1995). These authors examined variation in mtDNA restriction-fragment profiles for 13 species of birds that occur on either side of the Bering Sea. Although their study was preliminary in that the number of mtDNA restriction-sites detected was fairly small, they nonetheless discovered that differentiation between *B. m. perdix* and *B. m. marmoratus* was "consistent with species-level distinctness."

Two recent papers by Vicki L. Friesen, John F. Piatt, and A. J. Baker have supported this conclusion. The first of these papers (Friesen et al. 1996a) reported the use of total molecular evidence to infer phylogenetic relationships within the family Alcidae (the auks). "Total molecular evidence" refers to the use of both mtDNA and either nuclear DNA or some product of nuclear DNA such as allozymes (different kinds of the same protein). Their study was broad in scope: it included data for all 22 extant species of alcids. Based solely on mtDNA sequence data, *B. m. marmoratus* was found to be actually more closely related to Kittlitz's Murrelet than it was to *B. m. perdix*.

By contrast, allozyme data tended to cluster the two Marbled Murrelets, with the Kittlitz's Murrelet as the sister species; however, *B. m. perdix* was extremely divergent from *B. m. marmoratus* even when clustered with it. With the data sets combined, the mtDNA grouping was restored with strong support. Thus, the Kittlitz's Murrelet and *B. m. marmoratus* are sister species, with *B. m. perdix* their closest relative. These authors were obviously intrigued by this strong evidence for species status, as they referred to *B. m. perdix* as the "Long-billed Murrelet" throughout their paper.

The second paper in this series

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SYSTEMATICS (continued)

(Friesen et al. 1996b) focused only on the three species of *Brachyramphus* murrelets. The authors used the same data set, but added two allozyme loci, and their analyses were more rigorous. As with their earlier study, they found strong divergence between *B. m. perdix* and *B. m. marmoratus*, and again found, regardless of analysis type, that *B. m. marmoratus* is more closely related to Kittlitz's Murrelet than it is to *B. m. perdix*. They concluded that "the Long-billed Murrelet [*B. m. perdix*] clearly merits full species status according to phylogenetic, evolutionary, or biological criteria."

Given the genetic differentiation between Long-billed and Marbled Murrelets, coupled with specific distinctness of Marbled and Kittlitz's Murrelets, the AOU decided to recognize the Long-billed Murrelet as a full species.

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