GENERAL NOTES

Wing molt of the Kittlitz's Murrelet.—Knowledge of the relation between timing of molt and other annual cycle events in birds is important to an understanding of breeding seasons. Although no study of the natural history of the Kittlitz's Murrelet (*Brachyramphus brevirostris*) has been conducted, published field observations and information on molt obtained from museum specimens presented here permit the timing of molt in relation to breeding to be outlined.

I examined 213 specimens from the collections of the Denver Natural History Museum (DNHM), Museum of Comparative Zoology at Harvard Univ. (MCZ), Univ. of British Columbia (UBC), Univ. of California Museum of Vertebrate Zoology (MVZ), Univ. of Michigan Museum of Zoology (UMMZ), the United States National Museum (USNM), the American Museum of Natural History (AMNH), California Academy of Sciences (CAS), Chicago Natural History Museum (CNHM), Carnegie Museum (CM), Peabody Museum of Natural History (PMNH), Univ. of Alaska (UA), and the Univ. of Kansas Museum of Natural History (KU).

The status of each primary of the 14 specimens in molt was recorded by assigning to each growing feather a score, according to its growth stage, of 1 (empty or pin feather) 2, 3, or 4. Full-grown new feathers score 5, so that in newly molted birds, each feather is scored 5. A completed molt score is 50 since I quantified feather replacement only on the left wing (Table 1).

Bent (U.S. Natl. Mus. Bull. 107, 1919) and Dementeʹev and Gladkov (Birds of the Soviet Union, Vol. 2. IPST, Jerusalem, 1968) stated that adult Kittlitz's Murrelets undergo 2 seasonal molts, a partial prealternate molt in spring and a complete prebasic molt in late fall or early winter. Kozlova (Fauna of the USSR: Birds 2:1–140, IPST, Jerusalem, 1961) noted that although the dates of the complete prebasic molt are not known, the partial prealternate molt is completed by late May. The prealternate molt occurs apparently rapidly between mid-April and mid-May. Laing (Victoria Mem. Mus. Bull. 40, 1925) took a male in basic plumage on 22 March 1924 in Chignik Bay, Alaska. A male (MCZ 250797) taken on 9 April 1916 near Bethel, Alaska, is in its basic plumage with no wing or body molt and little wear of the remiges. A female (Bailey, Colorado Mus. Nat. Hist., Pap. Ser. 8, 1948) taken on 28 April 1922 near Wales and a female (USNM 92184) collected near Cape Etolin, Alaska, on 3 April 1883 are in their basic plumages as are 2 males (KU 40294, 40295) taken on 15 April 1960 near Point Hope. Four males (AMNH 757401, CNHM 456901, MCZ 320031, MVZ 14534) and 2 females (AMNH 753398, 753399) taken in Glacier Bay on 16 May 1913 are in their alternate plumages.

The simultaneous wing molt does not begin until late August (see Table 1); the birds are rendered flightless. A female (DNHM 19287) taken by A. M. Bailey near Barrow on 26 July 1936 is of interest. Its primaries were molted and being replaced by new ones and the bird was flightless. It had failed possibly at breeding and had initiated a rapid and early wing molt. Premature body molting due to apparent breeding failure has been reported in auklets (*Aethia* spp.) by Bédard (Can. J. Zool. 47:1025–1050, 1969) and in the Marbled Murrelet (*B. marmoratus*) by Sealy (Bird-Banding 46: 141–154, 1975).

The breeding season (egg-laying to fledging of young) of the Kittlitz's Murrelet in Alaska spans the period from early June to mid-August (Thayer, Condor 16:117–118, 1914; Bailey, Auk 44:1–23, 1927; Ford, Auk 53:214, 1936; Thompson et al., Auk 83: 349–351, 1966; Bailey, Condor 75:457, 1973; J. Bédard, pers. comm.).

TABLE 1

MOLT OF THE LEFT PRIMARIES OF THE KITTLITZ'S MURRELET[a]

Specimen	Date, sex, locality, molt status	Primary number									
		1	2	3	4	5	6	7	8	9	10
CNHM	26 Sept. 1929, ♂										
159075	Barrow: score 25	2	2	3	3	3	3	2	3	2	2
CNHM	17 Sept. 1941, ♂										
159076	Barrow: score 21	1	1	2	2	3	3	3	2	2	2
CNHM	26 Sept. 1929, ♀										
159077	Barrow: score 29	1	2	2	3	3	4	4	4	3	3
CNHM	26 Sept. 1929, ?										
159078	Barrow: score 30	1	2	2	3	4	4	4	4	3	3
DNHM	26 July, 1936, ♀										
19287	? ? score 22	2	2	2	2	3	3	2	2	2	2
LACM	fall, 1962, ♀										
78605	Barrow: score 26	1	1	1	2	3	3	4	4	4	3
PMNH	17 Sept. 1941, ♂										
1460	Barrow: score 18	2	2	2	2	2	2	1	2	2	1
PMNH	25 Aug. 1936, ?										
9278	Barrow: score 8	1	1	1	1	1	1	1	1	0	0
PMNH	25 Aug. 1936, ?										
9279	Barrow: score 14	1	1	2	2	2	2	2	2	0	0
PMNH	17 Sept. 1941, ♀										
9285	Barrow: score 0	0	0	0	0	0	0	0	0	0	0
UMMZ	25 Aug. 1936, ♀										
125204	Barrow: score 16	2	2	2	2	2	2	2	2	0	0
UMMZ	25 Aug. 1936, ♂										
125205	Barrow: score 7	1	1	1	1	1	1	1	0	0	0
UMMZ	17 Sept. 1941, ♂										
125206	Barrow: score 18	2	2	2	2	2	2	2	2	1	1
UMMZ	17 Sept. 1941, ♂										
125207	Barrow:score 21	2	2	2	2	2	2	2	2	3	2

[a] Explanation of symbols: 0, feather that is old; 1, empty socket or pin feather; 2, growing feather with vane up to one-third grown; 3, growing feather with vane between one-third and two-thirds grown; 4, growing feather with vane more than two-thirds grown but not full length; 5, feather full length, but still with blood in calamus.

Thus, the prebasic molt does not overlap breeding; the young have fledged by the time this molt begins in late August. The separation of breeding and prebasic molt has been recorded also in the Marbled Murrelet and Ancient Murrelet (*Synthliboramphus antiquus*) by Sealy (Bird-Banding 46:141–154, 1975; Condor 78:294–306, 1976).

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Memorial Fund of the American Museum of Natural History and the National Research Council of Canada.—SPENCER G. SEALY, *Dept. of Zoology, Univ. of Manitoba, Winnipeg, Canada. Accepted 9 Apr. 1976.*

Incidence of runt eggs in the Canada Goose and Semipalmated Sandpiper.—There are few published reports of runt (dwarf) eggs in nature (Rothstein, Wilson Bull. 85:340–342, 1973) and little is known about the rate at which they occur in a given population. In 1973, while working under contract for the Canadian Wildlife Service on North Twin Island in James Bay, we examined about 950 eggs of various species. These included about 500 eggs (122 nests) of the Canada Goose (*Branta canadensis*) and 29 eggs (8 nests) of the Semipalmated Sandpiper (*Calidris pusilla*). In one Canada Goose nest, found on 19 May, there were 3 normal eggs ($\bar{x}$ 82.9 × 56.5 mm, 148 g) and a runt (46.4 × 35.8 mm, 39 g). The runt was only 26% of normal weight and unusually spherical. After boiling it was opened and found to contain a rather fibrous yolk, 5 mm in diameter. We did not disturb the normal eggs and their number had not changed by 25 May. Another Canada Goose nest, found on 16 June, contained 2 runt eggs (61.1 × 35.2 mm, 39.8 g; 56.0 × 34.3 mm, 35.0 g), but no normal eggs. These runts had no yolks and were, in Palmer's terminology (Handbook of North American Birds, Yale Univ. Press, New Haven, Conn., 1:13, 1962), "long elliptical." The female goose was apparently incubating the eggs in a normal manner and, unless it was a replacement clutch, had probably been so doing for nearly the full term—as other clutches were already hatching. One Semipalmated Sandpiper's nest contained 3 normal eggs ($\bar{x}$ 29.8 × 21.5 mm, approx. vol. 70.5 cc) and a runt egg (22.2 × 16.1 mm, approx. vol. 29.5 cc) of normal shape and color, but a volume only 42% normal. The normal eggs hatched 3 July but the fate of the runt is unknown.

Based on the above figures, the rate of occurence of runt eggs is 0.6% for the Canada Goose or 0.4% if the 2 runts found in one nest are considered a single instance, 3.4% for the Semipalmated Sandpiper and 0.4% for all eggs examined by us in 1973. Unfortunately the samples are not random, because if no runts had been found there would have been no report. Museum samples are also liable to be biased upwards, because of a tendency for the unusual to be collected. If, therefore, we are to obtain reliable estimates of the rate of incidence of runt eggs in general and perhaps to make comparisons between species and populations it will be necessary for those handling large numbers of eggs to keep, at least approximate, records of the number of eggs they examine, even if no abnormality is found. Barth (Zool. Mus. Univ. Oslo, Contrib. 81, 1967) found only 1 runt among 4560 eggs (0.02%) in 4 species of gulls (*Larus*) and Ricklefs (Bird-Banding, 46:169) one runt in about 2000 eggs (0.05%) of the Starling (*Sturnus vulgaris*). We cannot recall previously finding a runt in the many eggs examined.—T. H. MANNING AND BRENDA CARTER, *RR 4 Merrickville, Ontario, Canada, KOG INO. Accepted 22 Apr. 1976.*

Late fledging date for Harris' Hawk.—On 29 November 1975, as part of an Arizona Raptor Study Committee project, we banded two nestling Harris' Hawks (*Parabuteo unicinctus*) approximately 40 km north of Phoenix, Maricopa County, Arizona. These 2 birds subsequently fledged sometime between 2 and 4 December 1975. This is the latest recorded fledging date for the species.

Previously recorded late dates are: a nest with fledged young in October and