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Rate and Timing of Prebasic Molt of Adult Boreal Chickadees.—Data on the rate and timing of molt of individuals or discrete populations allow examination of the relationship of molt to breeding and migration at the inter- and intraspecific levels. Here, we present information on the rate and timing of prebasic molt of adult Boreal Chickadees (*Parus hudsonicus*) from Kent Island, New Brunswick (44°35′N, 66°45′W).

Between 17 June and 13 October 1980, we used mist-nets to sample the resident Boreal Chickadee population on Kent Island. We evaluated flight feather molt of all birds by coding each primary, secondary, tertial, and rectrix: 0 = old feather, 1 = missing feather, 2 = pin feather to less than one-third grown, 3 = one-third to less than two-thirds grown, 4 = two-thirds to less than full grown, 5 = new, full-grown feather. Raw molt scores for individual captures were obtained by summing the feather codes. The minimum possible raw score for a Boreal Chickadee's 50 flight feathers is 0, indicating that flight feather molt has not begun. The maximum possible raw score is 250, indicating that flight feather molt is complete. To facilitate comparison with 9-primaried oscines, molt scores were computed from the raw molt scores by the following formula: molt score = (raw molt score ÷ 250) × 100. Thus, the molt score is an estimate of the percent flight feather molt completed.

We made 43 captures of 15 individuals. Molt scores are shown plotted by date in Fig. 1. Eight birds were caught at least twice while actively molting, allowing calculation of rate of molt. Using the earliest and latest captures with active molt, the difference in molt scores was divided by the number of intervening days. Seven of the 8 birds had molt rates of 1.00 or greater. One bird had a molt rate of 0.39, which was calculated from 2 captures late in the molt sequence. Several birds show a slowing of the molt rate towards the conclusion of molt, suggesting that the slow rate for this individual probably had not applied throughout its molt. Excluding this individual, the mean molt rate was 1.30 (SD = .21, range 1.00–1.59). At this rate it would take 77 days to complete flight feather molt.

We are not aware of other published data on molt rate for Boreal Chickadees, nor for the related species *P. cinctus* and *P. rufescens.* The duration and rate of flight feather molt of Great Tits (*P. major*) and Willow Tits (*P. montanus*) is similar to that of Kent Island Boreal Chickadees (Dhondt 1973, Orell and Ojanen 1980). Two resident Kent Island Black-capped Chickadees (*P. atricapillus*) had molt rates of 1.56 and 1.49, at the high extremity of the Boreal Chickadee molt rate range.

Recent studies of time and energy partitioning of breeding and molt (Payne 1972, Bancroft and Woolfenden 1982) have indicated little overlap between the 2 activities. We used the mean molt rate to estimate the date of molt initiation by extrapolation from the first capture with active molt for the sample of 15 Kent Island Boreal Chickadees. The mean initiation of molt was 28 June, ranging from 8 June to 12 July. Nesting dates from Maine and New Brunswick (Bent 1946, Palmer 1949) indicate fledging near the end of June and beginning of July. On Kent Island, flying Juvenile Boreal Chickadees were first captured on 10 July. One nest was found in 1980, from which the young fledged during the first few days of July. The female parent of this nest had not begun to molt on 5 July
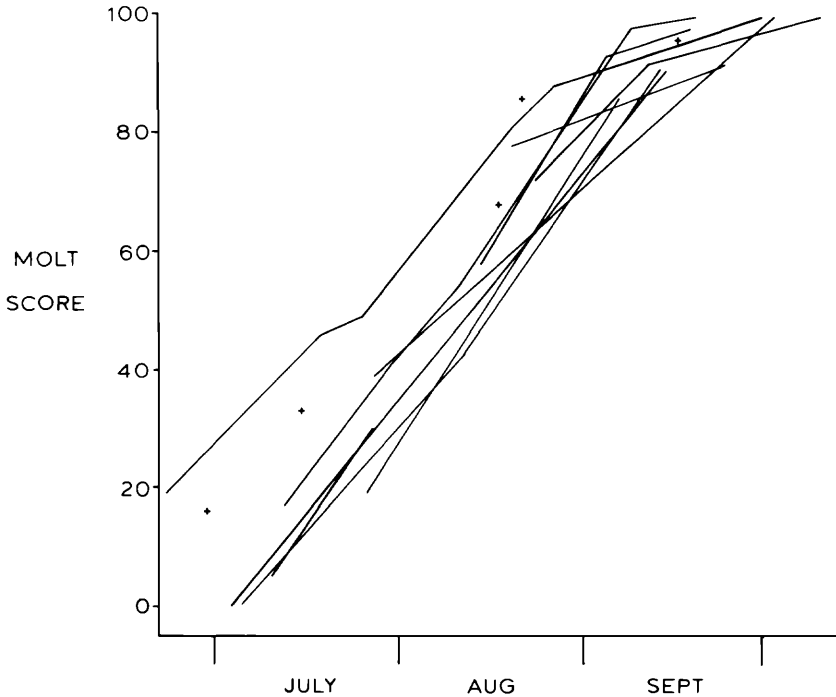
FIGURE 1.   Molt score plotted by date of capture for Kent Island adult Boreal Chickadees.
    Crosses denote scores of birds that were only captured once. Lines connect separate
    scores of individuals.

and extrapolation from a molt score of 43 on 11 August gives a probable molt initiation
date of 10 July. Thus, Kent Island Boreal Chickadees probably initiate prebasic molt
around the time of the fledging of their young, but still during the period of parental
care. Great Tits and Willow Tits in Finland also overlap molt with parental care of nestlings
and fledglings (Orell and Ojanen 1980).

We thank C. E. Huntington, A. H. Cannell, S. Sargent, M. H. Windels, K. Noyes, S.
Highley, and A. Colihan for their help in operating the Kent Island Banding Station.

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Altruism in the Horned Lark?—The ability of a bird to recognize its own eggs and young is usually associated with colonially breeding species, such as seabirds and Bank Swallows (Hoagland and Sherman, Ecol. Monogr. 46:33–58, 1976; Beecher et al., Anim. Behav. 29:95–101, 1981). Most passerines, however, are territorial, rather than colonial, and locate their nestlings easily because there is no confusion generated by neighboring nests. After the young leave the nest, they usually remain in the parental territory where they are cared for by their parents for a few weeks. The primary mechanism of parent-offspring recognition is often auditory, with young and adults giving begging and location call notes, respectively, until they locate one another (Burtt, Anim. Behav. 25:231–239, 1977; Stoddard and Beecher, Auk 100:795–799, 1983). Some wandering from the parental territory may occur, however; and, by the time nest-leaving occurs, it would be of obvious adaptive value for the parents to be able to recognize their own young and not feed or protect unrelated young. I report here on an observation of care of unrelated young in Horned Larks (*Eremophila alpestris*) near Macomb, McDonough Co., Illinois.

Two color-banded 12-day-old young from one territory [nest 3, territory K (Beason and Franks, Auk 91:65–74, 1974)] were fed by the color-banded parents of a second territory [nest 1, territory H (Beason and Franks 1974)] on 2 May 1969. These observations were made while the young were in territory H, which is separated from their natal territory by one intervening territory. The young had left their nest 3 days before, and had been cared for by their own parents prior to this observation. The parents of the young were also color-banded, as were the offspring of the adults involved in these observations. While I observed from a blind, each adult made 8 feeding trips to the young in 2 h of observations, and responded to the distress notes of the young when I captured them. While I weighed and measured the young, one adult stood on nearby fence posts and gave loud alarm call notes. When released, the young fluttered a short distance and landed, followed by the adults. The adults had 3 young of their own which were the same age as the young they were fostering. Their young were located on their own territory the two days prior, but not on the day of these observations. No young from either nest was located again until 2 weeks later, when I recaptured juveniles from both nests. The adults of territory K were present on their own territory the day of these observations and later.

Unlike the experimental studies on altruism by Power (Science 189:142–143, 1975) and Weatherhead and Robertson (Behav. Ecol. Sociobiol. 6:185–186, 1980), which asked replacement mates to feed and care for foster offspring, this observation involved the natural intrusion into a defended territory by alien young and subsequent fostering by the adults of that territory. Although relationship further removed than one generation cannot be eliminated, it is unlikely that the young birds from nest 3 were related to the adults of nest 1. After becoming independent, juvenile Horned Larks aggregate into flocks and disperse from their natal area during the fall, but the adults remain on the same territory for successive years (Pickwell, St. Louis Acad. Sci., Trans. 27:1–153, 1931; Beason, MS thesis, Western Illinois Univ., Macomb, IL, 1970). This behavior would reduce the probability of kin-interaction and inclusive fitness (Hamilton, J. Theor. Biol. 7:1–52, 1964) as a possible explanation.

A likely explanation for the observed behavior by the adults (other than true altruism) is reproductive error. The intruding young were the same age as the parent's own young and the parents may have failed to distinguish the alien young. The reproductive process in birds is strongly under hormonal control (Lofts and Murton *in* Farner and King, eds., Avian Biology, Academic Press, New York, 1973:1–107), and the adults were physiologically motivated to feed young. However, because their own young were alive and in the