

## CHANGING COMPOSITION OF A REDPOLL FLOCK DURING SPRING MIGRATION<sup>1</sup>

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Information on changing associations of birds during migration is scarce. Flocks of birds in migration are usually considered to be coherent social aggregations and they appear to be so at any one time and locality. However, our studies of willow ptarmigan (*Lagopus lagopus*) have shown that individual age and sex groups independently pursue their own special programs in migration although they always occur in coherent flocks (Irving *et al.*, 1967). The same situation occurs in migrating Lapland longspurs (*Calcarius lapponicus*) where the sex ratio changes with time in what appears to be a coherent aggregation in a specific locality (West, Peyton, and Irving Ms.).

The following information reports on the changing association between two species of closely related birds, the common redpoll (*Acanthis flammea*) and the hoary redpoll (*A. hornemanni*) that migrate together and occur in mixed flocks.

The whole subject of taxonomy and of seasonal changes in distribution of these two species needs thorough review and is not treated in this paper. However, small flocks of both common and hoary redpolls occur in interior Alaska during winter, migrate through the area in spring and less conspicuously in the fall, but only the common redpoll remains in the low forested interior near Fairbanks (64° 51' North latitude, 147° 43' West longitude) to breed (Kessel and Springer, 1966; Kessel, Weeden, and West, 1967).

Throughout April 1966, we observed, netted, and banded redpolls from the large flocks migrating through the Fairbanks area and obtained interesting data on the changing proportions of hoary and common redpolls during that period. Redpolls, which feed extensively on alder (*Alnus crispa*) and birch (*Betula papyrifera*) seeds during the winter, come down to feed on weeds exposed in spring by the melting snow (White, Ms.).

On a south-facing bank on the west ridge of the University of Alaska campus, a large stand of lamb's quarter (*Chenopodium album*) flourished during the summer of 1965. Flocks of redpolls utilized this food source of tiny black seeds in October as snow covered other areas, but by midwinter, all the stems were covered. In late March, the stems again became exposed and, by April 1, the whole bank was clear of snow even though surrounding, flatter terrain was still snow-covered. Large flocks of redpolls were present in the immediate vicinity of the bank from March 28 through April 25, feeding on the lamb's quarter seed. After this date, the melting snow had exposed many other areas available for feeding

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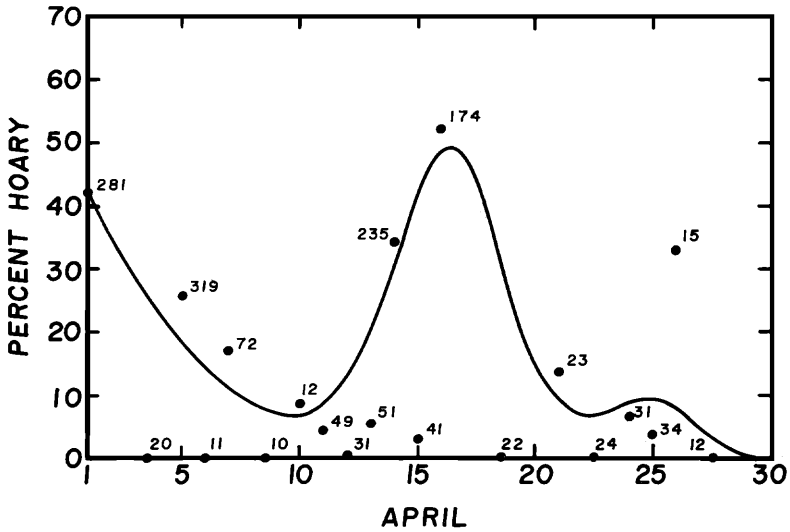
redpolls and thus the flocks either scattered to other areas or left the Fairbanks area altogether.

The two species of redpolls are often difficult to distinguish even when the birds are in the hand (Houston, 1963). The reason for this may be that the two species either interbreed and produce offspring with characters of both species (Gabrielson and Lincoln, 1959) or else the natural variations in each species population are such that the characters of the two species overlap. Two clues are normally utilized to distinguish the two species: bill shape and plumage color. The hoary redpolls of Alaska (*A. h. exilipes*) have shorter and stubbier bills than the common redpolls (*A. f. flammea*) which often have rather long bills that taper to a fine point. Hoary redpolls have a generally light plumage which is most evident on the head, rump, and undertail coverts. The rump of a hoary lacks streaks or has only faint streaks while the common usually has heavy streaks. The undertail coverts of the hoary are white, those of the common are streaked. However, there is a continuous intergrade between the plumages of the two species. Some birds appear very light, but have a long bill; others are dark with stubby bills. Therefore, there is always a certain percentage of birds that cannot be accurately separated. In this study, all those birds with white undertail coverts and pale plumage were termed "hoary"; all those with streaked undertail coverts and dark plumage were termed "common." The bill character was used only in confusing cases. This scheme generally follows that of Houston (1963). Initially it was hoped that age and sex could be accurately estimated, but as an increasing number of birds were handled, it became obvious that our estimates were not accurate enough to be used in a critical analysis.

During April, 1966, we netted, trapped, and banded 1,467 redpolls, of which 398 were identified as hoary and 1,069 as common redpolls. Figure 1 shows the number of birds banded each day and the percentage of the population that consisted of hoary redpolls. A significant daily sample size was set at 30 individuals (although this may be too low) and therefore, the curve (fitted by eye) is drawn to correspond with those samples greater than 30 individuals.

There are two obvious peaks in both numbers of birds netted and percentage of hoary redpolls. The migration of redpolls apparently occurs in waves (Kessel and Springer, 1966). In 1966, two main waves were obvious from general observation. The first wave came in the last two to three days of March and persisted until about April 9. The second wave began on April 13 and continued until April 17. A third wave of considerably lesser magnitude occurred around April 22-26. Although the netting was not done so as to quantify birds caught per hour of netting time, the total numbers caught per day reflects the general population flux in the netting area.

The shift in percentage of hoary birds when combined with the total number caught indicates their influx and rapid movement out of the area. The two major peaks in numbers of hoary red-



1. Percent of hoary redpolls out of the total number of redpolls caught in April 1966. Numbers next to the points are the total number of redpolls caught. The curve is fitted by eye and is weighted towards those samples greater than 30 individuals caught on any one day.

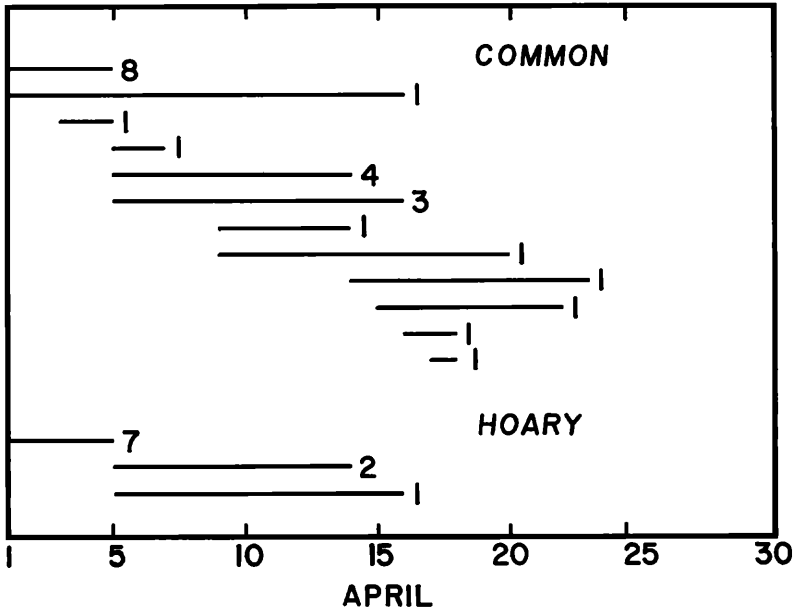
polls occurred at the time of the large waves of migration of both types (Figure 1). Therefore, the numbers of common redpolls fluctuated in the same period but in almost twice the amplitude of the hoary redpolls.

Of the total birds recaptured (34), the proportion of each type corresponded directly with the total number originally banded (Table 1).

However, the total number of recaptures in such a concentrated flock is much lower than might be anticipated in view of the fact that all birds were released back into the flock soon after capture. We had estimated the flock to number 1,000+ birds on April 1 and 5 and again on April 14-16. If we assume that this estimate is correct, we caught 28 percent of the flock on April 1, 32 percent on April 5, 24 percent on April 14, and 17 percent on April 16. If the

TABLE 1. RECAPTURES OF BANDED REDPOLLS

	Hoary	Common
Total banded	398	1,069
percent of total	27.1	72.9
Total recaptured	10	24
percent of recaptures	29.4	70.6



2. Recaptures of common and hoary redpolls in April 1966. Length of line indicates length of time between initial capture and recapture. Numbers at the end of the line are the number of individuals recaptured.

flock retained its composition of the same individuals from April 1 to 5, we would expect 28 percent of the individuals caught on April 5 to be recaptures. Instead, only 15 out of 319 or 4.7 percent were recaptured (Figure 2). Likewise, from April 5 to April 14-16 we would expect over 32 percent of the netted birds to be banded (if we include those banded on April 1 with those of April 5, it would be 60 percent expected to be already banded). Instead, on April 14-16 only 12 birds out of 450 were previously banded or 2.7 percent.

The low number of recaptures indicates clearly that birds were moving out of the area and few individuals remained long enough to be recaptured. The average length of stay as calculated from recaptured birds is 6.2 days. However, this estimate of length of stay is biased by two obvious factors: 1) Only those individuals remaining in the area can be recaptured on the second or subsequent day of netting, while those that have remained a shorter length of time are excluded, and 2) As the season progresses, an increasing number of common redpolls will be found remaining in the area since they nest in the vicinity of Fairbanks and hoary redpolls do not (Kessel and Springer, 1966). Therefore, the actual average length of stay is undoubtedly less than the calculated 6.2 days.

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GENERAL NOTES

**An Indoor Blue Jay Nest.**—During winter and spring, 1967, at Coventry, Connecticut, coarsely ground corn ("chick feed") was regularly scattered on the floor of a garage to provide food which remained accessible for wild birds despite snowfalls. Among the species seen entering the garage, undoubtedly to feed on the grain, were Blue Jays (*Cyanocitta cristata*). It is not certain that this provision of food influenced the subsequent selection of a nest site in the garage, but a relationship is suspected.

Throughout May and June, 1967, people regularly visited the garage on various chores, but usually remained inside for only a few moments. Nesting was first detected on May 14, when an adult jay was seen sitting on the completed nest in a relatively dark location near the ceiling. On several different days when I entered the garage an adult was on the nest and, despite my being nearby, remained silent and seemingly immobile, except for turning of its head, presumably to watch my movements. Although no special effort was made to study the history of this nest, it was noted that several large nestlings were present on June 11 but that the nest was empty on June 12. A juvenile jay seen in lilac (*Syringa*) bushes next to the garage on June 14 presumably was from this nest. During the latter part of the nestling period and for at least two days after the presumed fledging, one or both adult jays called loudly and made attacking dives when a domestic cat approached the garage. The cat was generally repelled by these attacks.

Surrounded by fields, lawn, trees, and bushes, the wooden garage was used for storing firewood, refuse, and miscellaneous items. The somewhat dilapidated building was approximately 5.7 meters wide, 4.9 m deep, and 2.64 m in maximal height. Jays could enter the garage through an open doorway nearly 2.3 m<sup>2</sup> in area, two open windows with an area of almost a m<sup>2</sup>, low horizontal gaps between the walls and roof on two sides, and perhaps through a few smaller openings. The nest was more than two meters from the nearest entrance and about 2.1 m above the earthen floor. A plank and adjacent metal pipe formed a nearly level sup-