The first basic plumage in the Black-capped Chickadee is acquired by a partial prebasic molt, which involves the body plumage and wing coverts, but not the rest of the wings or tail (Dwight, The sequence of plumages and moults of the passerine birds of New York. N.Y. Acad. Sci. 13:73–360, 1900). This chickadee's molting of a few flight feathers at an uncharacteristic time may be due to geographical irregularity in molt pattern or replacement of individual lost feathers.

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A circular "ring-angel" movement by field-feeding waterfowl.—The pattern of dispersal of birds from communal roosts has been termed "ring-angel" because of the images that the flocks produce on radar screens (Harper 1959, Eastwood et al. 1962). This pattern of movement from roosts has been discussed in relation to central place foraging and food competition avoidance (cf. Hamilton and Watt 1970), but it has not been examined in terms of flock movements of feeding birds. In this paper, we describe a "ring-angel" distribution, along with the movements and amounts of grain eaten by feeding Mallards (*Anas platyrhynchos*) and Greater White-fronted Geese (*Anser albifrons*) near Last Mountain Lake, Saskatchewan.

Observations.—The events reported here occurred between 17:20 and 20:00 h on 22 September 1982 in a 125-ha harvested barley field (six-row variety). Observations of feeding Mallards and geese were made with binoculars and a spotting scope from 4 m up in a tree at distances of from 50 to 200 m from the flock. The birds' landing locations and subsequent movements could be determined accurately. Thirty-four Greater White-fronted Geese had been feeding in the field for 20 to 30 min before most Mallards began arriving at 18:00 h. As flocks of Mallards arrived they landed centrally within the flock rather than at its edges. They then gradually dispersed outward from these central positions, producing a very clear, circular "ring-angel" pattern (cf. Harper 1959, Eastwood et al. 1962). During the next hour, Mallards, and smaller numbers of geese and Northern Pintails (*Anas acuta*), continued to land inside the ring-angel and then walked outward to join feeding birds. Approximately 5600 ducks and 300 geese were involved in the ring-angel which was estimated to be about 200 m in diameter when they left the field.

It was not possible to observe feeding birds the next morning (23 Sept.) because of hunting in the field. However, we sampled several parts of the field, including where ducks and geese had fed the previous evening and adjacent areas that had not been used. A 0.29-m^2 hoop was tossed >5 m ahead as we walked through these areas. The ground was searched for feathers and droppings to ensure that the proper areas were sampled. The number of grain heads, number of plant stems, and height of the stem nearest the center of the hoop were recorded for each toss. The number of heads/toss was then assigned to one of the following categories: 0, 1, 2, 3, >3. The number of kernels inside the hoop was estimated and was categorized as follows: <5, 5–15, 16–50, and >50.

Results and discussion.—The amount of grain missed by harvest machinery (waste grain) and plant (stubble) characteristics in the two areas differed. First, the average number of grain heads/toss was significantly lower inside the ring-angel (1.3 ± 1.7 [SD], N = 36 hoop tosses) than outside (5.3 ± 10.9, N = 67) (G-test, $P < 0.01$), and there were fewer loose kernels inside the ring-angel than outside (G-test, $P < 0.05$). Waterfowl ate about 75% of the barley. In lure crop studies (R. G. Clark and H. Greenwood, unpubl. data), we found that ducks "gave up" feeding in swaths (windrows) of cut grain when 75–80% of the grain was eaten, possibly because it then became too difficult to find the remaining grain. These results concur with Baldassarre and Bolen's (1984) report that ducks removed about 80% of waste corn from fields in Texas during winter. Second, plants were less dense (t-test, $P < 0.05$) inside the ring-angel area ($\bar{x} = 27.3 \pm 15.1$, N = 36) than outside ($\bar{x} = 44.7 \pm 17.4$, N = 67), but plant height was similar inside ($\bar{x} = 12.5 \pm 5.5$, N = 36) and outside ($\bar{x} = 14.6 \pm 3.8$, N = 67) the ring-angel (t-test, $P > 0.05$). Bossenmaier and Marshall (1958) proposed that waterfowl prefer areas with low plant density and short height because it is easier for them to land, but as far as we know this is the first evidence to support this idea.

Ring-angels never developed when we observed waterfowl feeding in lure crops, where grain was concentrated in swaths (windrows), or in harvested fields where waste grain was concentrated where the swath had been picked up by a combine. In those fields, ducks and geese lined up along the swaths, where feeding appeared to be most profitable. For instance, in 1984, waste grain density along the path of the combine (a band about 1-m wide) averaged 69.2 ± 54.0 g/m^2 (N = 24 barley fields), whereas density in the area between these bands (about 5 m wide) averaged only 2.3 ± 1.9 g/m^2. In contrast, average waste grain density was 23 ± 48 g/m^2 in the ring-angel field, assuming that heads of barley contained an average of 1.25 g of kernels (Clark et al. 1986), and we found no evidence of harvested swaths (i.e., waste grain was relatively dispersed).

We suggest that as grain was eaten inside the ring-angel, the "biodeterioration zone" (Hamilton and Watt 1970:265) increased in size, forcing birds to move outward in search of more abundant food. The ring-angel formation enabled many birds to scan all directions simultaneously, possibly improving predator detection. We have no idea how often the ring-angel formation occurs and, unfortunately, as most waterfowl feeding behavior is recorded at ground level, the pattern, if present, would usually be missed. Further work is needed to ascertain the conditions favoring the development of this feeding pattern (e.g., Sih 1980).

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