

Observations on Avian Morbidity and Mortality at a Winter Feeding Station

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During the winter of 1987-88, I was able to make some observations on morbidity and mortality among the birds using two feeders at my home in Oxford, North Carolina. One feeder was a table 1.2 m square and 1.2 m high, located in front of a window. The second feeder was a cement driveway located about 10 m from the first. The food placed on the driveway was 3 m from a small red cedar (*Juniperus virginiana*). A rose bush was located 12 m from the driveway feeding site and 22 m from the window feeder. A loblolly pine (*Pinus taeda*) and a box elder (*Acer negundo*), about 12 and 6 m tall, respectively, were located within 18 m of both feeders.

Sunflower seeds on the table feeder were used mostly by Carolina Chickadees (*Parus carolinensis*), Tufted Titmice (*P. bicolor*), Evening Grosbeaks (*Coccothraustes vespertinus*), and House Finches (*Carpodacus mexicanus*). Chicken scratch feed, consisting of cracked corn and wheat, was used on the driveway and attracted Mourning Doves (*Zenaida macroura*), Blue Jays (*Cyanocitta cristata*), House Sparrows (*Passer domesticus*), Northern Cardinals (*Cardinalis cardinalis*), Rufous-sided Towhees (*Pipilo erythrophthalmus*), White-throated Sparrows (*Zonotrichia albicollis*), and Song Sparrows (*Melospiza melodia*). Use of the feeders increased after a heavy snowfall on 7 January 1988.

Birds were judged to be morbid when they consistently carried their head and body plumage fluffed out. They often remained alone at the feeder after conspecifics departed and then showed reduced reactivity to disturbance. When leaving the feeders, they sometimes hopped instead of flew.

Counting sick and dead birds to measure the levels of morbidity and mortality was made difficult by the presence of house cats. Of two dead birds left available after discovery, one (a female House Finch) was gone within two hours and the second (a male House Sparrow) was removed by a cat after eighteen minutes. A third bird (a male Northern Cardinal), stunned after flying into a window, was snatched by a cat immediately.

Cats often jumped onto the feeder table or waited beneath the branches of the red cedar nearest the driveway in an apparent effort to catch birds. However, I observed only one successful attempt; that on a morbid female House Sparrow at the driveway feeder. In the absence of cats, morbid birds were observed to hop from the driveway feeder to the nearby rosebush. House cats were seen exploring around this bush on at least two occasions. Feathers of a female Northern Cardinal under this bush provided evidence that at least one bird had died and been eaten there. At least eight morbid House Finches were observed at the window feeder with no knowledge of their subsequent fate. As these eight birds were seen at different times, the possibility of some duplication existed.

No attempt was made to estimate numbers of birds of the various species using the feeding stations because it was felt that capturing and marking the birds would have exposed them to additional hazards. Consequently, no estimate can be made of the proportion of the total population affected by morbidity and mortality and the observations reported must be considered anecdotal.

House Finches were most abundant both among the birds coming to the feeders and among those found morbid or dead. As only House Sparrows, Northern Cardinals, and House

Finches were found morbid or dead, it is suggested that these species may have been more susceptible to injury from snow-cover than the other species visiting these feeders.

The increased use of artificially provided food during snow-cover suggests that snow provides new stress in the birds' search for adequate food. Consequently, the levels of morbidity and mortality observed at my feeding stations during a time of snow-cover is assumed to be higher than when such stress is absent. It is implied that snow-cover is a special hazard to at least some species of birds wintering in North Carolina. Unfortunately, it is not known to what extent morbidity and mortality was caused or hastened by snow-cover.

Even with the apparently large number of cats near the feeders, the observable impact of these predators on the bird population was minor. The Northern Cardinal, captured after injuring itself in collision with a window, was the only apparently healthy bird to fall prey to a cat.

Carolina Chickadees and Tufted Titmice showed a tendency to come alone to the window feeder, creating less attraction to would-be predators than the highly gregarious House Finches. Similarly, morbid House Finches often remained behind to feed alone after their healthy associates left en masse. A Sharp-shinned Hawk (*Accipiter striatus*), visiting the area on 10 January 1988, pursued a departing flock of House Finches instead of capturing the laggard bird at the feeder. This provides an example of an apparent advantage to solitary feeding. I presume that the outcome could have been different if the predator had been a house cat.

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Breeding Status of the Northern Harrier in North Carolina

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Despite the fact that the Northern Harrier (*Circus cyaneus*) is a regular, although not particularly common nesting bird on the nearby Delmarva Peninsula (Kain, 1987; Robbins and Boone, 1984), there is little hard evidence of these birds breeding in coastal North Carolina. The only published reports of breeding are an unsuccessful nesting attempt near Frisco, Dare County, NC (Pearson et al., 1942) and the revised 1959 edition of the Birds of North Carolina mentioned a 19 April 1891 inland nesting record for Bertie County. Coues (1891) listed this species as "very common, resident" of Ft. Macon, but provided no evidence of nesting for this or most other species that he considered residents. Smithwick (1897) considered these birds as "common residents in the east, probably breeding." During the last few years records obtained by ourselves and others suggest a small but regular nesting population along the north-central North Carolina coastal area. These records are regarded as the southern limit of breeding for this raptor in North America.

Areas of breeding season occurrence are presented in Table 1, with the majority of records coming from Ocracoke and Cedar islands. An increase in reported sightings in the last decade may or may not represent a real increase in nesting season birds. Documentation of nesting is particularly difficult for this species because of the early arrival and late departure dates