WEATHER AND PURPLE MARTIN MORTALITY IN WESTERN NEW YORK

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In western New York, Purple Martins nest abundantly in bird houses set up by bird lovers or insect-conscious homeowners. The usual date of spring arrival is April 9–20, although an unusually warm spring may find an occasional bird flying around one of the houses by April 1.

Since Martins are almost exclusively insectivorous (Beal, 1918) and feed almost entirely on the wing, cold weather in late April and early May can present a serious hazard. In 1966, the Martins arrived as usual, and by April 20 most houses were occupied. The weather was cool and damp with frequent precipitation until the first week in May. There was then a period of several days when the temperature did not rise above 50°F., with almost daily precipitation (Figure 1). On May 7, we received the first reports of dead Martins, but the temperature rose sharply, and we thought the danger was averted. On May 9, however, the temperature dropped to below freezing, and there was a two-inch snowfall, represented by the "S" in Figure 1. The temperature did not rise above 50° again until the 14th, by which time reports of dead Martins had multiplied.

Because of the large number of local complaints in northern Chautauqua County, we sent out a questionnaire to more than 100 owners of Martin houses, whose names we secured through a notice in the newspapers of western New York. We received reports from almost all of these people, but only 30 of them were sufficiently detailed to be useful. These reports detailed the fate of 552 Martins, which had arrived by the time the cold weather began. Of these, 323 were found dead around the houses or nearby, a known mortality of 58.5%. Since many owners reported that the first arrivals had "disappeared," and since a few Martins were picked up at some distance from a house, it is probable that this known mortality is lower than actual mortality. Our best estimate is that 75–80% of the Martins which had arrived in New York prior to May 5 died during the period from May 7–15.

Western New York was not the only area struck by heavy Martin mortality in 1966. The cold weather struck from Ohio to Central New York, with estimates of mortality ranging from 50–95%. Weather data for this period indicated that temperatures for the first half of May ranged from 10–12 degrees below normal for that period, while there was significant precipitation on 14 of the 30 days between April 15 and May 15.

Conditions which cause severe Martin mortality, then, are relatively easy to define:

1. Unseasonably cold weather, with the temperature remaining below 50°F. for several days.
2. Continued wet weather, with almost daily precipitation either as rain, sleet, or snow.
3. Following several days of the above conditions, which undoubtedly weakens Martins because of limited food, a sudden dip in temperature, with freezing conditions.

We were able to check the above conclusions during the spring of 1967, when a similar but mercifully shorter cold period in May caused some mortality, at least in northern Chautauqua County. The cold period was brief and was followed by a sunny period and slowly rising temperatures, which came in time to save a majority of the birds.

Although Bent (1942) reported that Martins have been observed picking up food from the ground, we were unable to find any evidence that the birds did so during these unseasonable periods. While other insectivorous birds are often seen during a May freeze picking up moribund insects from the ground, Martins appear not to do so. It was noted repeatedly by our observers that Martins crammed into the houses during bad weather and seldom left the house at all. Those found on the ground appeared to be those which were unable to jam themselves into the occupied boxes, although they could certainly have found space in an unoccupied nest. Mrs. W. J. Harmelink of Findley Lake wrote:

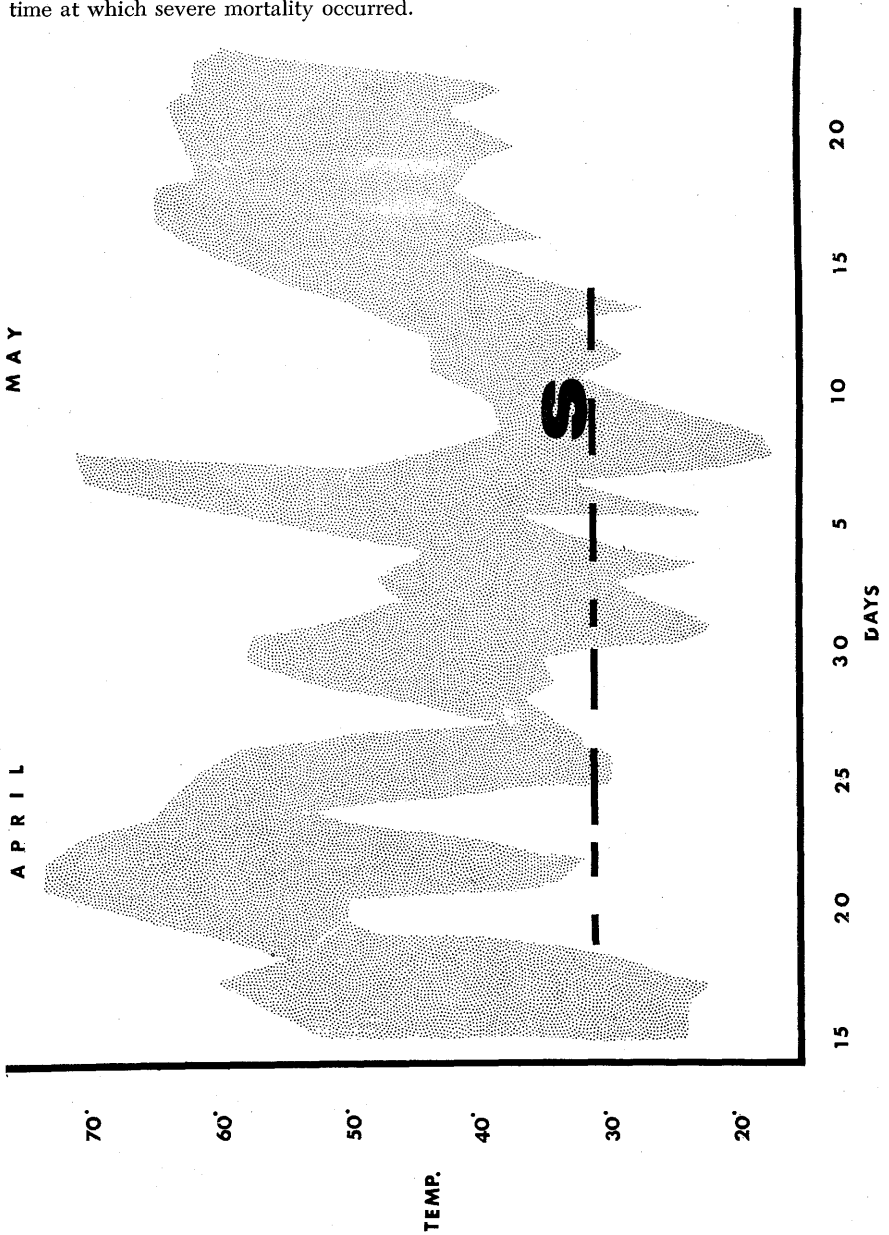
> "One bird got pushed out on the ledge, and
> I watched as first one claw let loose and
> then it swung down and hung upside down
> until it fell to the ground. Ten minutes
> later it was dead. The temperature was 27°."

Mrs. Harmelink, and some other observers, tried to save their birds in a variety of ways. Mrs. Harmelink placed a charcoal fire under the house and maintained it through the night. This apparently helped, since she lost only four birds and by midsummer had a full house. A few individuals were saved by artificial feeding of mealworms or canned dog food, but most birds which were weak enough to fall to the ground were too far gone to survive.

The evidence suggests that Martins are poorly adapted to continued low temperatures, and that they respond to poor weather conditions by entering a semi-comatose condition in the nest boxes. If weather conditions continue to be unfavorable, starvation enters the picture, and the birds seem unable or unwilling to seek food in unorthodox methods such as ground feeding. No loss of other insectivorous birds was noted, and resident Tree Swallows, Bank Swallows, and Barn Swallows were evidently able to find enough food to survive.

Figure 1 — A summary of weather conditions in southwestern New York, April 15-May 15, 1966.

Mottled area represents high and low temperatures each day. Dark line represents precipitation. Large "S" indicates a two-inch snowfall, and indicates also the time at which severe mortality occurred.



Extensive kills of Martins by inclement weather have been recorded frequently in the past. In 1903, a cold period in June killed thousands of Martins in western New England. Forbush (1929) reported an earlier occurrence in which all the Martins in eastern Massachusetts were destroyed. We have not found, however, any past disaster of such widespread occurrence as the 1966 mortality. Destruction seemed to be rather spotty, but in the whole area affected, the total kill must have been many thousands of birds.

Aside from the results of our survey of Martin mortality, we received a great many interesting letters which produced interesting observations on Martin life in general. A few of these are of sufficient interest to warrant verbatim quotation.

Mr. W. R. Kuhns of Olcott writes:

"Each summer during the growing season, the parents bring a few dried and odorless small fish to the perches. I have never seen any taken into the house, always being left on the porch with no more attention being paid to them by either the young or parents. The fish is eventually blown or kicked off."

Mr. Edwin Wilhelm of Collins reports an unusual feeding habit, the only observation of its kind:

"For the past month, quite a few martins have been landing on our feeding station and eating some of the smaller seeds."

Mr. Joseph Hannon of Orchard Park was one who tried to save his birds by force-feeding:

"We brought (two) into our house and after they were warmed up, fed them some ground round steak by placing small bits behind their tongue, which they readily swallowed. We were able to save the female bird, but the male bird was dead the following morning."

Mr. Raymond Ryan of Westfield was one of the few whose houses were eventually filled:

"We had 12 pairs equally divided, male and female. Of the group, we found 8 dead males on the ground and 3 in the house, no dead females. The females disappeared and we thought all had died. However, as soon as the weather warmed up, one pair returned. Thereafter, females returned until we had 12 females and one male."

A number of observers mentioned the predominance of males among the dead birds. Those who had nesting groups in 1966 included several who had more females than males in the final nesting count. I know of no reason why there should have been a differential mortality, but all the evidence suggests that females survived the adverse conditions better than males.

Summary

Purple Martin mortality in May 1966 approached 75–80% in western New York. Sustained cold wet weather, with temperatures below 50° for several days, appeared to trigger the losses. Female mortality was reported as less than male, although no precise figures are available. Few western New York houses were fully occupied in 1966.

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SUMMARY OF THE 1967 F. & W. S. BREEDING BIRD SURVEY

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Through the cooperation of 58 observers and numerous support personnel who helped with recording birds, driving routes and recruiting people to participate, 74 breeding bird surveys were completed in New York State during the 1967 breeding season. This survey is sponsored by the Fish and Wildlife Service of the U.S. Department of Interior. It was begun experimently in 1965 in Maryland and Delaware and first run in New York State in 1966. The 1967 counts amassed data on 64,188 birds of 156 species and one hybrid.

The purpose of the survey is to measure changes in abundance of breeding birds as brought about by changes in environment, land use and a multitude of other factors. To be statistically valid, the survey routes are selected on a random basis at the present density of eight per degree block. Thus there are 112 such counts in New York State. The coverage afforded by the 74 counts was adequate in all areas except the Adirondack Mountains and fringes. Twenty-three of the 38 counts which were not run were in this area.

The total value of this survey on a grand scale remains to be determined with time. However, even in its infancy, benefits appear to be accruing. The survey affords a quantitative handle for students of local bird populations. It is enlightening to know with some degree of reliable comparison the conspicuousness of species which for the most part has been previously determined quite casually. This impact is already noticeable in the use of survey data by regional editors in the October issue of *The Kingbird.* New birding areas that otherwise might not be visited are being assayed and hopefully are becoming the subjects of subsequent, more thorough investigation. In addition, there is a personal satisfaction