

GENERAL NOTES

Chimney perching for warmth in Starlings.—Maintenance of a favorable energy balance by Starlings (*Sturnus vulgaris*) during winter in the northern part of their range is sometimes difficult. This conclusion is evident from observations of mass mortality in severe winter weather (Forbush, 1927:409; Odum and Pitelka, 1939). Like many other species, Starlings are known to roost in situations favoring nighttime heat conservation (see, e.g., Kalmbach, 1932), but heat-conserving actions of daylight periods have been less frequently reported. On cold days during the winter of 1962-63 in Kalamazoo County, Michigan, I noticed a tendency for Starlings to perch on chimneys for extended periods. The birds usually sat quietly, singly or in groups, on the inner edge of the chimney (or, if the chimney possessed a ledge within the aperture, on this ledge). More frequently than not, the lee side of the chimney was used. Little vocalization and few social interactions were noticed; occasionally a bird would bring food to a chimney and eat while it perched there.

To determine whether or not the use of chimneys was related to air temperature, the following procedure was employed: A predetermined route of nine city blocks in Kalamazoo was walked at the same time each morning (beginning between 9:09 and 9:15 AM and ending between 9:29 and 9:34), and the total number of Starlings seen and the number seen perched on chimneys were recorded. Immediately before and after the observation period, light intensity (at 4 feet, reflected from a north-facing gray stone surface) and wind velocity (at 4 feet) were recorded; air temperature was recorded continuously during the observation period. Dates of observation were 1-12 (except 3, 4, 10, 11) March 1963. A parallel series of observations (without wind and light determinations) was made 3-9 March (beginning 8:50-9:00 AM) in Grand Haven, Ottawa County, Michigan, by Jack W. Kammeraad.

The results of these observations indicate that the use of chimney perches increased directly with decreased air temperature (Fig. 1). No particular correlation with wind or light was discernible. From these results, it seems likely that the Starlings were using the chimneys as heat sources. Probably air temperature is not the sole factor involved in chimney perching; rather, the Starlings may tend to perch on chimneys if heat loss is slower there than elsewhere and to leave if high winds, rain, etc., make heat loss greater than in more sheltered sites. (The unusual observation of 100 per cent at $+2^{\circ}$ C [see Fig. 1] was of six birds on the only rainy day of the observation period. The lowest count on any other day was 13 birds; presumably, most birds on this day were in sheltered situations where they were not readily seen.) No quantitative estimates of energy relations can be given, but it is patent that under some conditions of low temperature, chimney perching can conserve a substantial amount of energy that would otherwise be dissipated in maintenance of body temperature.

Instances of Starlings perching on chimneys in England have been considered examples of "smoke-bathing," a kind of behavior supposed to be related to anting (see Prideaux, 1947; White, 1948; and for a review of the subject of smoke-bathing, Whitaker, 1957: 246-248). That a "smoke-bathing" behavioral pattern, not connected with maintenance of body temperature, may exist is conceivable, but nothing in the observations presented here seems to require the postulation of such behavior.

I am indebted to Jack W. Kammeraad for the use of his observations, and to Charlotte Calhoun for the opportunity to examine some of her field notes.

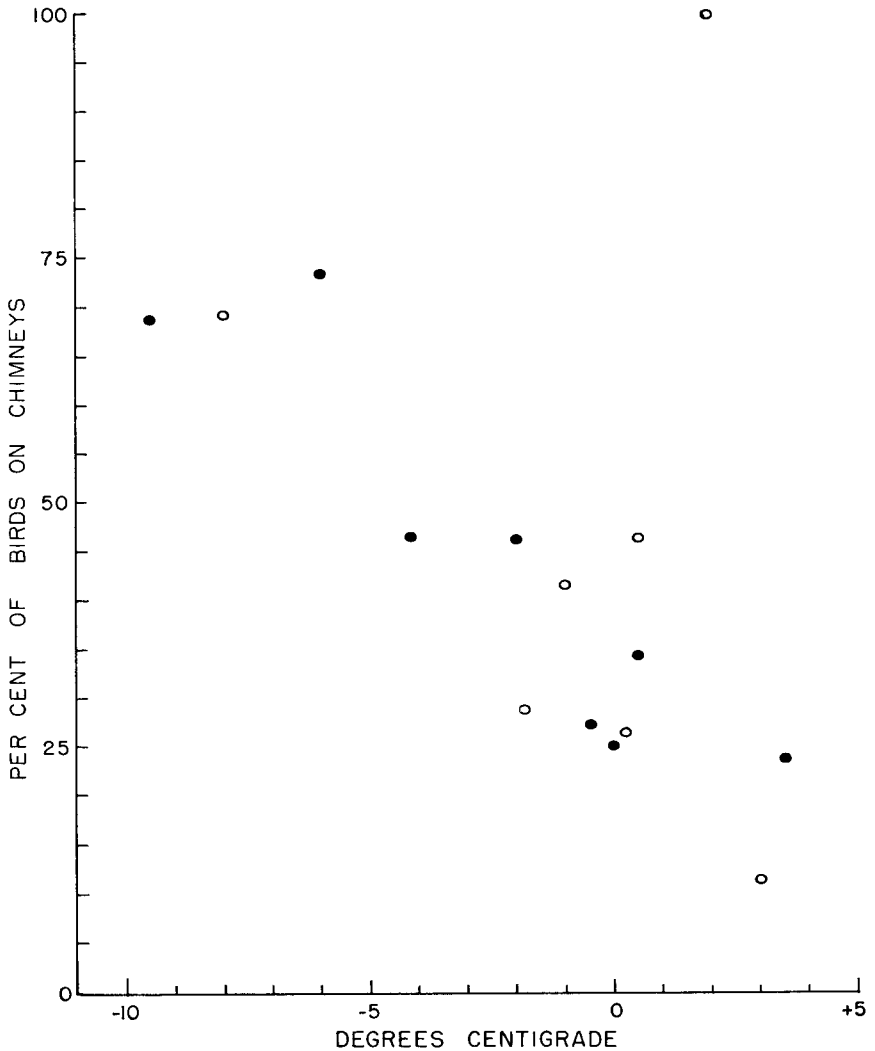


FIG. 1. Relationship between air temperature and the tendency of Starlings to perch on chimneys. Y axis is $\frac{\text{number of Starlings on chimneys}}{\text{total number of Starlings observed}} \times 100$. Solid points are for Kalamazoo, open symbols are for Grand Haven.

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Carolina Wren's ability to survive during severe winters.—In *Wilson Bull.*, 75: 140-158, Barbara G. Beddall describes the range expansion of several species, including the Carolina Wren (*Thryothorus ludovicianus*) in the northeastern states. The article referred to habitats and temperatures but no mention is made of the effect of snowfall upon the possible survival of these species. The following comments refer to the Carolina Wren. Bent's "Life Histories of North American Nuthatches, Wrens, Thrashers, and Their Allies," *U.S. Nat. Mus. Bull.*, 195, says that a 1916 study of 291 stomachs representing every month showed animal matter, nearly all insects, to account for 94.18 per cent of the contents, and when a deep fall of snow covers the ground for a long time, and is accompanied by severe cold, most of the wrens succumbed to cold and starvation. There is also a quotation by Dr. Alexander Wetmore citing two winters when the Carolina Wren population was greatly reduced, and concluding with the statement, "The supposition advanced in my former note that decrease in the species was due not to cold, but to the heavy blanket of snow seems substantiated."

This species, formerly an uncommon resident of Polk County, Iowa, became well established in 1954 and was seen regularly throughout 1961. The severity of the winters following their establishment is shown by the following data furnished by the U.S. Weather Bureau Station at the Des Moines Airport.

Winter Dec.-Feb.	Average temp. F	Minimum temp.	Snowfall 3 months	Average snow on ground
54-55	24.4	-13	22.9"	2.1"
55-56	22.3	-14	15.3	0.9
56-57	25.0	-18	19.5	1.1
57-58	24.8	-20	21.8	1.9
58-59	21.0	-14	19.1	1.2
59-60	25.0	- 8	32.9	4.2
60-61	25.9	-12	15.2	0.6
61-62	17.2	-19	49.4	7.2

There had been no noticeable decrease in the population after the winters of 1956-57 and 1957-58 when there were minimum temperatures similar to those for 1961-62, but there have been no Carolina Wrens reported during 1962 or 1963, from which it appears that there is a limit to the amount of snow cover which this terrestrial feeder can tolerate.—WOODWARD H. BROWN, 4815 Ingersoll, Des Moines, Iowa 50312, 8 August 1963.