

ODUM, E. P., AND F. A. PITELKA

1939 Storm mortality in a winter Starling roost. *Auk*, 56:451-455.

PRIDEAUX, R. C.

1947 "Smoke-bathing" of Starling. *Brit. Birds*, 40:340.

WHITE, M.

1948 "Smoke-bathing" of Starling and of Herring- and Black-headed Gulls. *Brit. Birds*, 41:244.

WHITAKER, L. M.

1957 A résumé of anting, with particular reference to a captive Orchard Oriole. *Wilson Bull.*, 69:195-262.

RICHARD BREWER, *Department of Biology, Western Michigan University, Kalamazoo, 5 April 1963.*

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.