

SHORT COMMUNICATIONS

Low return rates of migratory Loggerhead Shrikes: winter mortality or low site fidelity?—

From 1985 through 1988, only 14% of adult Loggerhead Shrikes (*Lanius ludovicianus*) banded during the 1984–1987 breeding seasons were resighted in North Dakota (10 returns out of 69 birds; CAH, unpubl. data), a figure which is much lower than return rates usually reported for site-faithful migratory birds (e.g., American Robin [*Turdus migratorius*] 46% and Brown Thrashers [*Toxostoma rufum*] 31%, CAH, unpubl. data; Gray Catbird [*Dumetella carolinensis*] 47%, Darley et al. 1977; Savannah Sparrow [*Passerculus sandwichensis*] 48%, Bedard and LaPointe 1984; Eastern Kingbird [*Tyrannus tyrannus*] 43%, Blancher and Robertson 1985; Bobolink [*Dolichonyx oryzivorus*] 34%, Gavin and Bollinger 1988). Because several authors have reported the Loggerhead Shrike to be site-faithful (Atkinson 1901, Bent 1950, Porter et al. 1975, Kridelbaugh 1983), the low return rates documented by CAH suggest a high winter mortality in the North Dakota population of shrikes. An alternative explanation is that shrikes exhibit low site fidelity. Indeed, our observations of nest reuse, mate desertion, and mate switching in two populations of shrikes suggest that high site fidelity should not be assumed. As part of a study on the relationship between reproductive success and breeding site fidelity in migratory passerines, CAH has observed a population of individually marked Loggerhead Shrikes since May 1984. The study area consists of a number of isolated shelterbelts and wooded creeks located in Sioux County, North Dakota. SAS studied winter territoriality of and territory use by non-migratory individuals from 1976 to 1981. The study site included several old fields in Alachua County near Gainesville, Florida. In the latter population male and female shrikes maintained separate and adjacent territories during the non-breeding season, but coalesced and defended a single breeding territory.

Most of the evidence for site fidelity in the Loggerhead Shrike comes from observations of the reuse of nests or nest sites by unmarked birds (Atkinson 1901, Miller 1931, Bent 1950, Porter et al. 1975). Observers assumed that if a nest was occupied in two consecutive years the original owners had returned. The tenuous nature of this assumption is illustrated by two kinds of nest reuse. First, shrikes may reuse nests of other shrikes. In North Dakota, for example, a banded female shrike with an unbanded mate was observed relining and later nesting in a nest that had been built and occupied by a different banded pair of shrikes the previous year. Second, shrikes have been observed re-using the nests of other species, including those of Black-billed Magpies (*Pica pica*) (Porter et al. 1975), Brown Thrashers (Bent 1950, CAH, pers. obs.), Common Grackles (*Quiscalus quiscula*) (Patton 1884, CAH, pers. obs.), a Northern Mockingbird (*Mimus polyglottus*) and a Gray Catbird (Bent 1950). This lack of discrimination by shrikes in nest re-use, both within and among species, indicates that observations of shrikes nesting on old nests are not proof of site fidelity (e.g., Miller 1931).

We suggest that desertion and mate switching by female shrikes may be important contributors to low return rates at a particular site. Our observations suggest that female shrikes are not faithful to a territory within a breeding season and thus probably do not exhibit substantial site fidelity between breeding seasons. In North Dakota, one female was found nesting approximately 2 km from her nest site of the previous year. Low breeding site fidelity of females could account for the extreme bias toward males in return rates and, perhaps, the low overall return rate compared to other migratory passerines when data for both sexes are combined. For example, Kridelbaugh (1983) found that, although 47% (7/15) of males banded in central Missouri returned to the general area, no females (0/15) did. The overall return rate, 23% (7/30), is similar to that in North Dakota. CAH also found a male bias in

return rate, with 28% (8/29) of banded males but only 5% (2/38) of banded females returning to the study area. Although many studies report a male bias in site fidelity, this five-fold difference between the sexes is unusual (summarized in Greenwood 1980). In Florida both males and females tended to remain on the study area because birds held territories year-round.

Females may wander during mid-season to locate unpaired males. In both the North Dakota and the Florida populations, we observed females that deserted their first mate for a new mate during the breeding season. In North Dakota, a marked female shrike successfully fledged young in June and moved approximately 0.5 km to reneest with a new male while her previous mate continued to tend the first brood. The female's second set of young fledged in early August. At least two instances of mate switching occurred during the breeding season in Florida. In the first case, a banded female left her original mate after the eggs had hatched. She immediately laid eggs with an adjacent male that already had a completed nest available on his territory. The female's first mate gradually had stopped singing and the neighboring male had begun to court the female before she deserted. The nestlings from the first nest died, presumably from starvation. In the second case, the male successfully raised two nestlings to fledging after the female disappeared. The female was later found feeding fledglings on the territory of a neighboring male.

Our observations suggest that there is a need to re-evaluate reported site fidelity in populations of the Loggerhead Shrike. This is especially important since the Loggerhead Shrike has experienced a marked decline throughout North America; it is declining rapidly in the midwest and no longer breeds in New England (Geissler and Noon 1981, Robbins et al. 1986). In evaluating causes of the decline, low return rates cannot be taken as evidence of high winter mortality. Realistic evaluation of trends in population size are of paramount importance if we are to understand and perhaps rectify this alarming decline.

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Female Hooded Warbler plumage does not become more male-like with age.—Dwight (1900:284-285) provided two hypotheses to explain the variable amount of black plumage in female Hooded Warblers (*Wilsonia citrina*): "The adult winter plumage . . . shows a variable amount of black about the head and throat. How much of the black is due to individual vigor and how much to successive postnuptial moults is a question not easily answerable. We know that some females in the breeding season are almost indistinguishable from males, and there are all sorts of intermediates from these mature birds down to those of the worn first winter dress, which are guiltless of black."

Dwight's description of the variable black coloration in adult female Hooded Warblers was apt, although we are not likely to accept his suggestion that female "vigor" is defined by comparison with the male plumage color. However, his suggestion that females might attain more melanism with each molt is often repeated. Chapman (1917:270) also suggests that the development of the "hood" in the female is dependent upon age.

Lynch et al. (1985) classified female plumages into 6 classes ranging from no black (class 0) to male-like in hood development (class 5). Class 5 females were rare, constituting about 1-6% of eighty museum skins examined, a figure reasonably representative of the proportion of this female plumage class in their field observations of wintering birds in Mexico. They suggested that this rarity of melanistic females would be predicted if females increase in melanism as they become older, and supports the hypothesis that female plumage melanism is age-related.

I tested the hypothesis that female Hooded Warblers become more melanistic with age