The retention of colored plastic leg bands by Black-billed Magpies

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Introduction

Auxiliary markers on birds are intended primarily to permit rapid identification of individuals without recapturing and handling. The retention of such markers is paramount to accurate recognition of individuals. Colored leg bands are the principal auxiliary marker used by avian ecologists. Loss or removal of these bands by the birds can lead to confusion when identifying individuals in the field. This paper describes the loss of colored plastic leg bands from Black-billed Magpies *(Pica pica hudsonia)*. Differences between colors are not addressed.

Methods

From April 1978 to March 1980, I captured and banded magpies near Logan, Utah. Each bird received a U.S.F.W.S. aluminum band and a unique combination of 3 colored plastic bands (2 bands per leg). Six different colors were used. The plastic bands, purchased from A.C. Hughes, England, wrapped around the leg, overlapping approximately 1.2 cm. The bands averaged 0.114 g (s.d. = 0.007, n = 9). Each band was opened manually, fitted around the bird's leg, and the overlapping portions glued together securely. All birds were aged as either nestlings, juveniles less than 1 year old, or adults (after Erpino 1968). Sex was determined in nesting females by the presence of a brood patch and in other birds by laparotomy (Risser 1971).

Results

Whereas over 500 magpies were banded as above, this paper will deal only with those individuals that were sighted or recaptured 90 or more days after initial banding. Sixty-eight magpies are included in the analysis (Table 1).

Table 1. Age and sex categories of color banded Black-billed Magpies sighted or recaptured 90 or more days after initial banding.

Age and sex		Birds banded		Birds that lost at least 1 band	
		N	% of total	N	% of total
Nestling	male	9	13.2	2	10.0
	female	1	1.5	0	0.0
	unknown	19	27.9	4	20.0
Juvenile	male	12	17.6	4	20.0
	female	5	7.4	4	20.0
	unknown	10	14.7	1	5.0
Adult	male	5	7.4	3	15.0
	female	5	7.4	2	10.0
	unknown	2	2.9	0	0.0
Total		68		20	

No U.S.F.W.S. bands were lost, and 48 (71%) birds retained all colored bands. The maximum period that these birds were sighted after banding ranged from 98 to 396 days ($\bar{x}$ = 252, s.d. = 81.2). Twenty (29%) of the 68 birds lost at least one colored band, and 9 (13%) lost two or three bands ($\bar{x}$ = 1.65 bands lost per bird). Of these 20 birds, 15 were observed at least once prior to band loss. These sightings ranged from 4 to 317 days after banding ($\bar{x}$ = 125, s.d. = 122.3). The initial band losses from the 20 birds were first noted from 65 to 728 days after banding ($\bar{x}$ = 309, s.d. = 138.4). Magpies were not routinely observed from July through December in either year of the study, hence more precise records of band loss are unavailable. Most of these birds had lost bands when first sighted during the winter following the spring or summer of initial banding. Therefore, band loss could have occurred any time from July to December.

Band loss was related neither to the age of the magpie at initial banding (X^2 = 1.513, d.f. = 2, $p<0.50$) nor to sex (X^2 = 0.714, d.f. = 1, $p<0.50$). Band loss was, as expected, related to the number of days since banding (X^2 = 8.975, d.f. = 4, $p<0.10$). That is, the greater the length of time after initial banding, the greater the probability of band loss.

Seven of the birds that lost bands were rebanded, and 5 of these were sighted 18 to 358 days later ($\bar{x}$ = 122, s.d. = 139.5). None of these 5 had lost any bands in subsequent sightings.

Discussion

Black-billed Magpies apparently are unable to remove U.S.F.W.S. bands. Unfortunately, they can remove the type of plastic band described above. I have observed birds, months after being banded, vigorously pecking at the bands when unbanded birds were quiet and still. Also, while displaying agonistic behavior, especially during nest defense, unbanded birds frequently hammered their bills against branches or the ground. Under these same circumstances, banded birds redirected their attention to the bands and pecked them repeatedly.

A colored band loss of 29% is high and would be inappropriate for a study dependent on long-term band retention. Using multiple bands does, as Balph (1979) stated, permit the detection of band loss as it occurs. Some birds that have lost bands can be recaptured and rebanded, as done here. My small sample size does not, however, allow a realistic assessment of the success of rebanding.

The high loss rate indicates that a different type of band should be used for Black-billed Magpies. Heavier, more durable bands are suggested.

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Literature cited

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