Of the theoretical models described in Brown (1987) for alloparenting, the possible role of the extra screech-owl in territorial defense as well as helping at the nest seems appropriate (Brown 1987, chapter 8). Although the rehabilitated adult that we introduced in the study area initially occupied parts of two adjacent Eastern Screech-Owl territories, it did not roost near the active nest and was not observed in the vicinity of the nest until late in the breeding season. After it began helping at the active nest the helper's home range equated to most of the nesting pair's home range. On two occasions the helper, as well as the two nesting adults, responded to playback of tape-recorded song, indicating its active participation in defense of the territory.

Two other examples of variations in numbers of adults at owl nests have been noted. In Idaho, polygyny in Saw-whet Owls (*Aegolius acadicus*) has been observed, but the females deserted after the eggs hatched, leaving the male to feed the young at both sites (J. Marks, pers. comm.). In Utah polygyny was observed in the Barn Owl (*Tyto alba*) with two females laying eggs simultaneously in the same nest boxes (C. Marti, pers. comm.). In two cases young were raised by the two females and one male. Such observations suggest that more information is needed about the possible frequency and role of alloparenting in the order Strigiformes.

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MALE PHILOPATRY IN MALLARDS[1]

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Key words: Philopatry; Mallards; Anas platyrhynchos; *return rates.*

Most North American ducks (*Anatini*) form pair-bonds on wintering areas or during spring migration (Hochbaum 1944, Rohwer and Anderson 1988). Females generally select new mates each year with males following females homing to their natal areas (Lincoln 1939, Sowls 1955, Johnson and Grier 1988).

Lincoln (1934) first documented female philopatry in dabbling ducks (*Anas* spp.) including Mallards (*A. platyrhynchos*). Beyond observation of a marked Mallard pair returning to the same home range occupied previously (Dwyer et al. 1973) and return of a single adult male Mallard marked by Titman (1983), little information exists on homing by male Mallards.

I present here new information on male philopatry in Mallards. From 1983 through 1987, I captured 225 adult male Mallards with swim-in bait traps (Hunt and Dahlka 1953) and decoy traps (Anderson et al. 1980) in northwestern Wisconsin. I also captured 72 juvenile (hatching year) male Mallards by night-lighting (Cummings and Hewitt 1964) and drive-trapping (Cooch 1953). Adults (yearling and older) were marked individually with color-coded nasal-saddles (Doty and Greenwood 1974) while juveniles received saddles coded only to capture sites.

From 1984 through 1988, six adult males were reobserved on the study area. All but one of these males were thought to be unpaired when originally captured. The return rate (2.7%) compares to 3% ($n = 33$) reported by Titman (1983) for adult male Mallards.

No juvenile male Mallards returned during this study. Sowls (1955) found no homing in his small sample of 13 juvenile male Mallards. Return rates reported for juvenile male dabbling ducks were lower than those for adults (Poston 1974, Blohm 1978). Lower survival of juvenile males compared to adult males may contribute to lower return rates for juvenile males (Anderson 1975).

Poston (1974), Blohm (1978), and Titman (1983) found that male dabbling ducks homing to previous breeding areas were unpaired. Past familiarity with breeding areas would increase the probability of finding a mate and increase survival (Rohwer and Anderson 1988). Two adult male Mallards that returned in this study were paired when first reobserved and four were

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unpaired. The two paired Mallards might have been unpaired when they first returned in late March or early April and found mates before they were first observed in early May.

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STATISTICAL ANALYSIS OF A PROBLEM DATA SET: CORRELATED OBSERVATIONS[1]

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Key words: Statistics; repeated measures; hypothesis testing.

Most statistical test procedures require that a random sample—a set of independent observations—be used for analysis. Observations are independent if the probability of observing one event does not affect the probability of observing another event. A few forms of analysis, such as the paired *t*-test, are designed specifically for correlated or dependent observations. Tests such as the two sample *t*-test, Pearson's chi-square test, the likelihood ratio test or *G*-test, routine analysis of variance, and regression analysis are not valid, however, if the assumption of independent observations is violated. The explanation of the importance of this assumption may be found in mathematical statistics texts (e.g., Hogg and Craig 1978).

A series of behavioral responses from a given bird comprises a set of correlated or dependent observations. Biologists who present data sets consisting of 20, 30, or more observations of behavioral responses from only a few animals may have very little information about the response of the population as a whole. An examination of the 1987 issues of *The Auk, The Condor,* and *The Wilson Bulletin* revealed at least 15 instances in which Pearson's chi-square analysis or the *G*-test (likelihood ratio test) was used for a data set in which the observations were clearly correlated (not independent). This indicates that (1) misuse of Pearson's

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