Dept. Zoology, Univ. Guelph, Ontario N1G 2W1, Canada; THOMAS D. NUDDS AND KJELL SJÖBERG, *Dept. Wildlife Ecology, Swedish Univ. Agricultural Sciences, S-901 83, Umea, Sweden.* (Present address TDN: *Dept. Zoology, Univ. Guelph, Guelph, Ontario N1G 2W1, Canada.*) *Reprint requests should be directed to TDN.* *Received 14 Sept. 1988, accepted 1 Feb. 1989.*

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Effects of radio transmitters on the foraging behavior of Barn Swallows.—In studies using radiotelemetry, it is important to determine the effects of transmitters on the animal's behavior. Studies on small bats and large birds (>75 g) have shown that the effects of transmitter packages vary greatly depending on species, weight of the package, and means of attachment (Boag 1972, Ramakka 1972, Sayre et al. 1981, Caccamise and Heddin 1985, Gessaman and Nagy 1988, Obrecht et al. 1988). Aldridge and Brigham (1988) showed that a 1:1 relationship should theoretically exist between percent transmitter load and percent decrease in maneuverability of small bats. Bats carrying increasingly heavier loads demonstrated significantly lower maneuverability as predicted. The purpose of the present study was to determine if radio transmitters have a measurable effect on the foraging behavior of Barn Swallows (*Hirundo rustica*). Transmitter loads weighing 5% of body mass might negatively affect maneuverability making insect capture more difficult (Aldridge and Brigham 1988). If prey capture efficiency is reduced, I predict that the number of foraging bouts and or the duration of individual bouts, and the proportion of total time spent foraging by tagged birds should increase.

I monitored five female Barn Swallows (mean mass 18.2 g) nesting on a building on the east shore of Vaseaux Lake, 10 km south of Okanagan Falls, British Columbia. I attached transmitters, resembling in shape those which produce minimum drag (Obrecht et al. 1988), to four individuals mid-dorsally using Skinbond (Pfizer Hospital Products, Largo, FL) cement after clipping a small area of feathers to expose the skin. The transmitters remained attached for 1–4 days, and in two instances, I reattached transmitters to individuals. The transmitter package weighed 0.8–1.0 g representing loads of 4.1–5.6% of a bird's body mass.

The birds were observed from 10 June to 23 June 1987 during the egg laying or incubation stage of nesting. I assumed that females incubating or laying eggs would leave the nest only for the purpose of foraging. Data were collected during all daylight hours with the majority of observations made in the afternoon. During all observation periods, at least one untagged and one tagged individual were monitored. On several occasions I monitored the behavior of the same bird visually and by radio tracking. The visual observations confirmed my ability to determine by radiotelemetry when birds departed and returned to their nests.

In 121 bird hours of observation I recorded the duration of 264 foraging trips. Tagged birds spent a significantly greater time away from the nest during each foraging bout than did untagged individuals ($\bar{x}$ = 11.6 ± 0.9 [SE] and 7.9 ± 0.8 min, respectively; $F = 8.5$, $P < 0.001$). However, tagged birds were not absent for a significantly greater proportion of the total observation period ($\bar{x}$ = 35.3 ± 4.4 and 36.6 ± 5.5 percent, respectively; $F = 0.1$, $P > 0.10$). This apparent paradox is due to the tendency for tagged individuals to make fewer bouts per hour than untagged individuals ($\bar{x}$ = 1.7 ± 0.2 and 2.4 ± 0.2 bouts per hour, respectively; $F = 3.35$, $0.05 < P < 0.10$). If the load imposed by radio transmitters influences foraging, only bout duration increased in the manner I predicted. A decrease in the number of bouts by tagged birds resulted in virtually identical total foraging time. This suggests that if the 5% "rule" of transmitter loads for small volant animals is used, there may be minimal behavioral effects on foraging. I do not mean to suggest, however, that if the 5% "rule" is observed, caution need not be exercised. Where possible, animals to which transmitters are attached should be observed to confirm "normal" behavior.

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Attempted polygyny by a Merlin.—The Merlin (*Falco columbarius*) typically is a monogamous raptor (Palmer, Handbook of North America birds, Vol. 5, Yale Univ. Press, New Haven, Connecticut, 1988). Here I report a polygynous nesting attempt by a male Merlin observed 18 April–27 May 1988, in Saskatoon, Saskatchewan. This color-marked male occupied two different nesting sites (A and B), about 450 m apart, each with a different female. I made sporadic observations totalling about 20 h (10 h at each nest). I saw the male make six prey transfers at nest A and four at nest B. I also observed him copulate twice with female A and once with female B, and I observed him going into both nests, presumably to incubate. During the same period, I made 14 trips to nest A and 15 trips to nest B to collect food remains presumably brought to the nests by the male. The male appeared to have deserted nest B in the fourth week of May. The female remained near the nest until early June, after which she also deserted. Four young were raised successfully at nest A (the hatching date of the oldest young was approximately 1 June).

Polygyny is rarely reported in raptors but is suspected in many of them (Newton, Population Ecology of Raptors, Buteo Books, Vermillion, South Dakota, 1979). Although polyg-