

and to collect bird specimens within Belize. K. C. Parkes and H. L. Batts commented on an earlier draft of this report.—D. SCOTT WOOD, *Section of Birds, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania 15213*, and RAYMOND J. ADAMS, JR., *Kalamazoo Nature Center, Kalamazoo, Michigan 49007*. Received 10 June 1985; accepted 15 July 1985.

Sustained Robbing of American Crows by Common Ravens at a Feeding Station.—Other than descriptions by Conner et al. (1975) of Common Ravens (*Corvus corax*) relying on American Crows (*C. brachyrhynchos*) as sentinels and by Erskine (1968) of a raven supplanting a crow at a carcass, there exist few descriptions of interspecific interactions outside of the breeding season. I report the robbing of crows by ravens in October 1984 on a dairy and sheep farm in Lyme, New Hampshire. Observations were made from farm buildings that looked out over fields backed by woods. On 7 October 1984 I started putting out suet, chopped into pieces 2–4 cm in length, at the edge of woods, 160 m from the farm buildings. Five to seven crows and a pair of ravens, marked by one of them having a missing wing feather, came to the feeding site each morning until 28 October, when the ravens ceased coming to the feeding site.

Behavior of the two species varied according to whether they came to the suet alone or together. When crows alone were present ($n = 7$), they fed and flew 30–150 m to store food in clumps of grass. They also flew into nearby woods with suet visible in their bills. When one or both ravens came alone to the suet ($n = 4$), they poked the food first with their bills, then jumped back or up with wings out, repeating this 3–5 times before seizing a piece and flying off.

When the ravens and crows both came to the feeding place ($n = 14$), one raven perched in a tree along the edge of the woods where it could observe the crows on the ground. When one or several crows started carrying suet into the woods, the raven flew among them, causing the remaining crows to mob it. On several occasions I observed a raven flying off with suet in its bill. On 4 November I watched a crow with suet in its bill flying over woods beyond with a raven in pursuit. When the crow dropped its suet, the raven retrieved it.

Discussion.—A question throughout observations was why the ravens, that can supplant crows (Erskine 1968), preferred to rob them in the air rather than going to the ground to feed directly. It is my impression that the ravens were wary of something on the ground. This fear, manifested by jumping back repeatedly from food that I set out, could have been fear of encountering a trap. Traps were set on the farm for coyotes (*Canis latrans*) every year. On 16 December I discovered an old, crushed trap and chain in the open only 5 m from the feeding station where it could have been easily seen by a raven perched on a tree above. On 19 December 1984 coyotes killed a sheep half way between the crow feeding station and the barn. A trapper was called in to set traps by the carcass. At sunrise on the next day I found a raven caught in two traps, with a second raven circling overhead calling. One leg of the raven was severely crushed and the bird died within a few hours. The trapper, who had caught ravens in coyote traps before, thought that they were more likely to get caught near a sizable carcass than by small bait. Hewson (1981) noted a similar attraction of ravens to sheep carcasses in Scotland.

An additional question is whether ravens are more fearful of steel traps than are crows. Ravens range widely over woodlands when trees are bare of leaves in New Hampshire and come down to feed on carrion and other food located from the air, as I have noted from tracks in the snow. This habit exposes them to the activities of trappers more than crows which are birds of the open and more apt to forage in fields where professional trappers are generally less active.

Some aspects of the behavior of ravens appear to be conditioned by human activities. Knight (1984) demonstrated conditioning of ravens to human intruders approaching nests in nesting areas having high, as compared to low, human densities and concurrent levels of persecution. It is conceivable that the presence of trappers in an area may affect the reaction of ravens to food scraps put out by man. I believe this is why ravens stole food from crows, rather than taking the risk of coming to the ground themselves.

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Polygamy and Promiscuous Behavior in the Barn Swallow.—The Barn Swallow (*Hirundo rustica*) is considered monogamous (Verner and Willson 1969, Von Haartman 1954), but at least 6 cases of polygamy have been reported in the European subspecies *H. r. rustica* (Feldman-Luternauer 1978, von Lohrl 1962, Mohr 1958, Richardson 1956, von Vietinghoff-Riesch 1955). None has been reported in North America, but my observations of banded and color-marked individuals at a colony 1.6 km northwest of Cohoctah, Livingston Co., Michigan, revealed such a relationship.

A banded male defended a territory with 2 active nests during the first clutch period (May and June) of 1979. The behavior of the birds at these nests is similar to that in prior published reports of polygynous behavior in this species. First, the distance (0.7 m) between the 2 nests would not involve separate territories defended by 2 males, see von Lohrl (op. cit.). Second, the male recruited both females in 1979 under normal conditions, without one of the females having been paired with another male until he was claimed by accident, as in a case reported by Mohr (op. cit.). The male incubated the eggs in one nest, but not in the other; other reports either do not mention male incubation or indicate that the male did not incubate at all. Both clutches hatched within a day of one another.

The color-marked females were synchronous in their nesting activities. Mate guarding by the male prior to, and during egg laying, forced the male to be on the wing most of the time. As the male and a female returned to the territory and nest, the male then accompanied the other female from the barn. The females seemed indifferent to one another, each coming and going independently. The male seemed to favor one female and associated nest over the other while near the nests, similar to behavior reported by von Lohrl (op. cit.). He landed on that nest more often when both females were present. During incubation the male settled into the favored nest after that female left the barn. At the other he remained on the nest rim until the female returned, or more frequently, left before her return. I made no observations during the nestling period. Mohr (op. cit.) and von Lohrl (op. cit.) reported that the male fed the young of both clutches equally, while Richardson (op. cit.) indicated that male-neglect of one brood resulted in death of the half-grown nestlings, though this occurred during a period of stress.

An observation of promiscuous behavior at this colony supports the suggestion that polygyny may be more common than previous reports indicate. A mated male attempted to recruit an additional female, and probably would have succeeded, had it not been for strong territorial defense by his mate. Observations made by Richardson (op. cit.) also indicate that males which behave monogamously in some years sometimes mate with an additional female when possible in other years.

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