

A RECORD OF TREE-NESTING PRAIRIE FALCONS IN WYOMING

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Prairie Falcons (*Falco mexicanus*) are thought to nest only on cliffs, usually selecting potholes or ledges with overhangs for their nests (Enderson 1964, Olendorff 1973, Newton 1979, Cade 1982). Subterranean nest sites have been reported twice (Pitcher 1977, Haak and Denton 1979). Prairie Falcons often use abandoned stick nests on cliffs (Bent 1938, Cade 1982), but we know of only two reports of their nesting in trees: one from northwestern Missouri (Goss 1891), and the other from southwestern Utah (Williams and Matteson 1947, Porter and White 1973).

Since 1978, the Wyoming Game and Fish Department has surveyed nesting hawks and falcons in order to collect baseline data for the U. S. Bureau of Reclamation's Medicine Bow Wind Energy Project in southeastern Wyoming, near the town of Medicine Bow. While conducting this survey in early April of 1982, we observed a pair of Prairie Falcons engaged in courtship flight near a typical cliff eyrie. Four Prairie Falcons fledged from this ledge in 1981. In May 1982, this ledge was unoccupied, but on 15 June a pair of Prairie Falcons vigorously defended a grove of 10 ponderosa pines (*Pinus ponderosa*) at our approach. This grove was on a steep, north-facing slope 2 km east of the previously used cliff eyrie. Five of the trees contained old nests of the Black-billed Magpie (*Pica pica*) in various states of disrepair. Closer inspection revealed four downy Prairie Falcon nestlings approximately two weeks of age

in one of the dilapidated magpie nests (Fig. 1). This nest cup on an open platform of sticks and mud was 4.5 m above the ground in a 6.0-m tall pine. The phenology of the tree nest was about two weeks later than that of the other Prairie Falcons in the area. We banded and photographed the young (presumably two females and two males). On 6 August 1982, we observed both adults and three fledglings flying in the vicinity of the nest tree. In 1983, the cliff and tree eyries were both unoccupied.

We propose three explanations for this instance of tree-nesting. First, the falcons may have been disturbed at the cliff eyrie and forced to move. Such a disturbance might explain why the phenology of the tree nest was later than that of other Prairie Falcons in the area. Secondly, one member of the pair may have fledged from an unknown but similar tree nest and was imprinted on such a site (Newton 1979). If the other member of the pair resisted the selection of the tree nest, nesting could have been delayed. We believe that a shortage of suitable cliff sites was not a factor because a traditional nest ledge nearby (2 km) was unoccupied. Thirdly, one member of the pair (possibly the female) may have been an inexperienced immature bird involved in the first nesting attempt. Immature falcons would also lay eggs later than adults (C. White, pers. comm.).

Tree-nesting by other large falcons has been well documented (Newton 1979, Cade 1982). The Peregrine Falcon (*Falco peregrinus*) has invaded some regions lacking suitable cliffs either by using old nests of other birds or by nesting in hollows in trees and on the ground (Pruett-Jones et al. 1981, Cade 1982). In some parts of its range the Gyrfalcon (*F. rusticolus*) regularly uses tree nests (Newton 1979, Cade 1982). If tree-nesting were to become widespread, Prairie Falcons could expand their breeding range into areas lacking nesting cliffs, although this is unlikely given the history of tree-nesting in this species (Newton 1979).

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FIGURE 1. Adult Prairie Falcon with nestlings in an old Black-billed Magpie nest, situated in a ponderosa pine.

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AGONISTIC "WHIRLING" BY ZONE-TAILED HAWKS

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Aerial "whirling" by raptors with their talons locked has been described for various species and given different interpretations. Raptors "whirl" when, in flight, one drops on another with feet extended and toes open, and upon close approach, the other rolls over on its back and extends its feet upwards, whereupon they lock feet and descend in the whirling fashion depicted in Brown and Amadon (1968: 100, Fig. 27). (Most encounters of this kind, however, do not result in whirling, but just touching and parting.) Brown and Amadon (1968) reported whirling as courtship for *Haliaeetus* eagles and the Upland Buzzard (*Buteo hemilasius*). Springer (1979) likewise interpreted this as courtship behavior for a pair of Red-tailed Hawks (*B. jamai-censis*). Craig et al. (1982) and Kilham (1981), however, reported it as agonistic behavior between breeding adults and intruders for the Northern Harrier (*Circus cyaneus*) and Red-shouldered Hawk (*B. lineatus*), respectively. Newton (1979) observed whirling encounters between Eurasian Kestrels (*Falco tinnunculus*) and reported on encounters between Peregrine Falcons (*F. peregrinus*), Golden Eagles (*Aquila chrysaetos*), and Common Buzzard (*B. buteo*), all of which were interpreted as agonistic.

Hubbard (1974) observed and reported this behavior for the first time in the Zone-tailed Hawk (*B. albonotatus*), but only speculated as to its function in that encounter. I witnessed an encounter between the adult male of a breeding pair and an intruding adult of this species which resulted in aerial whirling on 29 July 1983. This happened at approximately 11:00 while I was watching a family of these hawks in Santa Cruz Co., Arizona. The single young had fledged and was perched on a hillside about 100 m from the cottonwood tree nest. It called repeatedly and was easy to observe from the road. The adult female was particularly aggressive, even for this species (she dived at me and almost struck me) presumably because I was within 10 m of the fledgling. Initially the adult male flew low, slightly above the female, but did not attempt to dive at me. I could identify the male by his smaller size and different stage of primary molt. (Breeding male raptors

usually molt flight feathers a month or more later than their mates, e.g., see Newton 1982.) A third adult joined the pair flying at the altitude of the male. I believe the intruder was also a male because his size and stage of molt were the same as the territorial male's. The resident male and the intruder began vocalizing, flying with exaggerated deep wingbeats and gaining altitude. When they had risen to about 300 m, the upper one dived at the lower one, which rolled over on its back and presented talons. They locked talons and began whirling as described above. They fell for about 2 s, losing considerable altitude. After they parted, both birds continued soaring and vocalizing. A minute or two later, one of them, presumably the intruder, glided away to the east. Both ceased calling when this happened. The local male continued soaring over his territory. Throughout this encounter, the adult female continued to dive at me, making seven or eight stoops in all. The fledgling continued his calling, which I interpreted as food begging.

Thus, aerial talon-grappling or whirling is clearly agonistic at times. It remains to be reported whether this behavior is more frequent and widespread than its use in courtship, although an element of antagonism exists in the early stages of courtship.

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