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ACORN WOODPECKER PREDATION ON CLIFF SWALLOW NESTS¹

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Unlike many other woodpeckers that feed on wood-boring insects and larvae, Acorn Woodpeckers (*MeLANERPES FORMICIVORUS*) feed primarily on acorns, insects caught by flycatching, and sap (Bent 1939, MacRoberts 1970, MacRoberts and MacRoberts 1976). They also supplement their diets with an occasional small lizard (Koenig, pers. comm.), fruit, oak catkins, and wild oat seeds (MacRoberts and MacRoberts 1976). Acorn Woodpeckers are also known to eat eggs that have been removed from two-female communal nests (Mumme et al. 1983). Other unusual predatory behavior includes a single report of predation on a Western Wood-Pewee (*CONTOPUS SORDIDULUS*) nest (Bryant 1921) and the mutilation of two Red-breasted Sapsucker (*SPHYRAPICUS RUBER*) nestlings (Shuford 1985). These incidents, however, appear to be opportunistic; the Acorn Woodpecker does not regularly prey on other vertebrates.

We report here on an instance when nest predation by Acorn Woodpeckers may have harmed a colony of Cliff Swallows (*Hirundo pyrrhonota*) nesting in the Stanford Quadrangle at Stanford University, Stanford, California. The colony consisted of 56 mud nests concentrated under overhanging shingles from the roof of the east-facing main archway of the quadrangle. An additional 10 to 15 nests were dispersed throughout the colony. The nests were constructed in corners bordered by roof supports and shingles, ranging from 3 to 8 m off the ground. We observed eight Acorn Woodpecker visits to this colony during the week of 28 May through 3 June 1985, between 08:00 and 09:00. Though attempts at predation sometimes failed when mobbing Cliff Swallows induced the Acorn Woodpecker to flee, in four (50%) of these visits the woodpecker succeeded in stealing an egg from a nest. In another instance, an Acorn Woodpecker also appeared to have taken a nestling. Acorn Woodpeckers were nesting in two palm trees less than 25 m from the Cliff Swallow colony. After removing an egg, the woodpecker would fly towards its nesting site with the egg still intact in its beak. Unfortunately, we were unable to discover what the woodpeckers did with the Cliff Swallow eggs, though

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no egg shells were found below the palm trees where the woodpeckers were nesting.

Acorn Woodpecker disturbances may have inflicted greater damage to the Cliff Swallow colony than the loss of these few eggs. On 22 May 1985, the main colony totaled 56 mud nests, with 10 to 15 additional isolated nests dispersed throughout the quadrangle. Normally, Cliff Swallow nests consist of a mud shell frame with a small neck entrance (Emlen 1952). However, by 4 June, 17 of the 56 nests (30%) had necks which were either unfinished, completely removed, or partially widened. Furthermore by 28 June, an additional 17 necks were widened or removed leaving only 20 nests apparently undamaged. Because we had witnessed Acorn Woodpeckers pecking away at nest entrances before stealing an egg, we suspect that they were responsible for most of the damage done to the nests, especially the latter 17 which were still undamaged by 4 June.

Hamilton and Martin (1985) found that nests which had their necks partially or completely removed fledge fewer Cliff Swallows than undamaged nests. Because only 20 of the 56 Cliff Swallow nests (35.7%) seemed intact, we suspected that the action of Acorn Woodpeckers may have affected the breeding success of the colony. On 1 July, we found that only two nests, both undamaged, had feces lining their nest entrances and covering the ground beneath the nest. Thus, we infer that only these two undamaged nests successfully reared young. Also on 1 July, only 17 to 21 fledgling birds were observed at a nearby resting site. This number probably includes fledglings from five other isolated nests near the main colony which also had feces around and underneath them. The average number of young fledged by a Cliff Swallow pair is approximately four per nest (Hamilton and Martin 1985). Hence, it seems likely that population productivity was significantly reduced by Acorn Woodpecker predation and disturbance.

The two nests that appeared to be successful were located closer to the ground and were partially shielded by overhanging tile shingles. These nests may have been less conspicuous than the nests that received Acorn Woodpecker visits. Moreover, the larger and less agile Acorn Woodpecker may have had limited access to some Cliff Swallow nests because of their location behind thick copper tubing.

The hypothetical advantage of decreased risk from predation offered by colonial nesting (Emlen 1952, Hoogland and Sherman 1976, Snapp 1976) was not

evident for this Cliff Swallow colony under these circumstances. This observation agrees with Snapp's (1976) finding that Barn Swallow (*H. rustica*) colony size was not correlated with the amount of predation upon the colony. Instead, this colony appeared to offer little protection from Acorn Woodpecker predation; rather, it may have facilitated the Acorn Woodpecker in supplementing the diet.

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