

NOTES ON THE STATUS OF ACORN
WOODPECKERS IN CENTRAL MEXICO

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The extraordinary social behavior and feeding ecology of the Acorn Woodpecker (*Melanerpes formicivorus*) have been the subject of detailed analysis both in California (MacRoberts and MacRoberts 1976, Koenig 1978) and in the American southwest (Stacey and Bock 1978). In California, Acorn Woodpeckers live in groups of up to 15 individuals. Each group defends an all-purpose territory, a central feature of which is a storage tree or granary in which acorns are stored individually in holes, or less commonly in cracks or crevices (MacRoberts 1970, MacRoberts and MacRoberts 1976). Similar acorn storage has been reported throughout the species' range (see MacRoberts and MacRoberts 1976 for references). Without stored acorns or adequate granaries, Acorn Woodpeckers either are not present or are forced to abandon their territories in the winter (MacRoberts and MacRoberts 1976, Gutiérrez and Koenig 1978, Stacey and Bock 1978). Here we present notes on the status of this species gathered during January 1978 along the Durango Highway in the Sierra Madre Occidental (24°N) of central Mexico.

We examined three localities: (1) Santa Barbara, 43 km W Durango, 2,400 m elevation, Durango; (2) Rancho Liebre, 2 km N El Palmito, 1,950 m elevation, Sinaloa; and (3) El Batel, 1,700 m elevation, Sinaloa. During a two to three day stay at each place we attempted to determine the status of Acorn Woodpeckers, find evidence of acorn storage, take notes on the vegetation and fauna, and observe foraging and/or evidence of group living among any Acorn Woodpeckers seen.

Both granaries and woodpeckers were common at Santa Barbara, an area of open pine-oak woodland on the gentle east slope of the Sierra Madre. We found 10

granaries containing stored acorns, plus one additional empty granary during a 5-km walk. Observations of birds at one site suggested that at least four individuals were part of a group. The trees here were primarily *Pinus chihuahuana*, *P. engelmannii*, and *Quercus durifolia*, (39%, 33%, and 25% of basal area respectively based on 10 circular 0.04 ha² plots). Of these, *Pinus engelmannii*, with its "jig-saw puzzle" bark similar to *P. ponderosa*, was the only species used for acorn storage. Granaries were significantly smaller in DBH (diameter at breast height) than in California (Table 1), probably in part because of selective logging of large trees. The frequency with which snags were used as granaries was not significantly different in Durango from that in two California localities where pines are used (Table 1). Storage trees in all of these sites were dead more often than at Hastings Reservation in California, however, where pines are absent and storage is chiefly in oaks (*Quercus lobata*, *Q. douglasii*) or sycamores (*Platanus racemosa*; MacRoberts and MacRoberts 1976).

Table 2 summarizes the phenology of oaks at Santa Barbara and El Batel at the time of our visit. Acorn fall at Santa Barbara was essentially complete, suggesting no major differences in the timing or duration of acorn fall from the typical pattern seen in California (Griffin, pers. comm.).

The status of Acorn Woodpeckers was less clear on the west slope of the Sierra Madre. We found four old, apparently obsolete granaries in snags along the highway east of El Palmito, all above 2,400 m elevation. None showed signs of recent woodpecker activity. At Rancho Liebre, we walked through extensive pine-oak woodland on two successive mornings without seeing or hearing any Acorn Woodpeckers. This locality is discussed by Alden (1969), who listed Acorn Woodpeckers as being encountered on only 50-75% of trips there. This irregular pattern of occurrence is not usual for a bird generally as common and conspicuous as the Acorn Woodpecker, and suggests that the habitat is not very suitable. Why this might be became clearer at El Batel, 17 km west of Rancho Liebre. Our decision to stop there had been influenced by field notes of a Museum of Vertebrate Zoology expedition to El Batel in

TABLE 1. Comparison of Acorn Woodpecker granaries in central Mexico with those in three California localities.

	Santa Barbara, Durango (N = 11)	Plaskett Ridge, Monterey Co. (N = 31) ^a	Cone Peak, Monterey Co. (N = 19) ^a	Hastings Reservation Monterey Co. (N = 44) ^b
Primary species used as granaries	<i>Pinus engelmannii</i>	<i>Pinus ponderosa</i>	<i>Pinus lambertiana</i>	<i>Quercus lobata</i>
DBH of granaries (cm) ^c	37.4 ± 10.6	83.1 ± 28.4**	148.6 ± 30.0**	104.2 ± 34.5**
Percent of granaries dead ^d	82	100	47	14***
Primary species of acorns stored	<i>Quercus durifolia</i> <i>Q. sp. (arizonica?)</i>	<i>Quercus lobata</i> <i>Q. wislizenii</i> <i>Q. chrysolepis</i>	<i>Lithocarpus densiflorus</i> <i>Quercus chrysolepis</i>	<i>Quercus lobata</i> <i>Q. agrifolia</i> <i>Q. douglasii</i> <i>Q. kelloggii</i>

^a From Gutiérrez and Koenig (1978).^b From Koenig (unpubl. data).^c Mean ± SD. Comparisons are by Mann-Whitney U test of Santa Barbara vs. each California locality.^d Comparisons are by Fisher exact test of Santa Barbara vs. each California locality. Frequency at Hastings also significantly different from Plaskett Ridge and Cone Peak.** *P* < .01.
*** *P* < .001.

TABLE 2. Oak phenology at two localities in central Mexico, 15–19 January 1978.

	El Batel, Sinaloa ^a	Santa Barbara, Durango ^b
No sign of flowers or acorns on or below tree	20 (42%)	15 (33%)
Many acorns on tree	10 (21%)	1 (2%)
Few acorns on tree, many on ground below	17 (35%)	29 (65%)
Flowering	1 (2%)	0 (0%)
TOTAL	48	45

^a At least two species included, one possibly *Quercus fulva*.
^b *Q. durifolia* (30 individuals) plus one other unidentified species (possibly *Q. arizonica*).

October 1946 composed of A. Starker Leopold, Frank A. Pitelka, and Ward C. Russell (notes on file at MVZ). At that time, even before the Durango Highway had been completed, Leopold commented on the already heavily logged forest and stated succinctly that "This country [about El Batel] is about on its last legs as far as game and forest resources goes. All the merchantable timber has been cut . . ." (emphasis his). Nonetheless, Pitelka found Acorn Woodpeckers to be "one of the commonest species throughout the oak-pine woodland . . . abundant and generally distributed." These ornithologists collected five birds during their stay, incidental to other work, but they did not see any granaries.

In contrast, we saw only one group of at least four Acorn Woodpeckers at El Batel. They were seen twice at the same spot, but clearly ranged over a wide area. We observed them eating acorns taken directly off trees and also saw birds foraging about the epiphytes on larger oaks. We also discovered an oak limb with sap holes similar to those made by Acorn Woodpeckers in California (MacRoberts 1970, MacRoberts and MacRoberts 1976). We did not find any granaries. A local resident, however, was familiar with both the birds and their granaries. Unfortunately, he was unable to show us any, stating that those nearby had been cut down and removed. Our observations confirmed that logging had indeed been extensive. We found no large living pine trees at all, and saw only a few scattered large trunk sections that had been left lying on the ground. Crossin (1967) similarly commented on the heavy lumbering in this area.

We suspect that the present rarity of Acorn Woodpeckers on the west slope of the Sierra Madre is probably the result of extensive logging pressure, beginning as early as 1936 (when the first sawmill was constructed near El Batel), but probably accelerating in the 1950's when the road was completed (about 1951) and finally paved (about 1959). By removing large pines, selected by Acorn Woodpeckers as granaries (Gutiérrez and Koenig 1978), such logging apparently has reduced the Acorn Woodpecker population to small remnants over parts of its former range in central Mexico.

Our interpretation for the decline of the species must remain speculative, both because hunting may have been involved and, in any case, because neither we nor the 1946 MVZ party found granaries. Also uncertain is the present status of those few birds remaining at El Batel. Our observations suggest that the area might support a low population of resident Acorn Woodpeckers at least in some years even if no storing occurred. In contrast to the oaks at Santa Barbara or oaks at this season in California, many in this area still

had acorns in their crowns (Table 2), suggesting that acorn fall may last considerably longer than in more temperate areas. We also noted one tree in full bloom, further suggesting that acorns might become available up to two months earlier than in California (where flowering begins in March), or as early as June. This phenology, resulting in a wider time span (early summer to early spring) during which acorns could be harvested directly off trees, might be sufficient to support a low density of non-storing, resident Acorn Woodpeckers through the winter. Alternatives to this interpretation exist, however, which we are not able to eliminate due to the brevity of the study.

In Durango it is clear that acorn storage is as important to Acorn Woodpeckers as it is in other parts of their range. Furthermore, the virtual elimination of Acorn Woodpeckers around El Batel is probably related to the removal of suitable trees for storage. The continued presence of these birds in such heavily exploited forests, however, suggests the possibility that a remnant population may be able to survive without acorn storage.

SUMMARY

Acorn Woodpeckers were studied briefly in three localities along the Durango Highway in central Mexico. On the east slope, granaries were common and the ecological situation appeared to resemble that found generally in California. On the west slope, very few birds were seen where they were formerly abundant, and no active granaries were found. We suspect that extensive harvesting of timber, especially of the pines used by Acorn Woodpeckers for granaries, may have essentially eliminated this species over parts of its former range on the west slope of the Sierra Madre Occidental. Those few birds remaining may be able to survive without storing acorns.

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