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Getting Stuck: A Cost of Communal Cavity Roosting

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ABSTRACT.—Multiple Acorn Woodpeckers *(Melanerpes formicivorus)* perished as a result of two group members getting stuck while attempting to exit a communal roost cavity simultaneously. Both birds died, as did other individual(s) trapped behind them. Although communal roosting may have many benefits, such mortality constitutes a risk of communal roosting that may help explain why Acorn Woodpeckers choose not to roost as communally as they could. *Received 28 July 1997, accepted 17 April 1998.*

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Here I report an observation suggesting a potentially important cost of communal cavity roosting that may help explain its relative rarity. That communal roosting is typically advantageous is, of course, well documented. Individuals utilizing communal roosts compete for preferential access to the more protected interior roost sites (Swingland 1977, Weatherhead and Hoysak 1984), suggesting benefits of roosting both communally and in sheltered areas (Weatherhead 1983). Benefits of a sheltered roost site include not only greater protection from predators, but also lessened exposure to wind and precipitation (Weatherhead 1983). Cavities, being particularly well-sheltered (Kendeigh 1961), are utilized as roost sites by various avian taxa (Ligon 1993). Although communal roosting within cavities is relatively rare in birds, individuals that do so appear to enjoy substantial thermal benefits. Eastern Bluebirds *(Sialia sialis),* for example, roost communally during inclement weather (Frazier and Nolan 1959, Zeleny 1977). The best studied communal cavity roosting birds are found among cooperative breeders. In Acorn Woodpeckers *(Melanerpes formicivorus),* up to 14 group members have been observed roosting together in the same cavity (W. D. Koenig, pers. comm.). Experiments with Acorn Woodpeckers (du Plessis et al. 1994) and Green Woodhoopoes *(Phoeniculus purpureus*; Williams et al. 1991, du Plessis and Williams 1994) demonstrated significant energetic/thermal benefits of this behavior.

The relative rarity of communal cavity roosting suggests, however, the possibility of substantial costs as well. First, cavities are often found in dead or rotten limbs, which may be susceptible to both attack by predators (Ligon and Ligon 1978) or natural breakage. Moreover, communal roosts provide a means of transmission for various parasites and pathogens (Weatherhead 1983). Crowding may even result in suffocation. Pygmy Nuthatches *(Sitta pygmaea)* have been observed roosting in aggregations of over 100 individuals within single, albeit large, cavities and dead birds have been found at the bottoms of such cavities (Knorr 1957). In a communal roost of Eastern Bluebirds, 2 of 16 birds roosting in a small cavity during a snowstorm died before morning (Zeleny 1977).

Cavity roosting birds, especially communal cavity roosters, also face the possibility of becoming trapped within cavities. I once found the contorted remains of a female Acorn Woodpecker that had become stuck in the entrance of a hole. From her position I surmised that she had tried to turn around and exit the hole before she was all the way in. Had another bird been inside the cavity when this occurred, it may well have perished inside, paying a high price for communal roosting.

Such multiple mortality was observed in 1992. Arriving at a seldom-visited Acorn Woodpecker territory off the Hastings study area, I noticed that the entire group had disappeared and been replaced by new birds. Upon investigation I found the remains of two adult male woodpeckers stuck in a single cavity entrance. They had apparently attempted to depart the hole at the same time and become stuck at their shoulders. Neither bird appeared to have been caught by their leg bands (nor has this been observed on our study area). Inspection of these bands revealed both to have been breeders at the group. After removing their dehydrated remains, I found the remains of at least one other bird (the breeding female) trapped in the cavity behind them. This cavity, the walls of which were at least 5 cm thick, was located in a live limb of a valley oak *(Quercus lobata).* The birds within the cavity were not the only victims of this incident: the surviving members of the group had apparently been unable to defend the territory from usurpers.

Other observations also suggest that the communal roosting option in Acorn Woodpeckers is not pursued to the extent that might be expected from thermal advantages alone. Although communal roosting is the norm, entire groups seldom roost together in the same cavity (W. D Koenig and M. T. Stanback, unpubl. data). Although the size of the cavity may sometimes constrain the number of birds that can roost within it, this cannot be a general explanation: a cavity in which 4 birds are observed roosting on one night might be used by only 2 birds the following night. Such observations indicate that Acorn Woodpeckers are choosing not to roost as communally as they could, perhaps as a result of the potential costs discussed above.

Examination of the roosting habits of the Red-cockaded Woodpecker *(Picoides borealis)* also suggests that communal roosting may be especially costly in this species, which maintains sticky sap wells around cavity entrances. J. Walters (pers. comm) reports several instances in which individuals of this species have been trapped in sticky cavity entrances, including some (involving nests) in which additional individuals were trapped inside as well. Perhaps it is not surprising then, that Red-cockaded Woodpeckers roost solitarily, despite the fact that roost cavity availability drives cooperative breeding in this species (Walters 1990). This insistance on solitary roosting is not only expensive in terms of cavity construction, but is also extremely costly for those group members, usually juveniles, lacking access to their own roost hole. Such supernumerary individuals are generally forced to roost in the open (J. Walters, pers. comm.) where they are exposed to ambient temperatures, precipitation, wind, and predators. This suggests that, for the Red-cockaded Woodpecker, the costs of roosting communally within a cavity outweigh not only the costs of solitary roosting, but also the general benefits of cavity roosting.

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Anting by an American Dipper *(Cinclus mexicanus)*

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ABSTRACT.—Anting behavior has been recorded in over 200 birds, yet its purpose remains unresolved. Here I report an observation of anting in an aquatic passerine, the American Dipper *(Cinclus mexicanus)*. The dipper was seen preening ants onto its remiges in a process known as "active" anting. Numerous hypotheses exist for why birds ant, including controlling ectoparasites, inhibiting the growth of fungi or bacteria, soothing skin irritated during the molting period, and removing toxic formic acid prior to food consumption. Because of the timing and nature of the dipper's anting episode and the fact that dippers are not known to consume ants, my observation does not appear to lend support to either the molt-irritation or the food preparation hypotheses for this species. *Received 5 Dec. 1997, accepted 26 March 1998.*

Anting behavior, in which a bird exposes its plumage and possibly skin to ants or other pungent substances (Whitaker 1957, Simmons 1966, Clayton and Vernon 1993), has been documented sporadically in the literature and its purpose remains unresolved. Although it is observed infrequently, anting has been recorded in more than 200 avian species (see Groskin 1950, Whitaker 1957, Potter 1970, Dun-

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