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Was the Socorro Mockingbird (*Mimodes graysoni*) a predator on small birds?—The endemic avifauna of Isla Socorro, of the Revillagigedo archipelago, Mexico (lying ca 400 km SW of the tip of Baja California), includes four passerines: the Socorro Wren (*Thryomanes sissonii*), which looks as much like a House Wren as a Bewick's Wren; a distinctive form of the Tropical Parula (*Parula pitiayumi graysoni*) that was considered a full species as recently as the 5th edition of the AOU Check-list (AOU 1957); a small (30 g) race of the Rufous-sided Towhee (*Pipilo erythrophthalmus socorroensis*), also given species status in that check-list; and the Socorro Mockingbird (*Mimodes graysoni*), considered an endemic monotypic genus. Formerly called "Socorro Thrasher," this bird appears in the field to be more similar to mockingbirds. However, in a cladistic study of the Mimidae, Gulledge (1975) was unable to resolve a trichotomy that included *Mimus* (the typical mockingbirds), *Mimodes,* and *Toxostoma* (the thrashers).

Once considered "the most abundant and widely distributed species" on Isla Socorro (McLellan 1926), *Mimodes graysoni* was almost completely extirpated by 1981, probably by feral cats descended from pets brought to the island after the establishment of a military base in the late 1950s (Jehl and Parkes 1982, 1983).

Almost nothing is known of the life history of *Mimodes,* particularly its feeding behavior, in a natural state. The only published statement on foraging I have found is that of Brattstrom

and Howell (1956), who described a group of Socorro Mockingbirds feeding on blowflies congregated on the carcasses of sheep.

The California Academy of Sciences houses the unpublished field notes of Sterling Bunnell, a member of the Academy's 1903 expedition to Isla Socorro (Baptista 1987). Like several other observers, Bunnell commented on the tameness of the Socorro Mockingbirds. He stated that they were especially fond of cheese, and raided the food (unspecified) provided for the expedition's live parrots (presumably the endemic race of Green Parakeet, *Aratinga holochlora brevipes*). In commenting on their tameness, Villa (1960) described mockingbirds entering his tent to feed on bread. Some of the few remaining individuals of this species that we found on our 1978 expedition had maintained their traditional tameness, possibly because of a nearby picnic site of the military personnel, where the birds may occasionally have been fed.

None of this, however, throws any light on the *natural* foods of *Mimodes,* other than to suggest that, like other mimids, it was omnivorous. The only confirmation of this suggestion is from Bunnell, who wrote: "They eat many rose berries and the black berry on trees high on the mountain . . . Eat dead crabs."

Prior to human settlement of Socorro, its fauna included no mammals, one small lizard (*Urosaurus auriculatus*), an Elf Owl (*Micrathene whitneyi graysoni*) that Grayson (1872) described as feeding on insects and small crabs, and a Red-tailed Hawk (*Buteo jamaicensis socorroensis*) known to feed on crabs, doves, and probably lizards. The endemic race of Yellow-crowned Night-Heron (*Nycticorax violaceus gravirostris*), like members of its species elsewhere, feeds largely on crabs. None of these is likely to have been a principal predator on the small passerines, not even the Red-tailed Hawk, which would be unlikely to negotiate the tangled vegetation inhabited by the three species of songbirds.

One normally expects that in any ecosystem, most species will have one or more identifiable principal predators. I suggest that *Mimodes* was the principal predator on the three smaller species of passerines, most likely on their eggs and nestlings. At least one other large insular mimid, the Pearly-eyed Thrasher (*Margarops fuscatus*) of the West Indies, is a major nest predator (see, for example, Wiley and Wiley 1979). That this role was filled on Isla Socorro by *Mimodes* is supported by two lines of circumstantial evidence. The first involves mobbing. In 1981, when I was walking through an area occupied by mockingbirds in 1978 and playing back the songs recorded that year, I was mobbed by towhees, wrens, and warblers. Mainland towhees respond dramatically to my "squeak," but those on Isla Socorro have lost their traditional tameness, and were hard to lure into sight. However, the towhees approached me much more closely in response to playbacks of the Socorro Mockingbird tapes than they ever had in response to "squeaking." The behavior of the wrens and warblers as well as the towhees was similar to that shown by many species of small birds in mainland Mexico in response to my imitation of the whistle of the Ferruginous Pygmy-Owl (*Glaucidium brasilianum*). The birds mobbed me *only* during the playback, and were not simply responding to my presence. I can see no explanation for this behavior other than a reaction to a perceived threat, in this instance the voice of a known nest predator.

Indirect evidence for the Socorro Mockingbird's status as predator on the small passerines involves recent changes in the relative abundance of species. Those most affected by the cat predation appear to have been the mockingbird and towhee, the Socorro Dove (*Zenaida graysoni*), now considered extinct in a wild state, and Townsend's Shearwater (*Puffinus auricularis*) (Jehl and Parkes 1982, 1983), all ground-nesting or ground-foraging species. The tree-nesting warbler and wren appear not to have been affected by cat predation. We found both to be as tame as ever, and judging from descriptions in the literature, probably even more abundant than they were at the time of previous visits by ornithologists. Brattstrom and Howell (1956), reporting on Brattstrom's visit in 1953, said that the wren was "fairly common in most habitats, but was most numerous in the non-forested portions below

2000 feet." Jehl and I reported in our 1982 paper that the wren was "second in abundance to the Tropical Parula, [and] occurred at every locality we visited. . .up to the crest of Cerro Evermann (1040 m)." Even more striking is the apparent increase in the warbler population. Brattstrom and Howell wrote that these birds were "fairly common at lower elevations . . . but they seemed scarcer than the other endemic land birds although equally tame and easy to approach." In contrast, our paper states that, at Grayson's Cove in particular, the wren was outnumbered about 10:1 by the parula, which we considered to be by far the commonest land bird on the island, a status that was assigned to the mockingbird in the report of the California Academy of Science expedition of 1925 (McLellan 1926). In what appeared to be areas of food abundance, we saw gatherings of as many as 30–50 warblers. They occurred in habitats from the beachside vegetation to within 50 m of the crest of Cerro Evermann. This abundance is in stark contrast to the current status of those species most vulnerable to cat predation.

Based on our field experience in 1981, Jehl and I found it difficult to believe that the Socorro Mockingbird could have persisted, and certainly not in significant numbers. On 10 November 1984, five observers visited Isla Socorro briefly by air, spending about 5.5 h birding on foot. Although Jehl had supplied the party with our 1978 tapes of *Mimodes* vocalizations, only the recent immigrant Common Mockingbird (*Mimus polyglottos*) responded. Another survey, made by a party from the University of Mexico in August 1987, found about 20 individuals of *Mimodes* in a relatively inaccessible part of the island. The avian ecosystem of Isla Socorro is obviously in a dynamic stage at present. The Socorro Mockingbird is now outnumbered by the self-introduced Common Mockingbird (Jehl and Parkes 1983; S. Howell pers. comm.), a species unlikely to have a predatory impact on the smaller passerines. On the other hand, American Kestrels (*Falco sparverius*) have reached Isla Socorro (J. F. Clements and S. Howell pers. comm.) In 1984 the wren and warbler populations were reported still to be high. It remains to be seen whether the small remaining population of *Mimodes* is viable, and whether the carnivorous/insectivorous kestrel will become a major predator on the warbler and wren (probably on adults rather than on eggs and nestlings) and eventually establish a new predator-prey equilibrium on Isla Socorro.

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Winter diets of vultures in Pennsylvania and Maryland.—Black Vulture (*Coragyps atratus*) and Turkey Vultures (*Cathartes aura*) have declined in recent decades (Brown 1976). Food habits of these two species have been examined by analysis of regurgitated-pellets or by behavioral observations of marked birds at single roosts (Paterson 1984, Yahner et al. 1986, Coleman and Fraser 1987). No studies have compared winter food habits of vultures among communal roosts. Our objectives were to: (1) compare winter diets of vultures at seven communal roosts in southern Pennsylvania and northern Maryland, and (2) determine if food remains constituting winter diets were related to potential availability of these remains or to habitat features in the vicinity of roosts.

Study area and methods.—We conducted the study at seven winter communal roosts used by Black and Turkey vultures; each roost was located in a different county of southern Pennsylvania and northern Maryland (Thompson 1987). Major land uses in these counties were forest, agriculture, and residential (U.S. Bureau of the Census 1986). One-hundred ninety-two pellets were gathered at the seven roosts (N = 21–30/roost) in early to mid-February 1987. All visible pellets were gathered during a single visit to a roost to minimize differences in the effects of weather (e.g., depth of snow cover) on food items used by vultures (see Yahner et al. 1986). Based on appearance, we estimated that pellets collected were less than two weeks since egestion. Distances between roosts varied from 31 to 163 km and averaged 106 ± 41 km [SD]. Mean numbers of wintering Black and Turkey vultures/roost were 65 ± 65 [SD] and 136 ± 122, respectively (Thompson 1987). We have no evidence that vultures were segregated by species within roosts (Yahner et al. 1986, Thompson 1987).