

THE MOCKINGBIRD'S "TAIL-UP" DISPLAY TO MAMMALS NEAR THE NEST

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THE reaction of adult Mockingbirds (*Mimus polyglottos*) to mammals during the breeding season has been mentioned by several field observers (e.g., Michener and Michener, 1935; Laskey, 1935), but apparently never described in detail. This paper presents various observations on the Mockingbird's predator-display during the nesting season of 1958. The observations are principally of a single pair of Mockingbirds which successfully raised two broods; a few observations could have included neighboring birds.

Mockingbirds displayed to four species of mammals: dogs (*Canis familiaris*), a cat (*Felis domestica*), a human (*Homo sapiens*), and a Gray Squirrel (*Sciurus carolinensis*). The specific behavior pattern discussed here is termed the "Tail-up display."

OBSERVATIONS

Displays to dogs and general description.—The display and attacks of Mockingbirds were directed at dogs more commonly than to any other mammal; more than a dozen reactions were noted. Moving dogs of a variety of sizes and colors were the object of display and/or attack; a few times Mockingbirds postured at sitting or lying dogs, but never did they dive at them. The display of the Mockingbird toward this "potential predator" consists of highly stereotyped posturing and a special call, usually given only in the vicinity of the nest or young.

The displaying bird orients itself facing the dog and cocks its tail vertically, spreading it slightly so that the white of the outer tail feathers lines the edges of the tail. The body is held nearly horizontally, with the head directed at the dog. The bird utters a loud, sharp *klok*, and simultaneously fans the tail to its fullest extent, suddenly flashing the white outer tail feathers; the species' common rasping *zzzzz* call often follows. The display is "successful," in that the dog displayed to usually leaves the area; however, no dog showed particular interest in the Mockingbirds, and it is difficult to judge exactly how much effect the display has in causing the dogs to depart from the nest area.

In several cases, dogs did approach the nest, and this provoked the birds to attack, even though the dogs showed no overt hostility toward them. In these cases, the Mockingbird usually dived from the rear and slightly to the side of the moving dog and displayed its tail and wings quite prominently in the swoop. Several birds observed swooped to one side of the dog and then the other alternately for as many as eight passes without a break. Occasionally a diving Mockingbird actually struck a dog with its claws. The dogs nearly always tried to avoid attacks and two small dogs fled from a diving bird.

Other dogs reacted by lowering their heads and tucking their tails between or beside their hind legs.

Displays to a cat.—There was but one cat in the neighborhood of the Mockingbird's nest, and all observations described concern this animal. The Mockingbird's displays to the cat were stereotyped and identical to those given to the dogs. The only difference noted was that the mere presence of the cat, whether near the nest or not, always provoked intense calling and posturing from the pair of Mockingbirds which nested in our yard. Even if the cat were sitting quietly in the grass as far as 50 feet from the nest, the Mockingbirds often displayed to and dived at the animal. Judging by the intensity and frequency of display, the cat was certainly a stronger "releasing" stimulus-object than were the dogs observed.

Displays to a human.—The Mockingbird infrequently displays toward human beings, but will not do so if the nest is approached or examined. However, on the day I banded the nestlings, I was discovered at the nest by one of the parents. The same stereotyped Tail-up display given to the dog and cat was also directed toward me. Both parents postured from a telephone wire and a nearby fence, but neither dived at me and neither approached closer than 4 feet. One variation in the display was noted, however. During two very intense displays, when one individual was about 5 feet from my face, the wings were seen to be spread slightly and then closed again to the body. The white patches in the wings were not visible, and the motion appeared to be incipient.

Displays to a Gray Squirrel.—The Mockingbird's reaction to a Gray Squirrel was observed once, in late afternoon on 14 August, about three weeks after the fledging of the second brood.

My attention was attracted to a black locust tree in the yard by the loud *klok's* and *zzzzz* calls of several Mockingbirds. A Gray Squirrel was clinging to the tree trunk about 12 feet from the ground. Above the squirrel, five Mockingbirds were calling and displaying, while below, our dog was standing at the foot of the tree looking up. Only two of the Mockingbirds were plainly visible from where I stood, and both were giving the Tail-up display in full intensity. Whenever the squirrel moved slightly, one of the birds dived with ruffled wings and returned to its perch to display. When the squirrel tried to descend, the dog jumped at it and began barking. Two Mockingbirds continued to display at the trapped squirrel (and perhaps the dog), and I noticed that the other three birds were the fledged young. The two birds doing most of the displaying, presumably the parents, gaped at the squirrel several times, and one may have been snapping its bill. The bird closest to the squirrel opened its wings slightly, in a manner similar to that of the bird which had displayed to me.

The reactions of the young birds were also interesting. These birds, probably the second brood raised in the yard, were about three weeks out of the nest and still in the "dependency period" (that is, although they had left the nest, they still depended upon one or both parents for food and/or protection). The young birds also gave the Tail-up display, but their behavior differed somewhat from that of the adults. The young birds

did not utter the zzzzzz call, and only occasionally gave the sharp *klok* which sounded similar to that of the adults. The display did not appear intense, and was definitely not oriented toward the squirrel. In fact, the Tail-up display of the young seemed totally without direction or relevance.

The squirrel pressed itself closely against the tree trunk, with its tail out straight behind and ears held normally. It made no sound. Finally, the dog gave up waiting and trotted away, and the squirrel began to descend the tree again. As soon as it moved, one of the adult Mockingbirds dived at it, and continued diving until the squirrel had reached the ground. The other adult dived once or twice while the squirrel was descending, but returned to the tree. When the squirrel reached the ground, it bounded off with the most pugnacious Mockingbird in pursuit. This bird continued to dive at the squirrel until the latter had climbed a tree on the other side of the yard.

DISCUSSION

In the displays described above four elements were noted: (1) a sharp "predator call," often followed by a rasping call; (2) the raised and suddenly fanned tail; (3) gaping and bill-snapping; and (4) flicks of the wings. The first two elements are the only ones invariably characteristic of the display. The third may be given in extremely aggressive situations involving no formal display (e.g., Hailman, 1960*a*). Wing-flicks, particularly as representing incipient flight ("flight intention") may occur in any display bout in which the bird would be likely to move about (e.g., Hailman, 1960*b*:467). However, the wing-flicks might also have represented incipient wing movements of a "higher intensity" display (see below).

Predator-recognition.—It seems likely from the results of several investigations (see review in Thorpe, 1956:62 ff., 121 ff., 300 ff.) that the extent to which birds innately "recognize" predators (i.e., respond to with an appropriate behavior pattern such as mobbing, bunching, alarm calls, or predator-displays) varies among species. The observations reported here suggest that recognition by the Mockingbird of the Gray Squirrel as a predator "is probably handed on from generation to generation, not so much by the experience of the dire results of attack but by the alarm displayed by the parent birds or by members of other species when they see one of these enemies" (Thorpe, 1956:121). This process, by which learned traditions may be transmitted, is a typical example of "secondary conditioning," one of several kinds of social learning separated by Klopfer (1959).

Relation of the Tail-up display to "Wing-flashing."—Selander and Hunter (1960) described displays given by Mockingbirds in response to stuffed owls. Two primary display elements are evident from their photographs: raised and spread tail, and opened wings. This display was termed "Wing-flashing" because of its resemblance to wing movements commonly observed in foraging Mockingbirds (Hailman, 1960*c*).

Possibly similar wing movements were also observed by Hicks (1955),

who did not mention the tail position of a Mockingbird confronting a snake. In displays to the observer and the squirrel above, Mockingbirds flicked their wings in what may have represented incipient wing movements. However, because the wing movements and the Tail-up movements are separate elements of display in hand-reared birds (Hailman, MS), it seems desirable to avoid a unit description and name for the combined elements. An ontogenetic study of these two elements and their combinations in inter- and intraspecific agonistic displays is thus called for by the present evidence.

SUMMARY

Mockingbirds displayed to four mammalian species when the latter were near the nest: dog, cat, human, and squirrel. The Mockingbird faces the potential predator, cocks its tail vertically, utters a loud, sharp *klok* while suddenly fanning the tail, and usually concludes with a rasping vocalization. Sometimes the displaying bird also snaps its bill and gapes at the intruder, and occasionally it flicks its wings slightly.

Recently fledged young birds also displayed in this manner, but did not direct the response toward the predator. Calling and posturing of the adults present, rather than presence or movement of the predator, appear to elicit the response of the young birds.

The relation of this Tail-up display to the Wing-waving display given to avian and reptilian predators is discussed.

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