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Received 18 April 1977, accepted 27 July 1977.

Observations and Reinterpretation of Kingfisher-Raptor Interactions

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Reported observations of Belted Kingfisher (*Megaceryle alcyon*)-raptor interactions have ranged from brief encounters where the kingfisher escaped the raptor and the hawk subsequently flew away to repeated chases (Johnson 1925, McCabe and McCabe 1928, Skinner 1928, Smith 1963). In some repetitive chases, kingfishers appeared to initiate the interaction (McCabe and McCabe 1928, Skinner 1928).

On 25 August 1971 in north-central Minnesota an adult male kingfisher was observed fishing on a 4.5-ha beaver (*Castor canadensis*) flowage at 1740. At 1748 an immature Cooper's Hawk (*Accipiter cooperii*) landed quietly in a dead tree approximately 50 m from the kingfisher's perch. The kingfisher immediately began a loud rattling call and within 30 s flew directly at the hawk. When the kingfisher flew closely over its head, the hawk left its perch and began pursuit. The kingfisher dodged rapidly between standing dead trees and landed on a limb after the hawk had given up the chase. Chases were then repeated three times in the next 4 min. The kingfisher repeatedly approached the hawk and retreated when the hawk gave chase until the hawk left at 1910. In all instances, the kingfisher initiated the interaction by approaching the hawk on the wing or through a series of short moves through the trees. When not being harassed by the kingfisher, the hawk attempted to capture five different Black-capped Chickadees (*Parus atricapillus*) and two immature Hairy Woodpeckers (*Picoides villosus*).

On 23 August 1971, an adult Goshawk (*Accipiter gentilis*) was observed chasing teal (*Anas crecca*, *Anas discors*) and Wood Ducks (*Aix sponsa*) on a 5.1-ha beaver flowage at 0620. At 0635 an adult female kingfisher arrived and the Goshawk gave chase as the kingfisher flew within 20 m. When the hawk closed to within 1 m after a few wingbeats and thrust its legs forward, the kingfisher dove into the water from a height of approximately 3 m. The kingfisher emerged immediately, rattled, and rapidly flew away. The Goshawk turned quickly when it had flown past the splash made by the diving bird and was within striking distance before the kingfisher had flown more than 50 m downstream. The kingfisher dove again, emerged at right angles to its previous course and flew directly to a dead snag on the edge of the flowage, after which the Goshawk returned to a branch immediately above the ducks. Although quiet after landing in the dead tree, the kingfisher began calling when the Goshawk landed. It then flew within 1 m of the hawk, again initiating a chase sequence. The kingfisher dived into the water three times before landing on a perch after the second chase. This series of interactions was repeated three times. During the last chase, the kingfisher called continuously, flew out of view, and returned without the hawk in pursuit. The Goshawk was not seen again.

These observations and those in the literature illustrate encounters where the hawk initiates the pursuit in a typical predator-prey relationship and where the kingfisher initiates an attack by its persistent approaches toward the hawk. McCabe and McCabe (1928) described these approaches by the kingfisher in terms of "amusement" behavior. This kind of behavior may be better explained as mobbing behavior, since the kingfisher's actions result in a thwarting of predatory activities (Cully and Ligon 1976: 123). Since the hawks left the kingfisher's areas of activity after these encounters, we suggest that the purpose of this behavior is similar to that espoused for mobbing in general, an increase in fitness for either the mobbing bird, its mate, or kin. Observations by Kirby at beaver flowages and by Mic Hamas (pers. comm.) in other areas of north-central Minnesota suggest that kingfishers maintain feeding territories throughout the summer months. Benefits thus accrue to a bird if the mobbing behavior subsequently allows uninterrupted feeding behavior on a feeding territory, a result that was in fact observed. Mobbing behavior makes information regarding the presence and nature of a predator available to both conspecifics and extraspecifics. By informing other potential prey of the raptor's presence and location, the hawk's probability of capturing any prey within the kingfisher's territory would be reduced; therefore it would be more efficient for the hawk to leave the area and search elsewhere for more vulnerable prey.

We thus suggest that the kingfisher's ability to mob a hawk in its territory reduces the incidence of predation by raptors, increases the potential efficiency of the bird's food gathering process, and accounts for the behavioral series discussed here and in earlier literature.

We are indebted to S. R. Derrickson, M. Hamas, and D. F. McKinney for constructive criticism during manuscript preparation, and T. J. Dwyer, J. D. Nichols, and C. S. Robbins for review of the completed paper. Early discussion of this topic occurred while we were supported by National Institutes of Health Training Grant 5 TO1 GMO1779 to J. R. Tester, Department of Ecology and Behavioral Biology, University of Minnesota, Minneapolis.

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Received 23 May 1977, accepted 22 September 1977.

Acoustical Properties of the Swoop-and-soar Call of the Ring-billed Gull

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When a predator enters a gull colony, nearby gulls take flight and some may dive at the predator by flying rapidly downward toward it and then suddenly swinging upward in an arcing swoop, occasionally