GENERAL NOTES

Nest Associates of the Mississippi Kite.—During a study of the population biology of the Mississippi Kite (*Ictinia mississippiensis*) from 1968 to 1972 and from 1976 to 1979, ten kite nests were found with or near the nests of wasps (*Polistes* spp.; Vespidae), or near the nests of small birds. I know of no records of wasps associated with raptor nests. However, wasps are, or are suspected to be, mutualistically associated with some swallows (Jackson 1975), oropendolas (Smith 1968), weaverbirds, and other small bird species (McCrae and Walsh 1974 and references therein). Raptors are known to associate commensally with ants (Moreau 1936, North 1939) and bees (Loveridge 1922). Nesting of small birds with or within the nests of some raptors is known, but is neither common nor well understood, especially in North America (Durango 1949, Brown and Amadon 1968, McGillivray 1978 and references therein).

I encountered wasps when climbing to kite nests, especially those in mesquite (*Prosopis juliflora*) trees. In Jones County, Texas, one wasp nest was built directly on the bottom of a nest that was 4 m up in a mesquite tree; another wasp nest was on a limb a few centimeters away from a similar kite nest. In Meade County, Kansas, two wasp species were nesting in a locust (*Robinia* spp.) and many wasps were walking up and down the trunk and about the limbs near another kite nest. In the mesquite the wasps were always aggressive toward climbers, and in the locust they were aggressive when directly irritated. The wasp nests near and on the kite nests were undisturbed and the wasps were active throughout most of the nesting season. All three kite nests were successful.

English Sparrow (*Passer domesticus*) nests were twice found on the undersides of Mississippi Kite nests. One of these was 7 m up in a locust in Harper County, Oklahoma, and the other was 4 m up in a mesquite tree near Anson. Both were within 200 m of sparrow nests near or in buildings where sparrows were common.

Several other bird species nested very near kite nests. A Mourning Dove (*Zenaida macroura*) nest with eggs was in the same locust tree and 2 m below a 4-m-high kite nest in the Harper County, Oklahoma, shelterbelt, and I found other Mourning Dove nests within 15 m of kite nests in other kite colonies. Blue Jays (*Cyanocitta cristata*) twice nested close to kite nests; once about 6 m from a 5-m-high kite nest in an osage orange (*Maclura pomifera*) tree in a shelterbelt in Kiowa County, Kansas, and once in the same elm (*Ulmus americanus*) 3 m from a kite nest in a shelterbelt in Greer County, Oklahoma. The first of these two kite nests lost both eggs, on separate days; the fate of the other kite nest was undetermined. A Mockingbird (*Mimus polyglottos*) raised a brood in a small dead locust about 4 m from a successful kite nest that was 6 m up in a live locust 20 km south of Meade, Meade County, Kansas. One Mockingbird vigorously defended the area around its nest and the kite nest, often in company with the female kite. In a shelterbelt in Clark County, Kansas, Brown Thrashers (*Toxostoma rufum*) built a nest at 1.5 m in an osage orange tree about 4 m beneath a kite nest. They had 4 eggs and, like the Mockingbird, defended the nest area vigorously with the kites. On one visit I discovered a very small kite nestling in the thrasher nest with three remaining thrasher eggs. The kite nest and its several supporting limbs were situated so that the nestling apparently had fallen into the thrasher nest. The nestling was well fed and was apparently being cared for by the thrashers. I returned it to the kite nest, but it later died with its nest mate when the nest fell.

Although the number of kite nests with associates was only about 2% of the approximately 900 nests observed during this study, my foot travel to and from kite nests was usually over the same routes and I could neither systematically nor thoroughly check for nearby nests. These, especially dove nests, were probably more numerous than suggested by the cases described here.

Shelterbelts are a relatively new and abundant Great Plains nesting habitat for many bird species. They have encouraged a population increase and some range expansion by the kites and also probably by smaller bird species (Parker and Ogden 1979). This may present new possibilities for commensal or other nesting interactions between kites and smaller birds. Mississippi Kites are also relatively recent nesters in mesquite (Parker and

Ogden 1979), and I have rarely encountered wasps except there; so Great Plains Mississippi Kites and wasps are probably also new associates. Mississippi Kites suffer heavy loss of nests and some loss of nesting adults to a variety of predators (Parker 1974, unpublished data), many of which also threaten the smaller birds nesting near the kites. This is a major factor defining the potential relationships between nesting kites and their associates.

The kite-wasp association seemed potentially commensalistic. Presumably the wasps would have reacted aggressively to climbing predators, especially mammals, thereby increasing protection against terrestrial predators. It is unlikely that the wasps benefitted unless a kite nest provides a more secure site of attachment than a tree limb. Although wasps are known to attack birds (Duncan 1962), I saw no aggressive response to the kites. Sutton (1939) noted that kites occasionally eat vespid wasps, but I have no evidence of this from a large collection of food remains taken from kite nests or from observation of hunting or eating kites (Parker, unpublished data).

The potential relationships between kites and small birds were more diverse. Kites do capture and eat small adult and nestling birds, but not often, and this dietary habit may be recent (Parker and Ogden 1979). Generally, raptors do not hunt near their own nests. This may minimize advertisement of the nests (Durango 1949). Therefore, they are a minimal threat to the small birds nesting near them (Brown and Amadon 1968). Blue Jays are sometimes a threat to kite eggs (Parker 1974); although they may cooperate in defense of common nest areas, their net impact is probably not beneficial for the kites. However, the species of small birds which pose no threat to Mississippi Kite eggs contributed to the detection and harassment of nest predators near kite nests, and likewise probably benefitted from similar behavior of the kites in a seemingly mutualistic association.

Support for this study was given by the Frank M. Chapman Memorial Fund, an NSF Traineeship from the University of Kansas, The Eastern Bird-Banding Association, and the State University of New York Research Foundation.

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American Robin Rears Brown-headed Cowbird.—Friedmann (1963; Friedmann et al. 1977) recorded no instance of American Robins (*Turdus migratorius*) rearing Brown-headed Cowbirds (*Molothrus ater*). In fact, there are very few records of parasitism on