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Raptors killing raptors.—There are few detailed accounts of diurnal raptors killing other diurnal raptors (Peyton, *Condor* 47:167, 1945; Broun, *Hawks Aloft: The Story of Hawk Mountain*, Dodd, Mead Co., New York, New York, 1949:193–194; Rudebeck, *Oikos* 2:65–88, 1950; Rudebeck, *Oikos* 3:200–231, 1951). Here we provide additional field observations of this type of killing and suggest why it occurs.

Our observations were made during a study of the individual flight patterns of migrating raptors at Lehigh Gap, a break in the Kittatiny Ridge at Palmerton, Pennsylvania.

At 13:10, 15 Oct. 1982, a Peregrine Falcon (*Falco peregrinus*) was seen flying over the northeastern edge of the gap. The size of the falcon suggested it was a female. For approximately 2 min it coursed over the edge. It then turned west and set its wings in a gliding position. Suddenly, the falcon captured a Sharp-shinned Hawk (*Accipiter striatus*) believed to be a male because of its small size. The hawk was also in a glide prior to capture. The falcon approached its quarry from below (15–30 cm) and then flew up, flared its wings, and grasped the back of the accipiter. The hawk did not struggle after being grasped, and fell limp. The Peregrine Falcon then turned and flew back to the northeastern edge of the gap using labored flapping flight.

W. S. Clark and P. Dunne (pers. comm.) witnessed a Peregrine Falcon capture a Sharp-shinned Hawk in the fall of 1976 at their Cape May Point, New Jersey, banding station. The victim was gliding into a trap area when an immature male falcon struck it from above. As the Peregrine Falcon carried off its prey, a Northern Harrier (*Circus cyaneus*) began chasing the falcon. The peregrine responded by flying swiftly and turning sharply from side to side. Both birds passed from view over grass and dunes. Within a few seconds the falcon bolted almost straight up into the air without its prey. The harrier did not reappear.

D. F. Brinker and T. C. Erdman (pers. comm.) watched a Red-tailed Hawk (*Buteo jamaicensis*) capture a Sharp-shinned Hawk at their banding station on the west shore of Green Bay, Wisconsin. They also stated that during migration the larger raptors such as Red-tailed Hawks are lured to traps by previously captured smaller raptors such as Sharp-shinned Hawks. The larger birds dropped from their passage, entered the traps, and killed the smaller birds.

While banding raptors between 9 and 22 Oct. 1974, J. Ruos (pers. comm.) observed raptors of several species hunting other species on Loggerhead Key, Dry Tortugas, Florida. The weather was unfavorable for migration, with high winds and seas, and few typical prey were available to the predators. On several occasions during 11 Oct. Sharp-shinned Hawks attacked other Sharp-shinned Hawks caught in mist nets. Between 13 and 21 Oct. observations of Peregrine Falcons chasing a Sharp-shinned Hawk, American Kestrels (*F. sparverius*), and a Merlin (*F. columbarius*) suggest that the pursuing raptor was attempting to prey on the smaller ones.

Smaller raptors have also killed larger ones. From different accounts, Forbush (*Birds of Massachusetts and Other New England States, Part II*, Norwood Press, Norwood, Massachusetts, 1927:170) describes Peregrine Falcons killing Red-shouldered Hawks (*B. lineatus*)

and a Snowy Owl (*Nyctea scandiaca*). The suggested motives were nest defense against the hawks and defense of young against the owl. An additional account occurred in March 1981 during the spring migration just south of Albany, New York. T. K. Judge (pers. comm.) witnessed a Merlin strike and kill a Red-tailed Hawk. The Merlin was watched for approximately 20 min prior to the assault. The falcon initiated its attack from a perch in a tree, and struck the larger bird in mid-air. The Red-tailed Hawk lost some feathers, appeared limp and lifeless, and immediately dropped to the ground. No motive for this killing was evident.

Suggested motives for interspecific killing by raptors are competition for territory, food, or breeding sites (Mikkola, Br. Birds 69:144–154, 1976). Rudebeck (1951), referring to large raptors attacking smaller ones, suggested that the conspicuousness of some raptors might make them more vulnerable to larger ones, especially on migration when large numbers of raptors regularly interact while traveling in close proximity. In addition, large raptors kill smaller ones for what has been described as annoyance (p. 141, Brown and Amadon, Eagles, Hawks and Falcons of the World, McGraw-Hill Book Co., New York, New York, Vol. 1, 1968).

In sum, field observations suggest that raptors kill other raptors for food, in self-defense, and in defense of territories, nests, and young.

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Ants and foraging behavior of the Collared Forest-Falcon.—Few details concerning the habits of the Collared Forest-Falcon (*Micrastur semitorquatus*) are known. A nest was described recently by Mader (Condor 81:320, 1979). An egg, laid by a captive falcon, was described by Wetmore (Condor 76:103, 1974). Birds, lizards, and snakes have been reported as prey (Sutton and Pettingill, Auk 59:1–44, 1942; Wetmore, Smithsonian Misc. Coll. 150:266–268, 1965; Smithe, The Birds of Tikal, Natural History Press, Garden City, New York, 1966). Smith (Ibis 111:241–243, 1969) suggested that the Collared Forest-Falcon calls to provoke mobbing by small birds in order to capture them, and mentioned that *Micrastur* falcons are attracted to the sounds made by excited birds such as those following swarms of army ants. The Barred Forest-Falcon (*M. ruficollis*) is a “persistent ant follower that terrifies small birds, but mostly captures large insects” (Willis and Oniki, Ann. Rev. Ecol. Syst. 9:243–263, 1978). Slud (Bull. Am. Mus. Nat. Hist. 128:70–72, 1964) stated that Barred Forest-Falcons are attracted to swarms of army ants to prey on the attendant small birds. Skutch (New Studies of Tropical American Birds, Nuttall Ornithol. Club, Cambridge, Massachusetts, 1981) observed an immature Collared Forest-Falcon following army ants, eating large insects and spiders, and ignoring the small birds present. Here, I report three incidents of a mature Collared Forest-Falcon at swarms of ants.

My observations of Collared Forest-Falcons and ants occurred at Monteverde, Costa Rica,