

RAPTOR ATTACKS ON PEOPLE

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Raptors usually attack a narrow class of people, namely biologists that are approaching nests. Raptor biologists routinely tolerate nest-defense behavior, and most, when properly attired, confess to some enjoyment of a diving bird. An attack can vary from a half-hearted dive missing a person by feet, to violent hitting, usually on or near the head, by closed or opened feet, or raking or grabbing with one or more talons. It can result, depending on raptor size and temperament, in minor annoyance or serious lacerations, bruises, punctures, damaged eyes, torn clothing, auto accidents, and even death if complicated by factors such as heart disease or a fall. Usually the result is harmless, albeit unexpected, but for the general public it conveys an image of danger, of Hitchcock's movie, "The Birds," or of *Velociraptors* in Spielberg's "Jurassic Park."

Media-sensationalized raptor attacks on private citizens work strongly and persistently against respect for raptors, predation, and wildlife laws. Therefore, it is important that they be explained to the general public, preferably by those knowledgeable about raptors, managed if necessary, and be used as opportunities to educate.

This paper reviews the causes and records of raptor attacks on people, and discusses management solutions to this problem. My background of college teaching and research followed by full-time ecological education, frequently using live raptors in the public realm, leads me to approach raptor attack behavior and predation from a broad perspective. My concern for raptor attack behavior results from years studying the Mississippi Kite (*Ictinia mississippiensis*), which seems to have had its nest-defense diving publicized more than any other raptor species.

RECORDS AND CAUSES OF ATTACKS

Raptor attacks have no unifying literature and little research attention. Most accounts are in the newspapers rather than in recent ornithological literature. A literature search of the Raptor Research and Technical Assistance Center (U.S. Geological Service) found only 18 references, mostly to fab-

ricated accounts of attacks by eagles on adult humans and children. Other accounts, by Lumley (1939), Walker and Walker (1940), and Edge (1945), refuted claims of the raptorial carnivore as a vicious, blood-thirsty predator. Mavrogordato (1965) documented a rare court conviction of a hunter who shot a falconry-trained Tawny Eagle (*Aquila rapax*) claiming it was about to attack his entire hunting party. Two references (Bedichek 1948, 1961) described formal military responses to eagle harassment of WWI biplanes, a situation that might today confront slow-flying, single-engine aircraft. Although there are few references to attacks on humans by diurnal raptors, Thompson (1964), Grossman and Hamlet (1964), Grizmek (1975) and Voous (1977) convey the impression that, because of their scavenging in urban environments, Red and Black Kites (*Milvus milvus* and *M. migrans*) have the potential to harass people to pirate food items. The National Wildlife Federation's Raptor Management Techniques Manual (Pendleton et al. 1987) makes no mention of raptors diving at humans, but its section on transplanting nests and nest contents is applicable to the management of diving problems.

Owls have more of a reputation for attacks, often vigorous. Burton (1973) highlighted the tendency for attack by Screech Owls (*Otus asio*) and *Strix* species, and Sparks and Soper (1970) mentioned the Great Horned Owl (*Bubo virginianus*) as an attacker. In sections on antagonistic behavior, Voous (1988) thoroughly documented and assessed diving by 12 owl species. The last two works mentioned the prominence of attacks by owl species that have become urbanized, including the south Asian Spotted Owllet (*Athene brama*).

The most extensive account of attacks on people by a single bird is of Heinrich's (1987) captive-raised Great Horned Owl. This bird accosted people to protect cached food, to obtain food objects they held, and probably because they approached Heinrich. This case demonstrates a problem potentially caused by release of raptors which have been improperly raised, a major concern for rehabilitators.

In an evolutionary context, Newton (1979) noted that geographic variation in diving behavior probably correlates with variation in past treatment of raptor populations by humans. He stressed that killing of raptors which did not flee from humans at nests selected against aggressive defense behavior. However, the rapid development of defensive diving in urban populations of Mississippi Kites indicates it is often the result of raptor experience and learning.

Raptor biologists often collect credible accounts of raptor attacks on private citizens. Worldwide, these would comprise a massive and fascinating data set, but there has not been, and probably never will be, a good way to compile, verify, and publish these. One account (Anchorage Daily News, 1989) described a skier who, on the slopes in January, lost most of his clothing to a Great Horned Owl in repeated, prolonged attacks. His companions were not targeted. Another account involved common folklore in Bel Air, Maryland in which a captive-raised Great Horned Owl terrorized two housing developments by repeatedly landing on people to get food, with a preference for hot dogs.

In a series of five letters (*N. Eng. J. Med.* 1984, 311:1703; 1985, 312:1066-67; 313:330, 1232) briefly summarized in *The Runner Magazine* (April, 1985), several medical doctors discussed diving at Swiss joggers by Common Buzzards (*Buteo buteo*). Their explanations of bird behavior were invalid, although they referred to a more competent account of buzzard nest defense (Fryer 1974). Such letters show a need for raptor biologists to be more involved in raptor public relations.

Interesting legal and public relations problems can be generated when a raptor is killed as the result of its attack. In May, 1982, a retired deputy sheriff was hit by a nesting adult female Northern Goshawk (*Accipiter gentilis*) while in the woods near Wilton, Maine. Fearful and without relevant knowledge, he shot the bird and was pictured in the local paper holding the carcass triumphantly. He was not prosecuted, and I was prohibited from using the newspaper clipping of the shooting in a biology department education display on environmental education.

Most raptor attacks on humans can be explained by humans: being too near nests; being too near a disadvantaged, injured, or young raptor; approaching a raptor's food cache; encountering hand-raised (imprinted) but free-flying raptors; or leading, holding or wearing food or food-like objects.

Emotional and sensational claims that raptors are expressing vicious, vindictive behavior should be countered vigorously and quickly.

MISSISSIPPI KITES

The most publicized defensive diving on humans in North America is by the Mississippi Kite, a crowd-sized, migratory species that nests in 16 southeastern and southcentral states of the U.S. Like all North American raptors, the Mississippi Kite is protected by federal (Migratory Bird Treaty Act) and state laws. It defends its nest aggressively in flocks against predators. This has led to an urban public relations problem. The following description is from Parker (1988a, 1996) unless otherwise referenced.

During about 1945-65, Mississippi Kites in the Great Plains shifted their prairie nesting habitat from riparian trees to farm woodlots, windbreaks, and mesquite groves, all recently man-created. In the late 1970s, they became conspicuous urban nesters. Now, they nest densely by hundreds or thousands in urban areas of all sizes in five states. Urban roosting groups of 50-100 are not unusual. Kite populations have responded to increased nesting habitat, and probably an increased food base stemming from agricultural activity. Shaw (1985), Gennaro (1988a), and Parker (1996) showed its urban reproductive output is nearly twice the rural rate. Parker (1996) indicated that urban populations showed denser nesting, more nest reuse, more yearlings in populations, and probably less threat to nests than in rural kite populations.

In 1978, 28 kites were shot in Ashland, Kansas because one or more dove at people. Prosecution of the four offenders was successful and resulted in major public relations conflicts for state and federal wildlife agencies and the town. One offender was a state conservation officer. Incidents of diving have increased annually in cities and towns of all sizes. In urban areas, nesting pairs favor open, park-like areas including golf courses, city parks, town squares, and residential lawns, where diving is particularly disturbing to the public. Shaw (1985), Gennaro (1988b) and Parker (1979a, 1979b, 1980) concurred that diving kites are a small minority, that those hitting people are even less frequent, and that usually only one kite from a nest dives. However, because kites are so abundant, and humans pass so frequently, there are many verified accounts of diving and hitting. These include several golfers requiring stitches, two chil-

dren on bicycles struck by cars as a result of diving, an elderly woman who broke a bone when frightened enough to fall down steps, and a woman receiving a scratched cheek leading to an eye infection. Children, dogs, and people on regular routes (e.g., postmen) are frequent targets, and postal delivery is sometimes interrupted. Subjectively, one gets the sense that kites in urban areas are more aggressive.

MANAGEMENT RESPONSES

In 1978, I began advising local, state (Kansas, Oklahoma, New Mexico), and federal agencies (U.S. Fish and Wildlife Service, U.S. Animal Damage Control) in management, reduction, or elimination of kite diving, as described in a number of popular, scientific, and technical publications (Parker 1979a, 1979b, 1980, 1987, 1988b, Rideout 1979, Engle 1980, Andelt 1983, Garrison 1986, Gennaro 1988a, 1988b, DiCanio 1989, Sweet 1989). The Kansas State Cooperative Extension Service and the Martin Park Nature Center in Oklahoma City have produced several educational pamphlets and newsletter articles about diving, and a large educational poster was produced in 1980 by the U.S. Fish and Wildlife Service and the author.

Complaints about defensive diving come to nature centers, police departments and government offices. In Kansas and Oklahoma, action is taken as needed by personnel of the U.S. Animal Damage Control, in cooperation with state wildlife agencies and several zoos and nature centers. Permanent metal educational signs have been posted at the Altus (Oklahoma) Air Force Base golf course, at a golf course in Clovis, New Mexico (Gennaro 1988b) and by the Martin Park Nature Center staff in Oklahoma City (Garrison 1986). Some of these warn of specific diving birds and their nests, and are placed or moved as needed each summer.

My responses to diving incidents include: rapid coordination between government and private biologists, educators, and managers; quick educational contact with the disturbed public; and if necessary, removal of nests of diving kites. Nestlings or eggs (rarely) are transplanted to rural kite nests, or donated to an endangered species management program in west Tennessee (Parker 1984, Stokes 1985, Martin and Parker 1991).

In New Mexico, Gennaro (1988b) developed a program with support of the New Mexico Depart-

ment of Game and Fish to study and manage the state's major kite population at Clovis, where diving is frequent on a golf course. He used nest removal but also experimented extensively with the use of three-dimensional kite models placed in trees to discourage kites from nesting in areas where diving would be a problem. The models were of some use but often only displaced nesters a short distance. This technique is also hampered by shortage of models and time to use them.

Just as diving by Mississippi Kites is apparently a permanent problem, continued urbanization of raptor populations will increase chances for future attacks on humans by other raptor species. Attacks on humans can be expected to continue for those species now involved, and could develop for species like the Merlin (Oliphant and Haug 1985, Palmer 1988). Information on the Mississippi Kite and other raptors known to dive at humans should be used by private and government biologists and educators to manage conflicts.

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