

the morning observation period, all within a 1-km stretch of the river gorge, and was successful on four (23.5%) occasions. The pair obviously was not subject to a low availability of flying prey. They were exploiting a prey base that was spatially concentrated in a short length of river gorge, and temporally concentrated by a common activity peak in the early morning. This prey base consisted of an abundance of aerial insectivores and other species found in close association with the river or the cliffs of the river gorge. Rock pigeons, and presumably their nests, were numerous in the gorge. We suspect that nest robbing is a fairly frequent occurrence in this pair.

We thank the Foundation for Research Development for financial support.—**Andrew R. Jenkins and Anthony J. van Zyl, Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch 7700, South Africa.**

J Raptor Res. 28(2):119–120

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CANNIBALISM OF A YOUNG BARN OWL (*Tyto alba*) BY ITS PARENTS

Cannibalism occurs fairly frequently in broods of many raptor species (C. Ingram 1959, *Auk* 76:218–226; C.H. Stinson 1979, *Evolution* 33:1219–1225; J.K. Terres 1980, *Aud. Soc. Encycl. North Am.*, Alfred A. Knopf, New York, NY U.S.A.). This behavior is adaptive in predatory species in times of food shortages, severe weather conditions, and disturbance at the nest, and contributes to their individual fitness. Cannibalism among barn owls (*Tyto alba*) has been reported (D.S. Bunn et al. 1981, *The barn owl*, Buteo Books, Vermillion, SD U.S.A.; B.A. Colvin 1984, Ph.D. diss., Bowling Green, OH U.S.A.; G.M. Lenton 1984, *Ibis* 126:551–575; Marti 1992, *Barn owl*, *Birds of North Am.*, *Acad Nat. Sci., Phila.* 1:1–15), although it occurs less frequently than is popularly believed (D.S. Bunn et al. 1981). When food is abundant, nestling barn owls have been observed to share food with their younger siblings (C.D. Marti 1989 *Wilson Bull.* 101:132–134); however, when food is scarce, young barn owls have been observed to kill and consume their siblings, an act that could permit them to survive periods of severe food shortages (D.S. Bunn et al. 1981). The killing of an owlet by an adult and feeding it to the other young is the most unlikely of seven different cannibalism scenarios and has not been documented (D.S. Bunn et al. 1981). Reports of adult barn owls killing one of their own injured young and eating it or feeding it to their remaining young has also not previously been reported. Some circumstantial evidence exists to suggest that both of these scenarios can occur in North American barn owls (B.A. Colvin 1984).

In the process of studying a pair of nesting barn owls, I observed evidence of cannibalism in which one or both of the adults presumably killed and consumed one of their offspring during a period when food was becoming scarce.

I observed a pair of barn owls and their offspring on an abandoned herbicide manufacturing facility in Houston, Texas. I visited the site at 1–2 wk intervals from 10 April 1988 through 19 August 1989. The owls used a small brick structure (4.6 × 2.4 × 3.0 m) as a roosting/nesting site. A wooden box (0.3 × 1.2 × 0.3 m) above a small doorway, the only opening to the structure, served as a nest box. On 23 October 1988, a clutch of seven eggs was found in the nest. This was the second of three clutches produced by the owls during this 16-mo period. By 30 October, the first two eggs had hatched and by 12 November, a third egg had hatched and one egg remained in the nest; the other three eggs were missing. The remaining egg never hatched and disappeared within a week. The three owlets were last observed in the nest together on 17 December. On 24 December, both parents were seen at the roost and there were only two young still in the nest. The oldest owlet (57–59 d) was found dead on the floor and I observed the adult male sitting next to it. The owlet appeared to have been dead for about 1–2 d. Its body cavity had been ripped open, and it had been almost completely eaten. Only the wings, feet, skull, and stripped skeleton remained. It was not decapitated as is usually done with live prey and cannibalized young (D.S. Bunn et al. 1981) and its feathers were not scattered around the roost (K.L. Hamilton 1980, *Texas J. Sci.* 32:175). A necropsy on the dead owlet revealed a broken right humerus. I suspect that this occurred during practice flying within the small enclosed area, but may have been a result of falling out of the nest to the floor (about 2.6 m).

The barn owl roost and nest box were inaccessible to the few potential mammalian predators at the site and other avian predation was highly unlikely. In addition, the condition of the owlet's carcass strongly suggested that it had been eaten by the owls and not by another predator.

The hunger of either the parents or the remaining owlets, combined with the colder than normal temperatures at the time, probably led to this cannibalism. Pellet analyses indicated that prey were becoming scarce as winter progressed into 1989, and many birds and insects were found in the diet (unpubl. data).

Feeding behaviors such as cannibalism of healthy or injured young can be important in predatory species such as

barn owls during times of food shortage. However, this behavior usually is difficult to witness. More observations at raptor nest sites are needed to document the fate of nestlings that mysteriously disappear from their nests and to determine how frequent this behavior is and under what circumstances it occurs.

I thank W. McClure for field assistance with the ongoing barn owl study at this site, and J. Shaw, B. Colvin, J. Marks, and two anonymous reviewers for valuable comments on an earlier version of the manuscript.—**Steven R. Sheffield, Department of Zoology, Oklahoma State University, Stillwater, OK 74078 U.S.A.**

J. Raptor Res. 28(2):120

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OSPREYS (*Pandion haliaetus*) SCAVENGING FISH ON ICE

The diet and foraging behavior of ospreys (*Pandion haliaetus*) have been studied extensively in North America (A.C. Bent 1937, *U.S. Nat. Mus. Bull.* 167:352–379; T.C. Dunstan 1974, *Wilson Bull.* 86:74–76; J.E. Swenson 1978, *J. Wildl. Manage.* 42:87–90; A. Poole 1989, *Ospreys*, Cambridge Univ. Press, Cambridge, U.K.; S.P. Fleming et al. 1992, *Auk* 109:649–654), and other parts of the world (Y.A. Prevost 1982, Ph.D. thesis, Univ. Edinburgh, Scotland; S. Cramp and K.E.L. Simmons 1980, *The birds of the western Palearctic*, Vol. 2, Oxford Univ. Press, Oxford, U.K.). Live fish, caught by plunging into shallow water, comprised over 99% of the diet in each osprey population studied thus far (Poole 1989). In this paper we provide details of ospreys scavenging dead and dying fish, caught by fishermen, from the ice surface during the first week of nest site occupation in Canada.

Between 1 April and 6 April 1993, two ospreys were noted on artificial nest platforms in the Honey Harbour area of Georgian Bay, Lake Huron (44°51'N, 79°49'W). Ice cover was complete during this period on all water bodies within at least 8 km of these nest sites, and the main melt did not occur until the second week of April. In 1991 and 1992 the first ospreys were noted in this area on 7–8 April, and some of these birds flew up to 12 km to reach open-water fishing areas.

On at least three separate occasions in the 1–6 April period in 1993, the two ospreys were seen by one of us (EC) soaring and hovering above ice-fishing holes in a small bay 2 km from the nest sites. Fishermen were catching large numbers of black crappie (*Pomoxis nigromaculatus*) at this time, and usually left 15–30 cm fish on the surface of the ice. Since many different ice holes were fished by up to 50 people on some days, dead and dying black crappies were sometimes left unattended beside ice holes for up to 30 min. On several occasions both ospreys swooped down to the ice surface about 100 m from the nearest fishermen, and each flew off with a black crappie.

Ospreys have been noted previously to pick up dead or dying fish from the water surface or from shoreline rocks (Bent 1937, Dunstan 1974), but these appear to be the only published accounts of such behavior. We know of no other accounts of ospreys taking fish from the ice surface, but elsewhere in Lake Huron, fledgling ospreys occasionally take fish scraps thrown to them by fishermen (W. Davis pers. comm.). Ospreys regularly use large fish carcasses for nesting material (Bent 1937, Poole 1989), and we have noted this behavior in the Great Lakes. We have also recorded a male osprey picking up and eating a dead largemouth bass (*Micropterus salmoides*) floating at the water surface in Georgian Bay.

Ospreys arriving back at nest sites in northern parts of North America are often confronted with extensive ice coverage of foraging areas during the pre-laying period. These observations of freshly caught fish taken at ice-fishing holes reflect the osprey's adaptability in foraging techniques, and its remarkable tolerance of human presence.

The studies of osprey in the Great Lakes basin were funded by the Canadian Wildlife Service–Ontario Region, Environment Canada's Great Lakes Action Plan, and the Ontario Ministry of Natural Resources. We are also grateful to various colleagues at the Canada Centre for Inland Waters for logistical assistance.—**Peter J. Ewins, Canadian Wildlife Service, Environment Canada, Canada Centre for Inland Waters, P.O. Box 5050, Burlington, Ontario, L7R 4A6 Canada, and Elmer Cousineau, Brandy's Island, Honey Harbour, Ontario P0E 1E0, Canada.**

J. Raptor Res. 28(2):120–121

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UNUSUAL PARENTAL BEHAVIORS BY MALE NORTHERN GOSHAWKS

The parental role of male raptors during nesting is typically limited to providing food for their mates and young. It is uncommon for male raptors to participate directly in brood rearing, such as brooding or feeding nestlings (L.