Wilson Bull., 100(1), 1988, pp. 137–139

Seasonal predation of large prey by Merlins.—The diet of the Merlin (*Falco columbarius*) has been summarized as 80% birds, 15% insects, and 5% mammals (Brown and Amadon 1968). However, the type of prey can vary seasonally and with age and/or sex of the Merlin. For example, a preponderance of insects is common in the diet of immature birds in summer and fall (Jewett 1939, Lawrence 1949, Oliphant 1974, Dickson 1983), and many Merlins depend on insects during fall migration (Allen and Peterson 1936, Bond 1951, Johnson and Coble 1967). Among raptors, differences in diet between male and female are linked to sexual dimorphism (Snyder and Wiley 1976, Newton 1979). The size of Merlin prey can vary widely, but males tend to take smaller prey than females (Newton et al. 1984). In general, the primary prey of all Merlins is the most locally abundant bird species of less than 50 g (Cade 1982), and very few birds taken by Merlins are larger than 180 g. The Rock Dove (*Columba livia*) belongs in this group of larger prey, weighing between 180 and 370 g (Cramp and Simmons 1985), and has been recorded in field studies of Merlin food habits on only a few occasions (Fisher 1893, Dement'ev and Gladkov 1966, Newton et al. 1978, 1984, Lange 1985). This note describes observations of Richardson's Merlins (*F. c. richardsonii*) feeding on Rock Doves during a study of breeding and wintering Merlins in Saskatoon, Saskatchewan, Canada.

Prior to 1984, Oliphant observed Merlins on five occasions chasing Rock Doves in Saskatoon, all in late fall or early spring. Three of these Merlins were females, one a male, and the fifth of unknown sex. In early March of 1984, Warkentin observed two radio-tagged female Merlins (2- and 4-year-old birds) eating from dove carcasses. One of the Rock Doves was a road-kill, the other was frozen to a roof top and may not have been killed by the falcon. On 23 February 1986, Warkentin saw a first-year female Merlin eating a Rock Dove on the ground next to a building on the University of Saskatchewan campus in Saskatoon. Except for a 10-min period after she was inadvertently flushed from the carcass, the Merlin continued to eat, even when two Black-billed Magpies (*Pica pica*) approached within 30 cm and sat and called for several min. After nearly 2 h, the Merlin hopped off the carcass, seized it with her left foot and twice attempted to fly. She was unsuccessful in flying with the carcass, dropped it, and flew to a tree 10 m away where she preened for several minutes before moving to a perch several hundred m away. Examination of the carcass suggested no obvious cause of death aside from Merlin predation. The Rock Dove had a full crop of grain, and the remaining carcass weighed 300 g.

An immature male caught near Saskatoon on 12 November 1986 in a coop for homing pigeons had killed 12 birds inside the chamber over a 4-day period. On examination he was found to have a healed puncture wound just ventral to his right wing that appeared to impede his flying ability. A female Merlin of unknown age was observed eating a Rock Dove in Regina, Saskatchewan on 2 December 1985, and another first-year female was seen feeding on a recently killed dove in Saskatoon on 8 January 1987. It is not known if either of these females actually killed the doves or were simply scavenging them. Lange (1985) observed Merlin attempts on Rock Doves in fall and winter and a kill in December 1982, and Dement'ev and Gladkov (1966) described Rock Doves as Merlin prey during passage and winter. Also, Newton et al. (1978) discovered Rock Dove remains near nest sites in early spring.

Merlins associated with freshly killed Rock Doves (as opposed to the apparent scavenging by second- and fourth-year females reported here) tend to be first-year birds. We believe that, due to their lack of hunting experience and the greater likelihood of being unable to

meet energetic demands, first-year Merlins may be more likely to chase, and occasionally kill, larger prey. These results, combined with the absence of reports of Rock Dove predation by Merlins during the breeding season, suggest that such predation is more likely to occur outside the breeding season. We propose four possible explanations for this apparent tendency: (1) Merlins probably gain their experience with large prey during their first winter when they are relatively inexperienced, less effective hunters, and more likely to attack inappropriate prey. (2) Predation on Rock Doves is unlikely to occur during incubation and the early nestling stage because male Merlins who do most, if not all, of the hunting during this period are probably too small to kill Rock Doves under normal circumstances and certainly cannot carry them. (3) There appears to be little point in a female's killing a Rock Dove during the late nestling/postfledging period to feed her young. As demonstrated in the observations above, she would have difficulty carrying the carcass back to the nest due to its weight, and dismemberment of prey before transport to the nest has not been reported for Merlins. (4) Only when energetic demands are increased and other prey are less plentiful or more difficult to capture, and the potential benefits of such predation outweigh the costs due to the greater risk of injury involved in attempting to kill prey of equal or greater body size, is such predation likely to occur (i.e., during the winter period).

Mueller and Berger (1970) showed that adult Sharp-shinned Hawks (*Accipiter striatus*) were less likely to attack inappropriately large prey than juveniles during migration. They credit this ability to distinguish appropriate prey to experience, which fits the criteria we have outlined above. It would be interesting to see if this concept of the seasonality of larger prey, particularly among inexperienced birds, can be applied to raptors in general.

Acknowledgments.—We thank E. Haug and K. Wood for their reports of Merlins feeding on Rock Doves. P. C. James, J. C. Bednarz, and J. B. Buchanan reviewed earlier versions of this manuscript. The study was funded by the Natural Sciences and Engineering Research Council of Canada, Canadian Wildlife Service University Research Support Fund, Frank M. Chapman Fund, and Canadian Plains Research Centre. This paper was written while the senior author held a University of Saskatchewan graduate scholarship.

LITERATURE CITED

ALLEN, R. P. AND R. T. PETERSON. 1936. The hawk migrations at Cape May Point, New Jersey. Auk 53:393–404.

BOND, R. M. 1951. Pigeon Hawk catching dragonflies. Condor 53:256.

BROWN, L. AND D. AMADON. 1968. Eagles, hawks and falcons of the world. McGraw-Hill, New York, New York.

CADE, T. J. 1982. The falcons of the world. Cornell Univ. Press, Ithaca, New York.

CRAMP, S. AND K. E. L. SIMMONS. 1985. Handbook of the birds of Europe, the Middle East and North Africa. Vol. 4. Terns to woodpeckers. Oxford Univ. Press, London.

DEMENT'EV, G. P. AND N. A. GLADKOV. 1966. Birds of the Soviet Union. Vol. 1. A. Birron and Z. S. Cole (trans.). Israel Program for Scientific Translation Ltd., Jerusalem.

DICKSON, R. C. 1983. Fledgling Merlins catching moths. Scottish Birds 12:194.

FISHER, A. K. 1893. Hawks and owls of the United States in their relation to agriculture. U.S. Dept. Agric. Bull. 3. Government Printing Office, Washington, D.C.

JEWETT, S. G. 1939. Additional notes on the Black Pigeon Hawk. Condor 41:84–85.

JOHNSON, W. J. AND J. A. COBLE. 1967. Notes on the food habits of Pigeon Hawks. Jack-Pine Warbler 45:97–98.

LANGE, A. 1985. Merlin preys on pigeon. Alberta Nat. 15:134.

LAWRENCE, L. DE K. 1949. Notes on nesting Pigeon Hawks at Pimisi Bay, Ontario. Wilson Bull. 61:15–25.

MUELLER, H. C. AND D. D. BERGER. 1970. Prey preferences in the Sharp-shinned Hawk: the roles of sex, experience and motivation. Auk 87:452–457.

NEWTON, I. 1979. Population ecology of raptors. T. & A. D. Poyser, Berkhamsted, U.K.

———, E. R. MEEK, AND B. LITTLE. 1978. Breeding ecology of the Merlin in Northumberland. Brit. Birds 71:376–398.

———, ———, AND ———. 1984. Breeding season foods of Merlins *Falco columbarius* in Northumbria. Bird Study 31:49–56.

OLIPHANT, L. W. 1974. Merlins—the Saskatoon falcons. Blue Jay 32:140–147.

SNYDER, N. F. R. AND J. W. WILEY. 1976. Sexual size dimorphism in hawks and owls of North America. Ornithol. Monogr. 20:1–96.

IAN G. WARKENTIN, *Dept. Biology, Univ. Saskatchewan, Saskatoon, Saskatchewan, S7N 0W0, Canada,* AND LYNN W. OLIPHANT, *Dept. Veterinary Anatomy, Univ. Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada.* *Received 16 June 1987, accepted 16 Sept. 1987.*

Wilson Bull., 100(1), 1988, p. 139

Opportunistic foraging of Ruddy Turnstone on mowed lawn.—At 10:20 h on 12 January 1986 at Hog Island, Mount Pleasant, Charleston County, South Carolina, I watched a Ruddy Turnstone (*Arenaria interpres*) forage on a mowed lawn that adjoins the shoulder of a paved service road. The site is about 70 m from a salt marsh, but separated from it by a 50-m-wide strip of coastal scrub (maximum height, 10 m), that forms an abrupt edge at the lawn. The nearest beach or mudflat habitat is about 150 m away. The sky was clear, the wind was less than 10 km/h, and the temperature was 53°F.

The lawn (grass depth, 2–3 cm) had been mowed recently, and the mowing machine had ejected the cut grass in congealed tufts. These had dried intact to form dried clumps of hay. During the 5-min period that I watched the bird, it turned four of these clumps. The bird turned them by inserting its beak and then entire head under the clump, then running forward until the clump had flipped over. The bird then directed its attention to the newly exposed area. I turned five clumps and looked under them, but found no arthropods.

The turnstone had probably engaged in this foraging activity for some time, as I found 43 freshly turned clumps in a 6 × 15-m area surrounding the site where I first saw the bird. The average depth of ten clumps was 6.2 ± 1.7 [SD] cm; length, 22.8 ± 12.0 cm; width, 16.9 ± 5.5 cm. The average weight of four clumps was 39.3 g (range = 20–57 g).

Thirteen Killdeers (*Charadrius vociferus*), the closest of which was about 15 m from the turnstone, also foraged on the lawn. When the Killdeers gave alarm calls, the turnstone stopped feeding and assumed an alert posture. At that time a Sharp-shinned Hawk (*Accipiter striatus*) flew from the scrub edge, about 12 m from the turnstone, and pursued it. The turnstone joined the Killdeers in the air, and flew away from the hawk.

Although Ruddy Turnstones have been reported using unusual foraging sites, including boats, roofs of shacks, and mangrove roots (Stout, The Shorebirds of North America, Viking Press, New York, 1967), I know of no instances where they have been seen turning clumps of grass on mowed lawns.—W. POST, *The Charleston Museum, 360 Meeting Street, Charleston, South Carolina 29403.* *Received 18 Feb. 1987, accepted 22 Sept. 1987.*