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FOOD HABITS OF A HARLAN'S HAWK AND LONG-EARED OWLS IN KANSAS

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During March, 1988, 15 regurgitated pellets from a Harlan's Hawk (*Buteo jamaicensis harlani*) were collected at a roost site in Manhattan, Kansas and 42 Long-eared Owl (*Asio otus*) pellets were collected from a roost site near Milford Reservoir in Geary County, Kansas. The objective of this paper is to assess the food habits of these two species of raptors by analyzing the contents of these pellets.

The Harlan's Hawk roosted on one of several telephone poles in a rank grass area which was periodically mowed. The area surrounding this site is primarily residential. The hawk was often observed leaving the roost site in the morning (presumably to hunt on the outskirts of town) and returning in the late afternoon or evening. The Long-eared Owl site was a grove of Austrian pines (*Pinus nigra*) surrounded by native tallgrass prairie. At least three Long-eared Owls were present in this group of pines. Both the hawk and the owls were observed using these areas throughout the winter of 1987-1988.

The contents of each pellet were identified by examining them under a dissecting microscope. Characteristics of the teeth, skulls, and hair/feathers were used to identify the prey species. The prey items making up the pellets were tallied by number of prey individuals, frequency of occurrence in the pellets, and by percent of total pellet weight.

Results

Harlan's Hawk

Except for bird remains found in one of the pellets, all of the prey species were mammals. These mammal remains accounted for 98% of the total pellet weight. Remains of 11 prairie voles (*Microtus orchrogaster*) were found in 10 (67%) of the pellets. This species accounted for 45% of the total weight of the pellets. Eastern cottontails (*Sylvilagus floridanus*) remains were found in 8 (53%) of the pellets and contributed 29% of the total pellet weight. The number of individual rabbits that this represented was undetermined. The remains of 5 cotton rats (*Signodon hispidus*) occurred in 5 pellets (33%), accounting for 14% of total pellet weight. Four Elliot's short-tailed shrews (*Blarina hylophaga*) occurred in 4 pellets (27%), constituting 7% of total pellet weight. A western harvest mouse (*Reithrodontomys megalotis*) and a House Sparrow (*Passer domesticus*) were also found, contributing 3% and 2% of pellet weight respectively.

Long-eared Owls

Small mammals made up 100% of the Long-eared Owl pellet contents. As was the case with the Harlan's Hawk, prairie voles constituted the greatest portion of the pellet contents. Of the 59 prey individuals found in the pellets 25 (42%) were prairie voles. They were found in 48% of the pellets and made up 46% of the total pellet weight. The remains of 15 southern bog lemmings (*Synaptomys cooperi*) were found in 15 pellets (36%), accounting for 27% of total pellet weight. Ten white-footed mice (*Peromyscus leucopus*) were found in 8 pellets (19%), constituting 14% of total pellet weight. The remains of 8 western harvest mice occurred in 7 pellets (17%), accounting for 10% of total pellet weight. The remains of a short-tailed shrew accounted for the remaining 3% of total pellet weight.

Discussion and Conclusions

Of the seven Red-tailed Hawk subspecies recognized by American Ornithologists'

Union (1973), *harlani* is the most strongly differentiated, and one of the least well known (Mindell 1983). The Harlan's Hawk was considered to be a distinct species until 1973 when it was reassigned subspecific status (AOU 1973). Mindell (1983) provided additional evidence that *harlani* is a valid subspecies of Red-tailed Hawk. We know of only one reference to the food habits of *harlani*. Swarth (1926, cited in Sprunt 1955) identified the contents of four Harlan's Hawk stomachs which contained unspecified amounts of rabbits, ground squirrels and chipmunks. However, Red-tailed Hawk and Long-eared Owl food habits have been widely reported in the literature (May 1935, Bent 1937, Errington and Breckenridge 1936, Mendall 1944, Fisher 1974, Marti 1976, Marks 1983).

Red-tailed Hawks feed on a wide variety of prey, ranging from earthworms to Cattle Egrets (*Bubulcus ibis*) (Courser 1971). Errington and Breckenridge (1938) concluded that what a Red-tailed Hawk eats " . . . is largely a matter of what is to be had without too much trouble; what is conspicuous enough to be readily seen by a hungry bird; what is within the bird's power to capture and handle; or what is readily available in the form of a carcass . . ." Typically, their diet consists primarily of mice and voles with lesser amounts of larger mammals (e.g., tree squirrels, rabbits, mustelids, muskrats), birds, and invertebrates. Occasionally they feed on reptiles, amphibians and fish. They also eat carrion, including the remains of other Red-tailed Hawks (Mumford and Keller 1984). Because of this unrestricted diet, Craighead and Craighead (1956) classified the Red-tailed Hawk as a "general" feeder.

Unlike the Red-tailed Hawk, Craighead and Craighead (1956) classified the Long-eared Owl as a "restrictive" feeder. Long-eared Owls feed almost exclusively on small, nocturnal mammals that live in open lands, thereby resulting in a more limited diet than other sympatric hawks and owls (Marti 1976). Marks (1983) analyzed 4,208 prey items from Long-eared Owls in southwestern Idaho and found that mammals accounted for more than 98% of their diet, with five genera of small mammals accounting for 94% of all prey items. Marti (1976) reviewed the Long-eared Owl food habitats literature and reported that mammals accounted for 98.2% of 23,888 prey surveyed from North American studies, with *Microtus* being the most common prey (53.7% of all prey items in North American and European studies).

In interpreting the results of this study, it is important to recognize that they are based on a one-time collection of pellets and that the diets of both of these raptors in Kansas may change seasonally and annually as the abundance of prey changes. However, the results of the Harlan's Hawk pellet analysis which showed a preponderance of small mammals, along with rabbits and a House Sparrow in the diet is consistent with the findings of other studies and the Craigheads' classification. Likewise, that the 42 Long-eared Owl pellets analyzed in this study consisted entirely of small mammals, with *Microtus* being the most common prey species, also is consistent with the literature.

Literature Cited

American Ornithologists' Union. 1973. Thirty-second supplement to the American Ornithologists' Union checklist of North American birds. Auk 90:411-419.

Bent, A. C. 1937. Life histories of North American birds of prey, Part 1. U.S. Natl. Mus. Bull. 170. 482pp.

Courser, W. D. 1971. Red-tailed Hawk preys on Cattle Egrets. Auk 88:669-70.

Craighead, J. J. and F. C. Craighead, Jr. 1969. Hawks, owls and wildlife. Dover Publ. NY. 443pp.

Fisher, A. K. 1974. The hawks and owls of the United States in their relation to agriculture. Arno Press, Inc. NY 201pp.

Errington, P. L. and W. J. Breckenridge. 1938. Food habits of *Buteo* hawks in north-central United States. Wilson Bull. 50:113-121.

Marks, J. S. 1984. Feeding ecology of breeding Long-eared Owls in southwestern Idaho. Can. J. Zool. 62:1528-1533.

Marti, C. D. 1976. A review of prey selection by the Long-eared Owl. Condor 78:331-336.

May, R. B. 1935. The hawks of North America — their identification and feeding habits. National Audubon Society 140pp.

Mendall, H. L. 1944. Food of hawks and owls in Maine. J. Wildl. Manage. 8:199-208.

Mindell, D. P. 1983. Harlan's Hawk: a valid subspecies. Auk 100:161-169.
Mumford, R. E. and C. E. Keller. 1984. The birds of Indiana. Indiana Univ. Press.
Sprunt, A. Jr. 1955. North American birds of prey. Harper and Brothers, Inc. NY.
Swarth, H. S. 1926. Report on a collection of birds. Univ. of California Zool. Publ. 30.
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Barrow's Goldeneye at Tuttle Creek Lake. — On the morning of 4 January 1991 a pair of Barrow's Goldeneyes (*Bucephala islandica*) were found swimming and feeding with a mixed flock of Common Goldeneyes (*B. clangula*), Mallards (*Anas platyrhynchos*), and Hooded Mergansers (*Lophodytes cuculatus*) at the outlet tubes below Tuttle Creek dam (Pottawatomie County) north of Manhattan, KS. My initial identification was subsequently confirmed by Paul Wiedhaas and Jim Franz of the Tuttle Creek Ranger's office (U.S. Army Corps of Engineers). Other observers that day included Chris Smith, John Zimmerman, and Ted Cable, Cable finding an additional female Barrow's Goldeneye in the flock.

Figure 1. Male Barrow's Goldeneye (on the left) and male Common Goldeneye at Tuttle Creek Lake, 4 January 1991.

Barrow's Goldeneyes are rarely seen in the Great Plains; most winter along the Pacific coast south to San Francisco Bay and on the Atlantic coast south to Long Island (Farrand. 1983. The Audubon Society Master Guide to Birding, Vol. 1, Alfred A. Knopf, Inc.). Other winter records from the interior are from the Montana-Wyoming border, southern Idaho, and northern Nevada and Utah (Root. 1988. Atlas of Wintering North American Birds: An Analysis of Christmas Count Data. Univ. Chicago Press). Yet the species is so rarely recorded in the middle of the continent that Bent (1962. Life Histories of North American Wild Fowl, Prt. 2. Dover Publ.) comments, "All records east of the Rocky Mountain region and south of New England must be regarded as casual. Most of these records are based on females, incorrectly identified."

Although there are no specimens of this species from Kansas, three sight records from Scott, Stafford, and Trego counties are documented by Thompson and Ely (1989. Birds in Kansas, Vol. 1, Univ. Press of Kansas). Additionally, Lloyd Moore, Mick McHugh, and Mel Cooksey saw a male Barrow's Goldeneye accompanied by several Common Goldeneyes at Melvern Reservoir in February, 1988 (Selman. 1988. Horned

Lark 15(2):7). Tom Shane saw a single bird on the Cedar Bluff winter bird count on 8 January 1989 (Zimmerman. 1989. Kans. Ornithol. Soc. Bull. 40:1-21). Dan Gish reported an immature male on the Topeka sewage lagoons in April 1989 (Seltman. 1989. Horned Lark. 17(3):4). This latter bird remained in the area for about a week and was seen by many experienced observers, but apparently was never photographed.

The Barrow's Goldeneyes at the Tuttle Creek outlet were photographed during the morning and afternoon of 4 January 1991; these photographs are the first documentation of this species in Kansas. The important field characteristics of the male are apparent in Figure 1, in which the Barrow's Goldeneye on the left can be compared to a male Common Goldeneye on the right. The white, crescent-shaped cheek patch, greater extent of black along the flank, and the white spots above the black wing are characteristic of the Barrow's Goldeneye male. In addition, note that the forehead of the Barrow's Goldeneye bulges forward, while the forehead of the Common Goldeneye slopes more gently toward the base of the bill. The two females had mostly dark bills with a lighter, yellowish tip, similar to that of the female Common Goldeneye. But when compared to the latter, the Barrow's females had less white in the wing and a more vertical forehead profile. The dark bill of the females indicate that these birds are probably from eastern North America, as females of the western population have mostly yellowish bills with a dark tip (Madge, S. and H. Burn. 1988. Waterfowl: An Identification Guide. Houghton-Mifflin Co.).

Although the Barrow's Goldeneye is not common in the interior of the continent, the accumulated sight records and photographs demonstrate that this species can be found in winter and spring in Kansas. The possibility exists that large winter flocks of Common Goldeneye, routinely found in open water throughout the state, might contain individual Barrow's Goldeneyes. Thorough inspection of these flocks could provide additional records of this species in Kansas.

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