

similar to that found by Richards (Condor 72:476, 1970) so that the duck egg remained with those of the kestrel without any attention required on the part of the kestrel. I numbered all eggs with pencil.

On 3 May the bird was incubating 4 kestrel eggs and the same duck egg. The pencil markings had been rubbed off somewhat, presumably due to the incubating bird. There was no trace of the fifth kestrel egg. The positions of all remaining kestrel eggs had been changed so that each egg had been moved at least 90 degrees. The duck egg, however, had been moved only about 45 degrees. It now was situated on the outside of the clutch, but it still remained with the kestrel eggs in the cup of shavings without rolling out.

Apparently the kestrel eggs were near their hatching date because my next inspection on 24 May revealed 3 young kestrels with well-developed plumage including brownish-red primaries and rectrices. Many regurgitated pellets were present but the Wood Duck egg was gone.

The other instance of kestrel occupation occurred in a Wood Duck box with 2 compartments. During an inspection on 24 April I was repeatedly harassed by a flying kestrel (sex unknown) while observing a kestrel egg in one compartment. The kestrel was sitting in the compartment on 8 May. It continued to sit on the egg throughout my inspection and note-taking. In the adjoining compartment, I found 33 Wood Duck eggs abandoned and removed them to allow renesting by other ducks. The kestrel sat on at least one duck egg, again atop a 10 cm pile of shavings. Since the bird was sitting on the clutch, the positions of any other eggs were not noted. The duck egg, however, was located partly beneath the bird's right shoulder. Approximately half of the egg's surface was exposed. I do not know if the shavings formed a cup.

On 20 June I found one young kestrel about 3 weeks of age in the box along with regurgitated pellets and 2 duck eggs. One of the duck eggs was still viable. The other kestrel egg was missing. The young kestrel was gone by 2 July.

A similar report, published by Bent (U.S. Natl. Mus., Bull. 170, 1938), involved a kestrel sitting on an egg of a Common Golden-eye (*Bucephala clangula*).—STEPHEN J. ZIPKO, Dept. of Zoology, Rutgers Univ., Newark, NJ 07102. Accepted 30 Jan. 1975.

Wildlife occupying potential Wood Duck tree nest sites.—Natural cavities suitable as Wood Duck (*Aix sponsa*) nest sites are often judged scarce and normal management is to erect nest boxes to alleviate the shortage. This procedure is often quite effective (McLaughlin and Grice, Trans. North Am. Wildl. Conf. 17:242–259, 1952; Bellrose et al., J. Wildl. Manage. 28:661–676, 1964). Wildlife other than Wood Ducks often use the nest boxes and natural cavities so that many are unavailable for Wood Duck use. Several investigators have listed nest box occupants (Brown and Bellrose, J. Wildl. Manage. 7:298–306, 1943; Frank, J. Wildl. Manage. 12:128–136, 1948; McLauhlin and Grice, op. cit.; Klein, N.Y. Fish & Game J. 2:68–83, 1955), but few have studied the occupants of natural Wood Duck nest sites (Bellrose et al., op. cit.; Wier, Wood Duck Manage. and Res. Symp. p 91–112, Wildl. Manage. Inst., Wash. D.C., 1964). This note summarizes data on this subject which were gathered during a Wood Duck production habitat inventory (Boyer, M.S. thesis, Central Michigan Univ., 1974).

The area of study was the Shiawassee National Wildlife Refuge in east-central Michigan. Within the Refuge, the Tittabawassee, Cass, Shiawassee, and Flint rivers, plus several smaller creeks converge to form the headwaters of the Saginaw River. The Saginaw Valley is characteristically flat and is subject to extensive spring flooding. The

TABLE 1
WILDLIFE USING POTENTIAL WOOD DUCK NEST SITES IN NATURAL CAVITIES AND NEST
BOXES ON SHIAWASSEE NATIONAL WILDLIFE REFUGE IN 1972 AND 1973

| Species | Cavities | | Boxes | | Total | |
|--|----------|-----|-------|-----|-------|-----|
| | No. | % | No. | % | No. | % |
| Wood Duck (<i>Aix sponsa</i>) | 4 | 5 | 6 | 11 | 10 | 7 |
| Hooded Merganser (<i>Lophodytes cucullatus</i>) | 1 | 1 | 0 | 0 | 1 | 1 |
| Downy Woodpecker (<i>Dendrocopos pubescens</i>) | 1 | 1 | 0 | 0 | 1 | 1 |
| Tree Swallow (<i>Iridoprocne bicolor</i>) | 0 | 0 | 3 | 5 | 3 | 2 |
| Starling (<i>Sturnus vulgaris</i>) | 2 | 2 | 4 | 8 | 6 | 3 |
| Red-winged Blackbird (<i>Agelaius phoeniceus</i>) | 0 | 0 | 1 | 2 | 1 | 1 |
| Raccoon (<i>Procyon lotor</i>) | 12 | 13 | 1 | 2 | 13 | 9 |
| Squirrel (<i>Sciurus niger</i> or <i>Tamiasciurus hudsonicus</i>) | 14 | 16 | 0 | 0 | 14 | 10 |
| Deer mouse (<i>Peromyscus</i> sp.) | 0 | 0 | 1 | 2 | 1 | 1 |
| Bees (<i>Apis</i> spp.) | 0 | 0 | 3 | 5 | 3 | 2 |
| Unoccupied | 52 | 62 | 35 | 65 | 91 | 63 |
| Total | 90 | 100 | 54 | 100 | 144 | 100 |

Refuge's 19,500 ha included 39% forest, 44% croplands, and 15% marsh and open water. Red maple (*Acer rubrum*), eastern cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanicus*), and bitternut hickory (*Carya cordiformis*) were the most abundant trees.

I searched forest stands for trees with openings of 8 cm or greater. These were subsequently climbed and cavity dimensions, inside and outside, were recorded so that each cavity could be rated as to its value as a potential Wood Duck nest site. Fifty-five nest boxes were also checked for use. Animal sign in, outside, and near the cavity or box was used to determine use. A summary of wildlife using the potential natural nest sites and boxes is presented in Table 1.

Forest evaluation data showed that 48.1% of all trees on the Refuge were red maple. Cottonwood, green ash, and bitternut hickory made up 9.9%, 9.2%, and 6.0%, respectively. Suitable nest sites were found predominantly in red maples (62 of the 90 located). The remaining 28 sites were scattered among 8 species. Most of the natural nest sites (65%) and boxes (62%) were unoccupied, suggesting that competition for potential Wood Duck nest sites was low. All nest sites were close (1.6 km or less) to adequate Wood Duck brood rearing habitat, so that all sites were available for use by Wood Ducks.

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