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Wood Duck (*Aix sponsa*) Incubates on an Open Stick Nest

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A Wood Duck hen nested on an open stick and leaf nest in a residential yard on the shoreline of a Mississippi River backwater in southeastern Minnesota in May/June 2009. The hen occupied the nest for approximately 35 days, exhibiting normal incubation behavior and defending the nest against a potential avian predator. Several natural tree cavities and nest boxes were available in the immediate vicinity, but were not chosen for nesting. No hatchlings were observed and nest inaccessibility prevented confirmation of either nesting success or failure.

The Wood Duck (*Aix sponsa*) is one of the most important species of waterfowl in eastern North America, both in terms of number of breeding birds and number of birds harvested (Bellrose 1981, Bellrose and Holm 1994). They normally nest in natural tree cavities or artificial nest boxes (Bellrose and Holm 1994), but in rare cases they have been reported nesting in the open on the ground (Zipko and Kennington 1977, Mason and Dusi 1983), on a muskrat house (McIlquham and Bacon 1988), and in open leaf and stick nests (Hall 1969, Stout and Rapp 1993). Open nesting in trees has been documented only twice, with varying success (Hall 1969, Stout and Rapp 1993). We observed an open nesting attempt in Minnesota during the 2009 nesting season and recorded behaviors of the nesting hen over a 35-day period.

Study Site and Nest Description

The open Wood Duck nest was located in a green ash tree within 25 m of the northwestern shoreline of Weaver Bottoms (44° 15' 06" N, 91° 55' 13" W), a 1,600-hectare backwater marsh in Pool 5 of the Upper Mississippi River of Wabasha County in southeastern Minnesota. The marsh was the site of a large-scale wetlands habitat restoration project in 1987 by the U.S. Army Corps of Engineers. The nest tree was located at the top of a 13-meter-high steep, wooded, sandhill overlooking the water, in the side yard of a residence that was part of a small rural subdivision (18 homes along the shoreline, 11 more homes inland). The subdivision lies adjacent to Weaver Dunes Scientific and Natural Area, a 240-hectare complex of sand prairie, savanna, and woodland habitats southeast of Kellogg.

The nest tree (~20 m high, 45 cm DBH) was approximately 40 m from an established residence and 25 m from a new home that was under construction during 2009. Other trees on the wooded hillside included mostly black oak and green ash, with lesser numbers of silver maple, hackberry, river birch, and American elm. Many red (or Norway) pine, planted in 1955, were located in the residential yards. Numerous tree cavities were present in the mature oaks along the wooded hillside, and one cavity in particular had contained a Wood Duck nest for several years in succession (until the tree was felled by a windstorm in 2008).

Numerous nest boxes were located along the shoreline in the vicinity of the nest tree. Two nest boxes were within 80 m of the nest tree, and several others were attached to trees on the hillside or mounted on poles in the shallow marsh slightly further away. Property owners reported use of these boxes by Wood Ducks in recent years.

The open Wood Duck nest was located approximately 10–11 m high in the tree, at a point where two large branches joined the northernmost portion of a forked trunk (Fig-

Figure 1. Green ash tree where a Wood Duck hen nested in an open stick and leaf nest during May/June 2009 in Wabasha County. Arrow indicates nest location. Photo by Neal Mundahl.

ure 1). The nest was comprised largely of ash twigs and dried ash and oak leaves, and resembled an old squirrel nest (Figure 2). Although not observed directly, the bowl of the nest apparently was filled with down, as down feathers often drifted downward from the nest as the hen flew off. Most observations of the nest and hen were made with a spotting scope from the deck or yard of the adjacent residence.

Nesting Behavior

The Wood Duck hen was first sighted on the open nest during the week of 15–22 May 2009 by the homeowner. She was observed many times over the next five weeks by the homeowner and others, usually flushing from the nest when the homeowner walked nearby in the yard. The homeowner originally assumed that the hen was perching in the tree, but using some nearby tree cavity as its nesting site. During the first week of June, the homeowner realized that the hen always flushed off the old squirrel nest, and that the bird was actually nesting at that location.

During the morning of 7 June, we observed the bird leaving the nest at 9:25 A.M., returning briefly at 10:05 A.M. and departing again. At 10:43, a Common Grackle (*Quiscalus quiscula*) landed on a branch a meter or more above the vacant nest. The Wood Duck hen immediately flew in from somewhere nearby, chased the grackle away, settled onto the nest, and remained there as long as the observers watched (observers departed at 10:50 A.M.). The hen was photographed on the nest after chasing the grackle (Figure 2).

The homeowner observed the hen either on the nest or arriving/departing regularly through 22 June. She spent the majority of the time on the nest between mid-May and 22 June. She sometimes flushed off the nest in early morning (~6:30 A.M.) when the homeowner walked around the yard. When returning to the nest, she would rarely, if ever, fly directly to it. She would always arrive from over the water and land on a branch in the large oak halfway down the hill, remain there for a moment and observe and then finally fly up to the nest. Her nest attentiveness declined noticeably over the last several days (June 19–22). After being off the nest for at least three hours, she was observed landing on the nest at ~9:00 P.M. on 22 June. She was never seen on or near the nest again. No drake Wood Duck was ever observed with the hen or in the vicinity of the open nest during the entire nesting period.

The homeowner did not observe the Wood Duck hen or any hatchlings swimming in Weaver Bottoms in the vicinity of the property after June 22. The height of the nest and the angle of the trunk and branches made it impossible to safely access the nest via ladder to inspect it closely. Consequently, we were unable to determine either the number of eggs in the nest or whether they hatched.

Discussion

This is only the third reported attempt by a Wood Duck to nest on an open stick

Figure 2. Close-up of Wood Duck hen on the open stick nest, 10:45 A.M., 7 June 2009, Wabasha County. Photo by Dave Hoffman.

and leaf nest in a tree (Hall 1969, Stout and Rapp 1993), and the first in close proximity to human habitation. Although this open nesting strategy may be much more common in Wood Ducks than documented (Stout and Rapp 1993), it is rarely described and a Wood Duck hen has not been photographed on an open nest previous to this report.

The Wood Duck hen's behavior during nesting was typical of her cavity-nesting conspecifics. She remained on or near the nest for five weeks, demonstrating a high degree of nest attentiveness during the normal incubation period (Stewart 1962, Hepp et al. 2006). She left the nest briefly at irregular times each day, presumably to feed (Bellrose and Holm 1994, Schaefer et al. 2003). She defended the nest and its contents from a po-

tential avian predator in a predictable fashion (Montgomerie and Weatherhead 1988, Caro 2005).

Success of this nesting attempt could neither be refuted nor affirmed because of lack of safe access to the nest. Although the hen incubated normally and for the typical duration (Stewart 1962, Hepp et al. 2006), the decline in nest attentiveness at the end of the period was atypical for a normal cavity-nesting Wood Duck (Stewart 1962), suggesting nest failure. No sightings of hatchlings in the days following hen abandonment of the may also suggest nest failure. However, without direct examination of the nest, nesting failure could not be definitely confirmed.

Previous open nesting attempts by Wood Ducks have produced mixed results. Hall (1969) reported "numerous Wood Duck shell fragments and the presence of a newborn duckling in the nest" at the end of incubation, which could imply either a successful hatch for most eggs or nest destruction by a predator. In contrast, Stout and Rapp (1993) attributed a complete nest failure (six undeveloped eggs, four partially pipped eggs containing dead embryos) to a combination of a late snowstorm and late-term nest abandonment by the hen.

Open nesting by Wood Ducks would seem to be a non-preferred strategy only undertaken as a last resort. Eggs and hens incubating in open nests would be at greater risk from inclement weather (Stout and Rapp 1993) and nest predators (Montgomerie and Weatherhead 1988, Caro 2005), suggesting that selection should act against this strategy within populations. Intense competition for limited cavity nest sites may force some birds to seek alternative nest locations. However, in all three instances where Wood Ducks have nested on open stick nests in trees, unused natural cavities in trees and/or nest boxes were readily available to the birds (Hall 1969, Stout and Rapp 1993, present study). Why Wood Ducks would choose to nest in the open remains unclear, although high densities of cavity-dwelling mammals (e.g., squirrels and raccoons) may be a factor in this choice (Stout and Rapp 1993).

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Literature Cited

Bellrose, Frank C. 1981. Ducks, geese and swans of North America. Stackpole Books, Harrisburg, PA.

Bellrose, Frank C. and Daniel J. Holm. 1994. Ecology and management of the Wood Duck. Stackpole Books, Harrisburg, PA.

Caro, Tim M. 2005. Antipredator defenses in birds and mammals. University of Chicago Press, Chicago, IL.

Hall, Michael S. 1969. Unusual site for a Wood Duck nest. *New York Fish and Game Journal* 16:127.

Hepp, Gary R., Robert A. Kennamer and Maribeth H. Johnson. 2006. Maternal effects in Wood Ducks: incubation temperature influences incubation period and neonate phenotype. *Functional Ecology* 20:307–314.

Mason, Phillip J. and Julian L. Dusi. 1983. A ground nesting Wood Duck. *Auk* 100:506.

McIlquham, Carl J. and Bruce R. Bacon. 1988. Wood Duck nest on a muskrat house. *Journal of Field Ornithology* 60:84–85.

Montgomerie, Robert D. and Patrick J. Weatherhead. 1988. Risks and rewards of nest defence by parent birds. *The Quarterly Review of Biology* 63:167–187.

Schaefer, Joseph M., Jennifer Cohen and Mark E. Hostetler. 2003. The Wood Duck. University of Florida, IFAS Extension Document WEC 168. http://edis.ifas.ufl.edu/uw180 (Accessed 03/01/11).

Stewart, Paul A. 1962. Nesting attentiveness and incubation period of a Wood Duck. *Bird-Banding* 33:85–89.

Stout, William E. and Joseph M. Rapp. 1993. A Wood Duck nesting attempt in an open stick nest. *The Passenger Pigeon* 55:365–367.

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