previously been observed on a nest, even though complete nest searches of the refuge have been made annually since 1963. Apparently, this bird was not a productive member of the flock, although something stimulated her to go through all the motions in 1970. She was not seen again after the 1970 nesting season.

Similar behavior was recently reported for a Wood Duck (*Aix sponsa*) in Massachusetts (Heusmann and Pekkala, Wilson Bull. 88:148–149, 1976). In this case, the hen tended an eggless nest for 3 successive breeding seasons. In the third year, she was provided with a clutch that was successfully incubated and hatched. Later evidence indicated at least partial brood survival.

While these 2 cases may represent nothing more than aberrant behavior, they do raise questions about the breeding cycle of birds. Parasitic nesting demonstrates the ability of some species to biologically complete the breeding cycle even though it is not behaviorally completed. These 2 waterfowl cases suggest that there may be secondary stimuli that can produce a behavioral completion of the breeding cycle even though a biological completion is not possible.—CONRAD A. FJETLAND, *U.S. Fish & Wildlife Service, P.O. Box 250, Pierre, SD 57501.* *Accepted 28 July 1977.*

Wilson Bull., 90(3), 1978, pp. 457–458

Nesting success and nest site selection of Red-winged Blackbirds in a freshwater swamp.—The ability of the Red-winged Blackbird (*Agelaius phoeniceus*) to nest in diverse habitats and different species of vegetation has been noted by Campbell (Wilson Bull. 60:244, 1948), Beer and Tibbitts (Flicker 22:61–77, 1950), Case and Hewitt (Living Bird 2:7–20, 1963), Meanley and Webb (Chesapeake Sci. 4:90–100, 1963), and Stowers et al. (Wilson Bull. 80:320–324, 1968). The selection of nest sites by Red-wings is presumed to be an indication of a site's greater potential for nesting success. Our study was conducted to determine if Red-winged Blackbirds in a freshwater swamp exhibited any preference for nesting substrate and to determine if the location of the nest within the vegetation had any effect on the success of a nesting attempt.

From May to July 1975, an area receiving little human use was searched in Miller's Lake, Evangeline Parish, Louisiana for Red-winged Blackbird nests. The study area consisted primarily of open, common buttonbush (*Cephalanthus occidentalis*) and Carolina ash (*Fraxinus caroliniana*) swamps.

The 136 nests found were each marked and subsequently examined for the presence of eggs and young. If a nest examined did not contain young, it was revisited at least once after a 1-week interval.

The supporting vegetation was noted and at 100 randomly selected nests, measurements were taken of the height of vegetation and the distances of the nest from the ground, water, and top of the supporting vegetation. A Student's t-test was used to test if the distance of the nest from the water and from the top of the supporting vegetation differed between successful (young present) and unsuccessful nests.

The vegetation substrate of Red-winged Blackbird nests was determined for the 136 nests. Because nests were located no further than 2 m from the edge of any supporting vegetation, the amount of edge of each type of potential supporting vegetation was measured and the edge frequency composition was compared, using a Chi-square test, to the frequency composition of nest substrate species present.

Nesting sites.—Of the 100 randomly selected nests located in common buttonbush, 81 did not contain young. These nests averaged 1.26 m above the water and 0.49 m from the

top of the supporting vegetation. The 19 successful nests averaged 0.97 m above the water and 0.51 m below the top of the supporting vegetation. Successful nests were significantly lower than unsuccessful nests ($t = 2.40$, $p < 0.05$), but no differences were found in the distances from the top of the supporting vegetation ($t = 0.28$, $P > 0.05$).

These differences in success at different nesting heights are contrary to the findings of Meanley and Webb (1963) who studied the nesting of Red-winged Blackbirds in the tidal marshes of Maryland and found that nest success increased with height above ground or water: 45% for <0.6 m, 55% for 0.6–1.2 m, and 62% for >1.2 m. They attributed the reduced success rate of lower nests to easier accessibility by predators.

In our study, poor nest success is attributed to abandonment of nests after disturbance, avian predation, or weather damage. Higher nest success in the lower vegetation might be due to the relative lack of ground-dwelling mammalian and reptilian predators and to the increased stem density of the lower vegetation. The increased stem density could provide better concealment from avian predators and protection from weather.

Nesting preference.—In the study area, the relative abundance of potential nesting substrate species (expressed as amount of available edge) was common buttonbush, 11.2 km; southern wild rice (*Zizaniopsis miliacea*), 3.4 km; black willow (*Salix nigra*), 3.3 km; Carolina ash, 1.8 km; water elm (*Planera aquatica*), 0.4 km; water tupelo (*Nyssa aquatica*), 0.2 km; and red maple (*Acer rubrum*), 0.1 km. Nests were found in common buttonbush (131), southern wild rice (3), and black willow (2). A very highly significant ($\chi^2 = 131.51$, $P < 0.001$) preference was found for Red-winged Blackbirds nesting in common buttonbush.

Common buttonbush was a more important Red-winged Blackbird nesting substrate species than southern wild rice because the basic woody nest-supporting structure of common buttonbush was present when the birds started nesting and southern wild rice was too short to support nests. Common buttonbush also had a shrubbier form, lower height, and provided more concealment to nests than other woody species present.

There were insufficient nesting attempts in other species of woody vegetation to determine if differences in nesting success existed between them and common buttonbush. We believe that the almost exclusive selection of common buttonbush as a nesting substrate indicates that it provides the best nesting conditions in this swamp habitat.—BRENT ORTEGO AND ROBERT B. HAMILTON, *School of Forestry and Wildlife Management, Louisiana State Univ., Baton Rouge, 70803.* *Accepted 29 Apr. 1977.*

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Extreme nesting dates for the Mourning Dove in central Illinois.—The Mourning Dove (*Zenaida macroura*) is known for producing multiple broods over a prolonged nesting season. Nice (Auk 40:37–58, 1923) observed active nests in Oklahoma from late March into early October and cited reports of rare nesting from late January into December in Texas and California. In the central states, based upon a 3-year study in Iowa involving 3878 dove nestings, McClure (Trans. N. Am. Wildl. Conf. 15:335–346, 1950) calculated an average breeding season of 159 days from 4 April to 10 October. He further recorded extreme dates of 23 March to 15 October in Iowa and 8 April to 23 September in Nebraska. Bent (U.S. Natl. Mus. Bull. 162:416, 1932) listed "Indiana to Iowa" egg dates of 4 April to 1 September for this species. In a detailed analysis of 1950–58 dove nesting phenology in conifer plantings in northern and