On 9 December there were 2 young, which had sparse dusky down on head, wings and back. On 19 December, 2 were still in the nest. On 21 December at 14:20, the single remaining bob-tailed, but well-feathered, young flew from inside the nest, fluttering away close to the ground.

The adults were very timid. Only twice in 15 visits after discovery did an adult fly out of the nest, snapping its beak. In 1 of the 15 visits (17 December) an adult snapped its beak and sang faintly as it walked on the forest floor near the nest.

Oven-shaped nests, pinkish-buffy eggs and downy young are found in many Tyrannidae but seldom in Formicariidae. This may support placement of the genus in the Tyrannidae as suggested by Ames, Heimerdinger and Warter (Postilla 114:1–32, 1968). However the general nest type and egg color of this species do occur in ground-nesting birds of various families.

Fieldwork was possible thanks to Princeton University and to grants GB-32921 from the National Science Foundation and TC no. 6998-71 from the Conselho Nacional de Pesquisas of Brazil.—YOSHIKA ONIKI AND EDWIN O. WILLIS, *P.O. Box 644, Silver Spring, Maryland 20901.* (Present address YO: *Avenida Modesto Fernandes s/no., Bairro Barão Geraldo, 13.100 Campinas, S. Paulo, Brazil*; EW: *Dept. Biology, P.O. Box 249118, Univ. Miami, Coral Gables, Florida 33124.*) *Accepted 4 Dec. 1978.*

Wilson Bull., 92(1), 1980, pp. 127–128

First breeding record of the Double-crested Cormorant in Virginia.—While investigating the breeding avifauna of the lower James River during the summer of 1978, we found active nests of the Double-crested Cormorant (*Phalacrocorax auritus*) in Charles City County, Virginia. As there are no previous records of the nesting of this species in Virginia, and only 1 other breeding locality in this region of the Atlantic seaboard (southeastern North Carolina; Parnell, N.C. State Mus. Nat. Hist. 1977:330–384), we felt that documentation of these nests should be of interest.

The nest-site is located within a heronry on the remains of old, sunken, gravel barges near the middle of the James River approximately 3 km east of Hopewell, Virginia, and is 1.5 km from either shore. Trees and shrubs have become established on the wood of the barges, although there is no soil substrate associated with the "island." The vegetation includes silver maple (*Acer saccharinum*), sycamore (*Platanus occidentalis*), river birch (*Betula nigra*) and at least 4 other woody species of plants. The height of the vegetation is approximately 7 m and the dimensions of the island are 25 × 75 m. A heronry, first noticed in 1977, completely occupies the site. Cormorants might have nested in 1977 as they were seen in the area after the breeding season, but our surveys were too late that year to detect nesting. Censuses during May, June and July, 1978, revealed the presence of the following nests (maximum number): Cattle Egret (*Bubulcus ibis*), 298; Great Egret (*Casmerodius albus*), 6; Snowy Egret (*Egretta thula*), 1; Little Blue Heron (*Florida caerulea*), probably 1 pair, nest not found; Green Heron (*Butorides striatus*), 1; and Double-crested Cormorant, 6. We observed the cormorants sitting on nests on 29 May and these were subsequently observed by F. R. Scott, W. K. Slate and H. Olson (pers. comm.) on 5 June. The cormorant nests began to disappear on-by-one and by 26 June (Scott and Olson, pers. comm.) all were gone. The nests were probably removed by Cattle Egrets which we observed taking material from nearby nests of their own species and of other egrets. Production of young by the cormorants was not substantiated, but 1 or more immature birds were seen within 100 m of the island on 26 June and 4 and 13 July.

The expansion of the range of this species, especially at this inland site more than 100 km

from the ocean, is puzzling. It is not known whether these nests represent an expansion of the breeding range of *P. a. floridanus*, which nests only in Florida, Louisiana and at a single site in southeastern North Carolina more than 350 km south of the present locality (see American Ornithologists' Union, Check-list of North American Birds, 5th ed., Baltimore, Maryland, 1957; Parnell 1977), or of *P. a auritus*, which nests about 800 km away in Tennessee and Kentucky (Mengel, The Birds of Kentucky, Ornithol. Monogr. 3, 1965) or 650 km northward in New York (Bull, Birds of New York State, Doubleday Nat. Hist. Press, Garden City, New Jersey, 1974). Both *floridanus* and *auritus* occasionally nest in trees with various herons; the latter is particularly prone to do so in the southern part of its range (Bent, U.S. Natl. Mus. Bull. 121, 1922; Bull 1974). Additionally, the nest-site is very near Bailey Creek, the source of severe Kepone pollution, which has plagued the James River and Chesapeake Bay for the past few years. The sediments in this part of the river are known to remain high in levels of this pollutant. As nearly all fish species in this area have been found to contain Kepone levels detrimental to human health, the taking of fish from the James River has been banned since 1975. Kepone is known to have estrogenic activities in birds and may induce eggwhite protein synthesis (Palmiter and Mulvihill, Science 201:356–358, 1978). However, neurological symptoms appear at dosages lower than those producing the estrogenic effect. Since the cormorants forage extensively in the area of Kepone pollution, the future of this colony would indeed seem to be tenuous.

We are indebted to F. R. Scott for assistance in preparing this note and to C. F. Murray and T. Saunders for help in the field.—CHARLES R. BLEM, WILLIAM H. N. GUTZKE AND CLAIRE FILEMYR, *Dept. Biology, Virginia Commonwealth Univ., Academic Division, Richmond, Virginia 23284.* *Accepted 2 Jan. 1979.*

Wilson Bull., 92(1), 1980, pp. 128–130

Corn cob manipulation in Northern Harriers.—Captive and free-ranging raptors, especially juveniles, often playfully manipulate a variety of inanimate objects, including dead prey, twigs, pieces of wood, pine cones, corncobs, clusters of dead leaves, clumps of grass, stones, cow dung, balls of paper, handkerchiefs and feathers (Ficken, Auk 94:573–582, 1977). Because such behavior is common among predatory birds, and because all manipulated objects appear to be within the size range of the raptors' prey, manipulative play behavior has been suggested as a mechanism whereby young raptors acquire skills in prey capture (Fagen, pp. 189–200 *in* Perspectives in Ethology, Vol. 2, Bateson and Klopfer, eds., Plenum, New York, N.Y., 1976; Ficken 1977). Here I compare the sizes of corn cobs manipulated by Northern Harriers (*Circus cyaneus*) with the size of the harriers' principal prey species, the meadow vole (*Microtus pennsylvanicus*).

During the winters of 1973–1974 through 1975–1976, I watched harriers in south central Ohio (Bildstein, unpubl. Masters thesis, The Ohio State Univ., 1976). On 7 occasions during evening pre-roosting, and twice during morning post-roosting periods, I saw harriers pouncing on and carrying, dropping and catching in midair, and apparently "eating" corn cobs. All of the cobs were without kernels; several were caked with mud. On 6 occasions I saw harriers pounce on, and carry, clumps of dirt and grass as well as pull on, and sometimes uproot vegetation. Adult males were seen playing twice, females 8 times and juveniles of unknown sex 14 times. Although harriers frequently snatch vegetation while pouncing on prey and are known to pounce on, and carry, microtine nests (Rolfe, Nidologist 4:39–41, 1897), the behavior I watched was distinctly different from this since it involved extensive repetition of behavioral sequences, more closely resembling a kitten playing with a ball of yarn than a raptor capturing prey (Ficken 1977).