

## Effects of Cool Weather on Nestling Behavior and Development in the Yellow-billed Cuckoo

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In an earlier paper (Potter 1980), I reported an incubation period of 9 days and a nestling period of 7 to 8 days for Yellow-billed Cuckoos (*Coccyzus americanus*) hatched in my yard near Zebulon, N.C., in 1973. The young birds burst their feather sheaths on the sixth day after hatching, which is the normal time according to Bent (1940). Vera Campbell (pers. comm.) noted a 10-day nestling period for two young fledged from a nest at Jacksonville, N.C. I suggested that the parents' lengthy absences from the nest once the first two nestlings require frequent feedings might explain the longer incubation and nestling periods reported by some observers (Bent 1940, Hamilton and Hamilton 1965). Development of the young in a nest studied at Zebulon from 28 May through 15 June 1980 indicates that unseasonably cool weather during the nestling period probably delays bursting of sheaths and departure from the nest.

On 27 and 28 May I heard cuckoos calling frequently from the vicinity of the site where a pair copulated on 2 July 1979 (Potter 1980). Repeated visits to the area revealed no nest-building activity, although an unattended nest was discovered on 27 May. The afternoon of 28 May, I noticed an adult cuckoo perched on a low limb near the unoccupied nest. The bird drooped its wings and raised its tail over the back in a distraction display frequently employed in nest defense (Hamilton and Hamilton 1965, Potter 1980). The bird raised and lowered its tail several times before flying out of sight. At 2030 EDT I found a cuckoo sitting on the nest.

The nest site was in a small, dense stand of pines (*Pinus* sp.) about 20 to 25 years old. This stand is separated from nearby woodlands by the dam for a small farm pond, the driveway to my house, and a powerline right-of-way. The nest was about 5 m above ground on a tangle of Muscadine Grape (*Vitis rotundifolia*) vines surrounding a horizontal limb of a pine tree on the edge of the stand facing the dam. The site is approximately 20 m from the place where copulation occurred in 1979 and about 50 m from the 1973 nest site (Potter 1980).

The first egg hatched during the afternoon of 6 June, and the second one hatched before 1655 EDT on 7 June. The incubation period for each of these eggs appears to have been 9 days. There was no evidence of additional eggs in the nest.

Although the tangle of vines about the nest prevented close observation of the care of the young, I believe it was essentially the same as in the previously reported nesting. Therefore, I expected the chick that hatched on 6 June 1980 to burst sheaths on 12 or 13 June. However, that was not the case.

On 13 June, the seventh day after hatching for the older chick, I noted that the parents were no longer removing fecal sacs and discovered white splashes of droppings on the leaves below the nest. One nestling repeatedly gave a series of five low "kuks" between feedings, but neither made begging sounds when an adult approached the nest. No signs of emerging feathers were noted on 13 June or the morning of 14 June. (No observations were made the afternoon of the 14th.)

By 1000 EDT on 15 June, its ninth day after hatching, the older chick had burst sheaths on most of its flight and contour feathers. The younger nestling had burst sheaths on most of its flight feathers by 1125 EDT, but nearly all of its contour feathers were still encased in sheaths. Both nestlings still begged for food silently. By 1230 EDT the younger had begun to give a series of five "kuks" repeatedly between feedings. By 1310 EDT the younger bird, with feathers of back and underwings still in quills, was in the vines near the nest, but the older one remained in the nest. At 1430 EDT the parents were tending both young as they fluttered from branch to branch in trees 3 to 10 m from

the nest. Thus the young burst their sheaths and left the nest on their eighth and ninth days after hatching, and the period from onset of incubation to departure from the nest lasted 18 days for the older of the two, 17 days for the younger.

I attribute the delayed emergence of feathers from sheaths and the slightly extended nestling period to the unseasonably cool weather from 9 through 14 June. High and low temperatures, in degrees Fahrenheit, for 8 through 15 June (U.S. Dept. Comm. 1980) were: 8 June 90/77, 9 June 90/53, 10 June 78/57, 11 June 86/60, 12 June 76/54, 13 June 82/42, 14 June 77/51, and 15 June 84/72. At 0900 EDT on 14 June my outdoor thermometer registered 65° F, and the nestlings were not being brooded. Although the parents seemed to have no problem finding an adequate supply of prey items, the growth and development of the young birds appeared to slow down once the daytime brooding was reduced or halted. The quill-covered young birds mostly remained huddled together in the nest cup between feedings and were generally much less active than the young in the 1973 nest. This behavior apparently enabled the nestlings to conserve energy and maintain body temperature without benefit of daytime brooding during several days of unseasonably cool weather.

#### LITERATURE CITED

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### Winter Records of the Grasshopper Sparrow In the North Carolina Sandhills

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The winter status of the Grasshopper Sparrow (*Ammodramus savannarum*) in North Carolina is not clearly understood. It apparently winters irregularly in the piedmont and coastal plain. Preferred winter habitats are weedy old fields, pastures, broomsedge fields, and similar habitats. Most published winter records for North Carolina are from the last half of December. However, this species is difficult to locate during the nonbreeding season. It does not flock with other birds, and when flushed, flies only a short distance before landing and running. Such "runner" sparrows are notoriously difficult to observe. Thus, the Grasshopper Sparrow may be more common in winter than realized.

Prior to 1978, only one record for this species existed for the Sandhills region in south-central North Carolina. M.P. Skinner saw one on 1 March 1926, but commented that "it may winter in the Sandhills" (Skinner and Achorn 1928, A Guide to the Winter Birds of the North Carolina Sandhills, Science Press, Lancaster, Pa.). This record probably represents a wintering individual, but it could be an early spring migrant.

On 12 November 1978, a Grasshopper Sparrow was seen in the Sandhills Game Lands, about 5.8 miles NW of Hoffman, Richmond County, N.C. Observers were