

## LITERATURE CITED

- BEVEN, G., AND M. D. ENGLAND. 1977. Studies of less familiar birds, 181, Turnstone. *Brit. Birds* 70: 23-32.
- BURGER, J., D. HAHN, AND J. CHASE. 1979. Aggressive interactions in mixed species flocks of migrating shorebirds. *Anim. Behav.* 27: 459-469.
- COLLINS, A. R., AND R. D. THOMAS. 1984. Turnstone attempting to rob House Sparrow. *Brit. Birds* 77: 567.
- CRAMP, S. AND K. E. L. SIMMONS. 1983. The birds of the Western Palearctic. Vol. 3. Waders to gulls. Oxford, Oxford Univ. Press.
- DONOGHUE, A. M., D. L. J. QUICKE, AND R. C. BRACE. 1986. Turnstones apparently preying on sea anemones. *Brit. Birds* 79: 91.
- GROVES, S. 1978. Age-related differences in Ruddy Turnstone foraging and aggressive behavior. *Auk* 95: 95-103.
- MALLORY, E. P., AND D. C. SCHNEIDER. 1979. Agonistic behavior in Short-billed Dowitchers feeding on a patchy resource. *Wilson Bull.* 91: 271-278.
- MYERS, J. P. 1986. Sex and gluttony on Delaware Bay. *Nat. History* 95: 68-77.
- MYERS, J. P., AND B. J. MCCAFFERY. 1984. Paracas revisited: do shorebirds compete on their wintering ground? *Auk* 101: 197-199.
- SULLIVAN, K. A. 1986. Influence of prey distribution on aggression in Ruddy Turnstones. *Condor* 88: 376-378.

Fla. Field Nat. 19(3): 84-85, 1991.

### COPULATION IN THE MANGROVE CUCKOO (*COCCYZUS MINOR*)

DOUGLAS B. MCNAIR  
 303 Robinson Street  
 Rockingham, North Carolina 28379

Although courtship feeding has been described in the Mangrove Cuckoo (*Coccyzus minor*) (Langridge 1990), the copulatory behavior of this species has not been documented. This note describes the vocal and feeding behavior of the female prior to copulation, and the pre-copulatory display and copulation.

I located a pair of Mangrove Cuckoos in Rockland Hammock at John Pennecamp State Park, Key Largo, Monroe County, Florida, on the early morning of 24 May 1990. The fairly open tropical hammock understory allowed uninterrupted observation of the bird's activities. The female cuckoo, whose sex identification was based on observation of later copulatory position, called near the top of a 10 m Wild Tamarind (*Lysiloma bahamense*) at 0645 h. The location of the male at this time was unknown. Without moving, the female continued to call in short bouts of 5-10 querulous guttural notes, at intervals of about 45 s, for 5 min. At 0649 h, she suddenly flew for 15 m, landed, then walked and hopped on the forest floor. The cuckoo appeared to be foraging, but she did not catch anything. She soon returned to the forest canopy where she resumed calling as before.

At 0650 h, the female again returned to the ground and resumed foraging on and very near the forest floor. At 0653 h, she captured a 10 cm long orthopteran. She discarded the wings, then tore off the legs and ate them. Finally, she beat the body of the insect against the ground and pulverized it. She finished eating it at 0657 h. Throughout this feeding bout, the female occasionally emitted subdued guttural calls, 1-2 at a time.

From 0658-0659 h, the female cuckoo rested motionless on the ground. Her breast appeared to be substantially enlarged from the meal, presumably caused by a full crop.

At 0700 h, the female left the forest floor and flew to a horizontal branch 5 m above ground. She perched lengthwise along the branch and elevated her bill, upper body, and tail. She then began vigorous, rhythmic tail-pumping (about 20/min), raising and depressing the tail 180 degrees while uttering very quiet monosyllabic calls for 2 min. At 0702 h 15 s, the male Mangrove Cuckoo flew in without calling and perched at the edge of the forest canopy, where he remained in a flight intention posture 10 m away from the female. Five seconds later he flew directly to the female, mounted her somewhat laterally (from the left side), and grasped her bill. Copulation lasted for 6 sec. I heard no calls. When the pair parted, the male flew 15 m, landing in the forest canopy. The female remained motionless on the branch for 10 sec and then flew 10 m to the mid-to-upper canopy.

At 0705 h, both birds still remained in the canopy, 20 m apart. The female occasionally uttered her querulous guttural call.

Female pre-copulatory display and copulation in the Mangrove Cuckoo are evidently similar to these behaviors in the Yellow-billed (*C. americanus*) and Black-billed (*C. erythrophthalmus*) cuckoos (Eaton 1979, Potter 1980, Pistorius 1985). Males of these three species may feed females during courtship feeding or copulation (Potter 1980 and references cited therein, Pistorius 1985, Langridge 1990 and references cited therein). However, all accounts of courtship feeding in these three species of cuckoos are brief anecdotes which document considerable variation in behavior, and the complexity and function of courtship feeding remain to be elucidated. For the Mangrove Cuckoo, courtship feeding has been previously described in an apparently precopulatory context (Langridge 1990), but it did not accompany copulation in the present observation. This may have been because the female Mangrove Cuckoo I watched had fed just prior to copulation. Thus, while courtship feeding may occur prior to copulation, it is not necessarily a prerequisite for copulation to occur.

I thank H. Langridge, R. T. Paul, W. Post, and E. F. Potter for critical comments.

#### LITERATURE CITED

- EATON, S. W. 1979. Notes on the reproductive behavior of the Yellow-billed Cuckoo. *Wilson Bull.* 91: 154-155.
- LANGRIDGE, H. 1990. Courtship feeding behavior in the Mangrove Cuckoo (*Coccyzus minor*). *Fla. Field Nat.* 18: 55-56.
- PISTORIUS, A. 1985. Yellow-billed Cuckoo. Pp. 128-129 in *The atlas of breeding birds of Vermont* (S. B. Laughlin and D. P. Kibbe, Eds.). Vermont Inst. Nat. Sci., Univ. Press New England.
- POTTER, E. F. 1980. Notes on nesting Yellow-billed Cuckoos. *J. Field Ornithol.* 51: 17-29.