

## SHORT COMMUNICATIONS

### Copulatory Behavior of the American Bittern

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There appears to be almost no detailed information on the behavior associated with copulation in the American Bittern (*Botaurus lentiginosus*); Palmer (Ed., 1962, Handbook of North American birds, vol. 1, New Haven, Yale Univ. Press) has summarized the fragmentary notes on this species. The comparable behavior of the other three *Botaurus* species is also undescribed or inadequately known (Hancock and Elliott 1978, The herons of the world, New York, Harper and Row). The following observations thus seem worth recording. At 1900 on 26 May 1976, while watching waterfowl at Christian Pond, Grand Teton National Park, I noticed a pair of bitterns fly into the pond area, with what proved to be the female leading and the male following about 3 m behind. After landing, the female began foraging immediately, while the male stood about 27 m away in short sedge vegetation. (At least one male Bittern had been heard calling on the pond as early as 21 May, but none had been seen there previously.) Watching the male, I thought it was preparing to call, because I saw it fluffing its plumage and progressively exposing its white nuptial plumes, but it simply stood in this posture, occasionally lowering its head and shaking it from side to side, with the bill held horizontal and very low (Fig. 1a–d). I thought at first that it might be retching, but the behavior was repeatedly performed, and soon the male began moving toward the female, which was still foraging. The female finally turned and walked toward the approaching male, which then began following her closely, pausing occasionally to repeat the “retching”

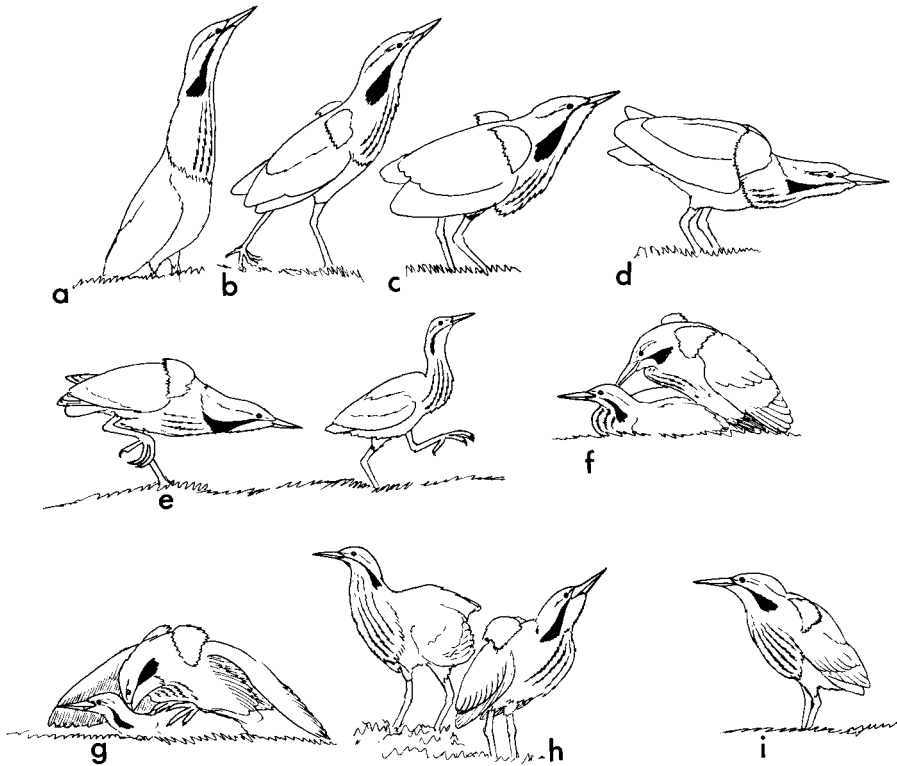


Fig. 1. Postures of male American Bittern during precopulatory display (a–e), during copulation (f–g), and following copulation (h–i); the drawings are based on a sequence of 15 35-mm transparencies taken of the incident.

movements. At times the female apparently tried to outwalk the male (Fig. 1e), but soon he caught up with her and put one foot on her back, immediately causing her to go prone in the sedge cover. The male then quickly mounted, lowering his wings strongly over the female and seemingly nibbling or preening her head feathers but apparently not grasping her nape (Fig. 1f–g). Copulation lasted about 15 s and appeared to be performed silently (although I was about 37 m away). Afterwards, both birds stood up and ruffled their plumage (Fig. 1h), after which the female walked back to the water and began foraging, while the male moved about 5 m in the other direction. There he stood quietly in the same fluffed plumage posture (Fig. 1i) for most of the following hour, and only once more did he perform the “retching” display. When I left at 2005, the two birds were still in this situation. During the entire period, I twice heard a Bittern calling from a considerable distance, but no obvious calling was done by the birds I was watching. On 13 June an incubating female was found on her nest about 46 m away from this point.

In common with the few other reported Bittern copulations, the behavior did not occur at the nest, and the white nuptial plumes were clearly an important display component. Apparently, the European Bittern (*B. stellaris*) sometimes seems to feed the female during copulation, which might account for the evolutionary origin of the retching-like movements I observed. In most respects the behavior I observed corresponds closely to the description by Fargo (1928, *Auk* 45: 203) of a probable precopulatory sequence, but I did not notice the chirping calls that he heard from the male during the approach phase. Received 3 March 1980, accepted 12 May 1980.

### Group Foraging by Mockingbirds in a Florida Strangler Fig

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Fruit is an important food of Mockingbirds (*Mimus polyglottos*), especially during the fall and winter (Beal et al. 1916, Howell 1932, Bent 1948). Mockingbirds are known to set up feeding territories at this time of year (Michener and Michener 1935, Laskey 1936, Hailman 1960), and fruiting trees may be vigorously defended (Moore 1977, 1978). Territories are maintained by single individuals or male-female pairs (Michener and Michener 1935).

The establishment of fall and winter territories is commonly observed in Mockingbirds in south Florida (O. T. Owre, pers. comm.). On 4 November 1979, however, I noticed many Mockingbirds foraging in a Florida strangler fig (*Ficus aurea*) on the University of Miami campus. The tree was about 10 m tall and had a relatively open canopy. Although *F. aurea* may be found fruiting in all seasons (Long and Lakela 1971), this represents a late fruiting date, as the peak is in early to midsummer (Carleton and Owre 1975).

Visits to the tree on 5 and 6 November revealed that Mockingbirds were not entering the fig tree in flocks, but their entrance from many directions appeared to be somewhat synchronized. Because this type of behavior has not been described in Mockingbirds, I designed a study to test the hypothesis that there was no significant difference between the observed pattern of Mockingbird entry into the tree and the pattern predicted by a random distribution.

Counts of birds entering the fig tree were made in the mornings (0600–0900) and afternoons (1300–1600) of 7–12 November 1979. Foraging behavior and aggressive interactions were noted. I recorded notes using a tape recorder. The number of Mockingbirds entering the tree in 1-min intervals was tallied in the laboratory using a stopwatch. On the mornings of 10 and 11 November I captured 27 Mockingbirds in two mist nets placed near the fig tree. Individuals were marked with U.S. Fish and Wildlife Service aluminum bands and plastic colored leg bands. Molt was noted, and the degree of skull ossification was examined by making a 4-mm median longitudinal incision in the skin on the posterior portion of the crown.

By 14 and 15 November the amount of fruit on the tree was dwindling, so to estimate the number of Mockingbirds using the fig tree I conducted 10 censuses of the area. The censuses lasted 3–5 min each and were made at intervals of greater than 1 h. I counted a Mockingbird only if I could see if it were banded or not. If the birds moved around so that I thought that I might count the same unbanded individual twice, the census was discontinued and repeated at a later time.

I recorded 1,131 Mockingbird entries into the fig tree in 1,037 min of observation. Mockingbird entries