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## Intense Aggression by Male Boat-tailed Grackles

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**Intense aggression by male Boat-tailed Grackles.**—Competition between males for access to females in a polygynous or lek-breeding species may determine seasonal reproductive fitness. Interactions between males also may affect their survival and consequently their total lifetime fitness. Here we report on an incident of extreme aggression between two male Boat-tailed Grackles (*Quiscalus major*) that had the potential to endanger the lives of both.

At 1050 h on 15 March 1987 we observed two male grackles fighting in the shallow water of a borrow pit pond in northeastern Tampa, Hillsborough County, Florida. They sat together half-submerged in the shallow water, presumably with their feet grasping each other's legs or lower body. One grackle had only its neck and head above water; the other had its shoulders above the surface as well. Both birds held their bills up as in Head-up Display (Selander and Giller 1961). Several times one grackle leaned toward the other, who leaned away. After about five minutes of sitting relatively still, the upper male jumped and flapped its wings, resulting in the second male being completely submerged. The second grackle was held under water approximately 10 seconds, and after surfacing was immediately submerged again. At this time other male and female grackles approached the fighting pair, and one or more males pecked the upper male as it pecked the lower male. At 1106 h the pair moved into shallower water. The upper male continued to peck the head of the second and plucked feathers. While the feathers were being plucked, the second male did not move, even though its bill was in the water. At 1110 h, still together, the pair fluttered into thick cattails and out of our sight. Distress calls were heard, and the two birds apparently had moved out of the water. At 1115 h they moved into the open again, separated, then grappled again. At 1116 h they separated, and the apparent winner flew away to a display perch. The apparent loser flicked its tail up repeatedly and walked under the cover of some brush. It then flew away from the marsh at 1121 h.

The males were locked together in the open for at least 25 minutes, and were in the water for at least 20 minutes. Both being exposed and immersed provided substantial risks for both grackles. Air and water temperatures, although not recorded, were cool and could have resulted in hypothermia. Undoubtedly the combination of trauma and chilling in water resulted in severe physical stress for at least the loser. In addition, by remaining in the open and not vigilant both grackles put themselves at risk of predation. Soaking of their plumage would have decreased maneuverability and increased vulnerability to predation. KJM observed a Sharp-shinned Hawk (*Accipiter striatus*) in the area later that same day, and MLD had observed a Peregrine Falcon (*Falco peregrinus*) hunting over the marsh one week earlier.

Our observations were made at the peak of the nesting cycle of the grackles (Dunham 1988) and the males may have been establishing dominance positions and territory boundaries. Bancroft (1987) found that male Boat-tailed Grackles were able to hold territories only when more than 500 m<sup>2</sup> of suitable nesting habitat was available, and at smaller colonies males never attained sole ownership of an area. The borrow pit where we made our observations had approximately 8000 m<sup>2</sup> of nesting area. Seven to 10 male grackles remained and displayed on the marsh during the season; one male apparently was able to defend a territory in the eastern section where we observed the fight (MLD, pers. obs.). Increased reproductive success accruing to the holder of this area could have justified the risk entailed by intense fighting. Because the birds were not marked, it is unknown if the participants of the fight remained on the marsh or if the victor was the eventual territory holder.

Territory defense in birds usually is moderated by the use of displays, but actual fighting does occur and may result in the injury or death of the participants (e.g., Cottrille 1950, Tuck 1961, Amadon 1964, Brown 1977, Hill 1986). Trail (1985) reported grapple-fights between males of the lek-breeding Guianan Cock-of-the-Rock (*Rupicola rupicola*) similar to, but even more intense than the observed grackle fight. Cock-of-the-Rock fights lasted up to two and one-half hours with a mean of 14 minutes. Although he observed no fatalities, Trail suggested that the fighting males could have been vulnerable to predators, which had been observed visiting the leks. Fights were rare relative to the occurrences of other aggressive behavior, but occurred regularly. Observations of "bald" male Boat-tailed Grackles at other marshes (MLD, pers. obs.) indicate that fights such as the one we observed also may occur regularly. If so, mortality resulting from intraspecific conflicts could be more frequent than is currently suspected.

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