ADDITIONAL RECORDS OF AUTUMNAL BREEDING OF BOAT-TAILED GRACKLES IN FLORIDA

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Autumnal breeding of Boat-tailed Grackles *(Cassidix major)* in Florida was first reported by Selander and Nicholson (1962), who observed breeding birds and fledglings at three lakes in Orlando, Florida, in the late autumn of 1956, 1959, 1960, and 1961. They concluded that autumnal breeding was limited to birds inhabiting parks surrounding lakes and residential districts where a greatly enhanced food supply was provided by either urban horticultural practices or direct subsidies in the form of bread and bird seed. Grackles living in agricultural and prairie lands in central Florida did not have these food subsidies, and it was assumed they did not make any reproductive efforts in the fall. Orions (1960) concluded that fall breeding of Tricolored Blackbirds *(Agelaius tricolor)* in the Sacremento Valley of California was dependent upon agricultural (irrigation) and duck hunting (wet potholes and marshes) practices, both man-influenced phenomena. Coon *et al.* (1971) report the initiation of breeding by Great-tailed Grackles *(Cassidix mexicanus)* in Texas during January and February 1971 as a result of abnormally high temperatures during this period. Sustained cold weather in late February terminated nest-building activities.

In the autumn of 1971, 21 active Boat-tailed Grackle nests were observed at several widespread locations in central Florida: along the east coast at West Palm Beach, Vero Beach, and Cocoa Beach, and at several interior sites along the Florida Turnpike: Yeehaw Junction interchange; Canoe Creek Service Plaza, south of St. Cloud; and Turkey Lake Service Plaza, south of Clermont.

Evidence of breeding was first noted on 7 November at the Canoe Creek Plaza where I observed a female grackle carrying food to a nest in an ornamental juniper *(Juniperus* sp.) located in a cluster of 16 junipers near a small borrow pond. Another group of 8 trees, from 8 to 15 feet in height, was present on the opposite side of the pond. Approximately 8-10 male grackles were calling and displaying to 15 to 20 females. A search of the trees revealed 7 active nests containing eggs or young (2-3 days old), one recently predated nest (broken egg shells in the nest and on the ground), and 15 old nests from the previous spring (Table 1).

Grackles were observed nesting in Wax Myrtle *(Myrica cerifera)* shrubs on an island in the middle of a one-half acre pond 3 miles northwest of Vero Beach beginning in early November. On 15 November 6 nests were observed: one contained 3 young ready to fledge, 2 nests contained 2 eggs each, 2 nests contained 3 eggs (one of these had only 2 eggs on 9 November) and one nest was being built. Several young fledged from this colony later in November and in early December.

On 17 November a check was made at several locations in central Florida for additional evidence of breeding. A single nest in a tall juniper was observed being attended by a female at the Yeehaw Junction interchange of the Florida Turnpike, but the nest was too high to determine its contents. Ten males and 20 females were counted in the area. Nests were again checked at Canoe Creek Service Plaza (Table 1). At Turkey Lake Service Plaza, northwest of Orlando, fewer grackles were noted and very little courtship activity observed. Three nests, all abandoned, were found in a Sweet Carrissa (*Carrissa* sp.) hedge near a borrow pond. One con-

tained 3 cold eggs, another 2 cold eggs covered by dead leaves, and the third was incompletely constructed. Three old nests from the previous spring were also present. Also, there appeared to be an active nest in the top of a Sabal Palm *(Sabal palmetto)* several hundred meters away, to which a female was seen carrying something (undetermined), but this nest was too high to be reached.

Visits were made to the three lakes in Orlando (Eola, Ivanhoe, and Lucerne) mentioned by Selander and Nicholson *(op. cit.)*. Several male grackles were singing and displaying at Lake Ivanhoe, but no females were observed being chased or carrying nesting material or food. Lake Ivanhoe is now bridged by Interstate Highway 4, but the "willows and cypress trees on a boggy finger of land jutting into the lake" still exist. However, no grackle activity was noted there. No nesting activity was found at Lake Eola or Lucerne, or at several nearby lakes.

Selander and Nicholson reported that the total population of Boat-tailed Grackles inhabiting Orlando in 1960 was approximately 50 individuals. The population now inhabiting the city appears to be many times that number. Although I saw numerous males singing and displaying in Orlando in mid-November, no evidence of fall nesting was found in 1971. The abandoned nests and the single active nest at Turkey Lake Plaza just northwest of Orlando, coupled with the lack of breeding in Orlando, suggests that the Orlando area was the northernmost limit of fall breeding for the Boat-tailed Grackle in Florida in 1971.

A check of potential breeding sites along State Road 60 as far west as Tampa on 23 November 1971 failed to find any nesting colonies. Grackles with active nests were reported in mid-November at Patrick Air Force Base, near Cocoa Beach *(fide* M. C .Bowman), and fledged young were reported at West Palm Beach in early December (C. D. Goforth, pers. comm.). I netted and banded a female grackle in juvenal plumage undergoing a first prebasic molt at Winter Beach, a few miles north of Vero Beach, on 24 January 1972. Grackles hatched in spring or summer complete their first prebasic molt by September, hence this juvenile was undoubtedly a fall-hatched bird.

Selander and Nicholson (1960) summarized the probable physiological basis for autumnal breeding as follows: A lengthy refractory period that follows gonadal regression from the vernal breeding condition often prevents response to favorable environmental conditions in the early fall when attempted reproduction usually would not be successful. However, during periods of prolonged mild weather extending into late fall and early winter, gonadal recrudescence in some species continues, and, in the absence of external inhibitors (decreasing temperatures, etc.), gametogenesis and breeding occur. The fall and winter of 1971 in Florida was one of the warmest on record and December was the warmest in 40 years, the second warmest on record (Nat. Weather Service 1971). In the tropics, of course, many species of birds have protracted breeding seasons.

Although each nesting colony in 1971 was located next to a pond in habitat developed and managed by humans, the habitats were chiefly rural in character and no food subsidies in the form of bread or grain were provided. Contrary to the environmental conditions found by Selander and Nicholson in the rural central Florida area in 1960 ("the grass is brown, many trees and shrubs lack leaves . . . "), the countryside throughout the

autumn of 1971 was verdant and insect food was abundant. Selander and Nicholson's suggestion that autumnal breeding of Boat-tailed Grackles in Florida is a strongly man-influenced phenomenon, restricted to urban areas, is not sustained by the observations reported here. Apparently wherever environmental conditions are favorable — that is, warm weather and sufficient insect food — adult grackles will attempt to breed.

The fall months of 1972 and 1973 in the central Florida area were also characterized by warm temperatures well into late November and early December. Although no special effort was made to determine the extent of autumnal breeding in those years, I did observe a female grackle carrying nesting material into tall cattails *(Typha* sp.) at a lake in Lakeland on 14 October 1972, and received reports of fledglings observed in November 1973 near Venice, Sarasota County.

SUMMARY

Breeding Boat-tailed Grackles were observed throughout the east-central region of Florida from Orlando to West Palm Beach in the autumn and early winter of 1971. Autumnal breeding is associated with warm temperatures throughout the fall months and the concurrent abundance of invertebrates utilized as food for nestlings.

TABLE 1.

Status of Boat-tailed Grackle nests on two dates in November 1971 at Canoe Creek Service Plaza, Florida Turnpike.

Nest	7 November	17 November
1	2 eggs	2 eggs
2	3 eggs	3 young (2-3 days old)
3	3 eggs	3 eggs
4	3 eggs	3 eggs
5	2 eggs	3 eggs
6	2 young (3 days old)	2 young (1m, 1f)
7	3 eggs	3 young (2m, 1f, 2 days old)
8	broken shells	

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