THE COMPETITION BETWEEN CATTLE EGRETS AND LITTLE BLUE HERONS

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Since the Cattle Egret, Bubulcus ibis, invasion into the heron colonies of Alabama in 1963, we have carefully watched for possible competition with the other species in the colonies and especially with the Little Blue Heron, Florida caerulea.

A cursory look at the food items regurgitated by the nestlings and observations of feeding adults shows little, if any, possibility of competition for food.

In an orderly nesting colony, the nests of Cattle Egrets and Little Blue Herons are interspersed, sometimes within a foot of each other. At a glance, there does not appear to be much nesting strife....little more than an occassional territorial squabble. There is, however, one critical point at which competition for nesting sites and even nests is very great. To comprehend the situation, it is necessary to explain both the non-competitive and the competitive sequences of nest establishment.

Non-competitive Nest Establishment:

The Little Blue Herons arrive first at the colony area and establish their nests in one or more concentrated groups. By the time the Cattle Egrets arrive, the Little Blue Herons usually have eggs in the nests and may even have young hatched. Small numbers of Cattle Egrets arrive and shortly begin nest building in sites adjacent to Little Blue Heron nests. Nest building is done in an orderly manner and under these circumstances there is little disturbance of the already nesting Little Blue Herons and little competition in the colony.

Competitive Nest Establishment:

This sequence starts in the same way with the Little Blue Herons in their arrival and nest establishment. The Cattle Egrets arrive later than usual and when they arrive their numbers are greater. By arriving later, or by being delayed by drought conditions, some are in more advanced breeding condition and more quickly seek nesting sites. Their nest building is not orderly and they cause much confusion in the colony. The other Cattle Egrets that do not immediately nest use the colony as a roosting area only. They usually arrive at near dusk, roost close to the nesting egrets and thus cause much confusion. This often causes the poorly constructed nests to collapse or the confusion is so great that it causes nest desertion to take place. The Cattle Egrets quickly take over any deserted nests. Thus nesting competition results.

Results of Competition

The results of the nesting competition are difficult to absolutely assess because other contributing factors are operative. The following observations show trends, at least.

Comparison of Numbers of Little Blue Herons and Cattle Egrets:

In most of the colonies studied, we have very generalized data on trends but for the colony near Pansey, Houston County, Alabama, we have

better population density information. Table 1 presents these data.

Table 1. Comparative Numbers of Little Blue Herons and Cattle Egrets at the Pansey, Alabama Colony.

Date	Numbers Counted and Estimated LBH	CE
July 7, 1963	300	600
Sept. 13, 1964	100	3,000
April 29, 1965	190	167
July 23, 1965	25	950
1966	Colony Area Not Used	
June 10, 1967	300	3,000
Aug. 4, 1967	300	6,650

Apparently in this colony the Little Blue Herons are remaining about the same in numbers and the Cattle Egrets are increasing in numbers greatly. Also, it is apparent that the existing competition is not greatly harmful to the Little Blue Herons and that their population density is controlled by other limiting factors. The Cattle Egrets, on the other hand, are not limited by the Little Blue Herons and most seasons are not limited by other environmental factors and are therefore increasing at an expanding rate (Dusi and Dusi, 1968; Dusi and Dusi, manuscript).

Possible Breakdown of Species Isolating Mechanisms:

Normally two species, occupying the same habitat, are isolated from breeding by one or more mechanisms which may be morphological, ecological, or behavioral. When the mechanisms fail to isolate the species, hybrids between them result.

Until the Cattle Egret invaded our native heron colonies, the Little Blue Herons and Cattle Egrets were isolated by being found on separate continents, during their breeding seasons. Our data on nesting competition show that fairly often nests deserted by Little Blue Herons are taken over by Cattle Egrets and that the Cattle Egrets often simply add their eggs to those already present in the nests. When the eggs hatch, the Little Blue Heron nestlings are reared by adult Cattle Egrets, just like their young. The final step has yet to be observed but we expect that the imprinting that has resulted through the action of the Cattle Egrets rearing their nestlings together with Little Blue Heron nestlings, will cause a breakdown in species recognition. This should occur in the breeding season following the hatching year. If the Little Blue Herons, still in their white or slightly mottled plumage, return to breed (Dusi, 1967), they may select or be selected by a Cattle Egret as a mate. If other behavioral patterns and chromosomal likeness permit, they may produce hybrid young.

We expect, therefore, that the major effects of competition between the Little Blue Heron and the Cattle Egret will be seen in the final results of nesting competition, in the form of hybrids. We also expect

the great increase in Cattle Egret numbers will result in the establishment of more nesting colonies.

Competition Between Nestlings:

Thus far, most nestling behavior has been compatible enough that little competition has been seen. The young of both species are belligerent to any foreign nestling and will repel it from their nest.

On June 24, 1967, while gathering data for a nesting success study near Pansey, Alabama, we found a nestling Cattle Egret in the process of swallowing his nest mate. The cannibalistic young egret was about two weeks old and his nest mate about half as old. When they were observed, the larger nestling had swallowed the head and neck of the smaller bird but the body was too large to be swallowed. The following day the nest was visited and the neck of the smaller bird had been separarated from its body. Apparently the head and neck had been swallowed completely. The larger nestling seemed to be in good condition and eventually fledged.

This is the first case of cannibalism we have observed but it could be more common than we suppose. Frequently the smallest young of a nest is found dead in the nest, or missing. Some of these losses could have been caused by cannibalism. It is possible also, that large Cattle Egret young could eat small Little Blue Heron young in an adjacent nest. Therefore, this relationship between the young might add another phase to the competition that exists between the Cattle Egret and the Little Blue Heron.

Literature Cited

Dusi, J. L.
1967 Migration in the Little Blue Heron. Wilson Bulletin 79: 223-235.

Dusi, J. L. and R. T. Dusi
1968 Ecological Factors Contributing to Nesting Failure in a Heron Colony. Wilson Bulletin 80: (in process for September issue).

Dusi, J. L.
Nesting Success and Mortality of Nestlings in a Cattle Egret Colony. (Submitted manuscript).

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A BIBLIOGRAPHY OF ORNITHOLOGY IN ALABAMA

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Part I

Editorial Note. The major aim of Alabama Birdlife has been to gather and print articles of ornithology in Alabama. In an attempt to mention articles printed elsewhere and before the advent of Alabama Birdlife, bibliographies must be resorted to. Mrs. Jordan's annotated bibliography was submitted as a qualifying paper to the Graduate Faculty of Jacksonville State University, in May 1967, and is condensed here to omit all Alabama Birdlife articles, routine reports in Audubon Field Notes, and the several major works on Alabama birds. It covers the period from 1824 to 1966.

Allen, Ralph H. 1946. Winter Foods of the Bobwhite Quail in Southeastern Alabama. Master's Thesis, Alabama Polytechnic Institute.

_____. 1949. Experience has Proven that Quail Restocking is a Failure. Alabama Conservation XX, 10-11: 8.
50,000 pen raised quail were released in Alabama, 1937-1949, but the total population decreased.

_____. 1965. The Wild Turkey---A True American. Ala. Cons. XXXV, 1: 4-5.
A brief history of the wild turkey of America, especially Alabama.

Allen, Ralph H. and Robert E. Waters. 1962. Bobwhite Quail Management Fact and Fiction. Ala. Dept. of Cons., Bull. No. 5.
A booklet of quail management recommendations.

American Ornithologists Union Committee. 1957. Check-list of North American Birds. Fifth Edition. Baltimore. Pp. xiii, 691.
Sourcebook for common names, A.O.U. numbers, and distribution.

Anonymous. 1933. Bird Visitors Identified. Ala. Game and Fish News, IV, 9: 14.
First records for Alabama of Bridled Tern and Willow Thrush.

_____. 1936. Board Regulation Makes Park Inviolate Bird Sanctuary. Ala. Game and Fish News, VIII,8: 12.
Lists regulations to be observed in Gulf State Park, Baldwin County, a sanctuary for wild birds, particularly waterfowl.

_____. 1960. Dollars for Ducks. Ala. Cons., XXXI, 5: 20.
Report on duck population in Alabama, determined from banding and from three waterfowl inventories.

_____. 1937. First Quail to Break Shells June 6 at State-Operated Farm. Ala. Cons., VIII, 12: 3.
Initial production of quail at Alabama's first quail farm, near Prattville, expected to exceed 300.

_____. 1934. International Collection in Rice Aviary. Ala. Game and Fish News, VI, 1: 11.
Aviary built by Julian Rice, prominent Montgomery ornithologist, housed both foreign and native species.

_____. 1935. Latest Hatching Date. Ala. Game and Fish News, VI, 7: 14.
Quail nest with 16 eggs, Nov. 17, at Greenville. All hatched.