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## Feeding Behavior and Analysis of Regurgitated Food Collected from the Cattle Egret *Bubulcus ibis* and the Little Blue Heron *Florida caerulea*

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FEEDING BEHAVIOR AND ANALYSIS OF  
REGURGITATED FOOD COLLECTED FROM THE  
CATTLE EGRET *BUBULCUS IBIS* AND THE LITTLE  
BLUE HERON *FLORIDA CAERULEA*

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INTRODUCTION

A study was made of regurgitated food items collected from young nestlings of the Cattle Egret (*Bubulcus ibis*) and Little Blue Heron (*Florida caerulea*). The largest nesting colony of these two species in the state occurs at the Luxora Heronry in Mississippi County. This heronry is located three miles northwest of the Mississippi River and seven miles northwest of Luxora on Arkansas Highway No. 120. During the past four years (1965-68) the senior author has studied the nesting and species composition at this heronry. The Luxora Heronry was first introduced into the literature by Hanebrink and Cochran (1966), when the first nesting record for the Glossy Ibis (*Plegadis falcinellus*) was reported. A description of this heronry including nesting sequence and species composition was reported by Hanebrink (1968). Cattle Egrets were first reported nesting in the Luxora Heronry in 1965 when five pairs were found nesting there by Ben Coffey, Jr. (Stewart, 1965). Meanley (1955) previously published on a nesting study of the Little Blue Heron at Swan Lake in eastern Arkansas.

During the 1968 breeding season approximately 100 pairs of Cattle Egrets nested in this heronry. Also five pairs of Snowy Egrets (*Leucophoyx thula*) nested there for the first time in 1968. The Glossy Ibis has not nested at this site since the 1966 breeding season, but stray individuals were observed several times each breeding season. The most abundant nesting species in this heronry is the Little Blue Heron. The total number of nesting birds of all species is over 3000 for this eight acres of lowland deciduous woods. The number of individual nests of all species is approximately 200 per acre.

The objectives of this study were to: (1) determine food items of the Cattle Egret and Little Blue Heron at this heronry, (2) study feeding behavior of the two species, (3) make a comparison of the food items of these two species, and (4) study the feeding areas for each species.

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#### METHODS AND MATERIALS

Regurgitated pellets of identifiable food from nestlings and older but still flightless young of both species were collected at the heronry. Young herons and egrets regurgitated their last meal when they became disturbed. The amount of disturbance necessary to cause regurgitation varied according to species and age level. Regurgitation and defecation of the young flightless herons and egrets which cannot escape are described by Dusi (1966) as displacement behavior characteristic of many herons and egrets.

The regurgitated pellets were collected throughout the summer and were immediately preserved in a 70 per cent isopropyl alcohol solution. From one to several days later the pellets were washed and food items were sorted, counted, and identified.

Observations were made at the various feeding areas to determine feeding behavior of the birds. Bushnell 7 x 35 custom binoculars were used when necessary. Cattle Egrets could often be studied from very short distances.

#### RESULTS AND DISCUSSION

Food for the young Little Blue Herons was obtained from nearby drainage ditches and from "barrow pits" and "sloughs" along the Mississippi River levee. Feeding also occurred in nearby flooded rice fields. When young Little Blue Herons were able to fly, they frequently were observed at ditches at the borders of fields. Young were also found feeding along the "sloughs" and "barrow pits" of the river levee.

Cattle Egrets fed in open fields when they first arrived in late March and early April. Many were found in the newly plowed or disked fields. Later, during the nesting season (May-August), the Cattle Egrets associated themselves with horses and cattle, which were numerous on the levee.

The Little Blue Heron was observed feeding as far away as 21 miles from the heronry during the nesting season. During early fall (September-October), they scatter and feed at much greater distances (Coffey, 1943; Hanebrink and Rhodes, 1968). Observations of birds of both species coming to the heronry at sundown and leaving near sunup indicated that they fed in all directions from the heronry.

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At the Luxora Heronry feeding areas, the well known symbiotic association of the Cattle Egret with cattle was observed constantly during the months of May through August. Although the egrets sometimes fed on their own, catching insects in the pasture and other prey along shallow mudholes and sloughs, they were seldom seen feeding over 100 yards from cattle or horses. One notable exception was observed in early June when eight Cattle Egrets were found following two tractors plowing a wheat field. They fed from 15 feet to 100 yards behind the tractors, searching the freshly turned soil for earthworms and insects much in the same manner as species of blackbirds.

When feeding with cattle, the egrets were usually quite active. They constantly made short runs, changed positions and flew short distances from animal to animal in their search for food. Cattle Egrets were most often found at the sides or near the heads of the cattle. The individual egrets carefully watched for insects disturbed by the cattle. These birds often examined the legs, flanks and head of the cattle for flies. In addition, these birds often alighted on the backs of the cattle. This was more for a perch rather than to feed on flies or ectoparasites. On more than one occasion a bird used a cow to ride across a water-filled area of the pasture.

In the heat of the day the cattle moved into the shade or into nearby water-filled sloughs along the Mississippi River levee. The egrets would not, however, follow a cow into water more than a few inches in depth. They notably preferred animals which were grazing or moving about and quickly abandoned an inactive or reclining cow to hurriedly run or fly to a feeding animal. Cattle Egrets also examined weeds and grass very carefully for insects. Although these birds usually caught their prey when it became disturbed and moved, they sometimes caught prey by slowly stalking it or by remaining very still, then suddenly catching it with a quick jab.

Sometimes the egrets were almost stepped on by the cattle as they searched for food, but only when a fly was picked from the head or face did the cattle seem bothered. Even then, the reaction was usually only a shaking of the head.

The Little Blue Heron has long been known in the United States and return to breeding areas each spring from wintering areas in Mexico, Central and South America and from the southern portions of the Gulf Coastal States (Coffey, 1948; Dusi, 1967). The adult Little Blue Herons associated with the Luxora Heronry were observed to stand, wait, and wade or walk slowly while feeding. They feed mostly in water a few inches deep near the edges of the "sloughs" and "barrow pits" between the Mississippi River levee and the Mississippi River. Some were observed feeding in nearby flooded rice fields. Both young and adult birds were observed feeding

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while standing on floating vegetation and partly submerged logs and stumps.

There was no association between cattle and Little Blue Herons, even though they frequented the same sloughs and pastures. Little Blue Herons occasionally fed on grasshoppers or other insects but rarely moved far from the edge of the water.

A comparison, made of food items of the Little Blue Heron and Cattle Egrets associated with the Luxora Heronry, is presented in Table 1. Food items listed include parts of entire organisms collected from the young in the heronry. The most common food for the Cattle Egret was grasshoppers. Small frogs were the most numerous vertebrates in their diet. A comparison of food items of these two species revealed that, with the exception of crayfish, vertebrates made up the bulk of the food of the Little Blue Heron, while invertebrates mostly comprised the diet of the Cattle Egret. Therefore, there is little competition between these two species for food in this area.

Since 1965, the number of nesting Little Blue Herons has remained relatively constant. During the 1968 breeding season these two species far outnumbered the other species of herons and egrets at this heronry. There is little competition with the Common Egret (*Casmerodius albus*), as this species wades in deeper water to collect larger species of fish. The Common Egret is the third most common nesting bird in this heronry. There is very little interspecific activity between the Cattle Egret and the Little Blue Heron even though they frequently nest in the same tree.

TABLE I

REGURGITATED FOOD ITEMS COLLECTED FROM THE  
LITTLE BLUE HERON AND CATTLE EGRET FROM THE  
LUXORA HERONRY (11 MAY - 26 JULY, 1968).

Food Items	Little Blue Heron	Cattle Egret
<b>Invertebrates</b>		
Oligochaetes (Earthworms)	0	27
Arachnida (Spiders)	3	80
Crayfish ( <i>Cambarus</i> spp.)	410	0
Fairy Shrimp	1	0
Chilopoda (Centipedes)	0	4
Odonata (Dragon Fly Nymphs)	3	0
Grasshoppers	45	2,888
Crickets	1	33
Carabidae (Ground Beetles)	1	311
Dytiscidae (Diving Beetles)	1	0
Elateridae (Click Beetles)	2	3
Pentatomidae (Stink Bugs)	1	1

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Noctuidae larva	1	2
Cercopidae (Froghoppers)	0	1
Tipulidae (Crane Flies)	0	1
Tabanidae (Horse and Deer Flies)	1	88
Calliphoridae (Blowflies)	0	25
Diptera larvae	6	1
<b>Vertebrates</b>		
Amiidae (Bowfin)	1	0
Lepisosteidae (Gars)	3	0
Cyprinidae (Minnows, Carp)	94	0
Poeciliidae ( <i>Gambusia affinis</i> )	1	0
Aphredoderidae (Pirateperch)	1	0
Sciaenidae (Drum)	16	0
Centrarchidae (Sunfish and Bass)	72	0
Ranidae (Frogs)	60	22
Tadpoles	25	0
Bufonidae (Toads)	1	2
Scincidae ( <i>Eumeces</i> )	0	1

## SUMMARY

A study was made of the feeding areas, feeding behavior, and regurgitated food items collected from the young nestlings of Cattle Egrets and Little Blue Herons in the Luxora Heronry located in Mississippi County, Arkansas.

A comparison was made of food items of these two species. Food items are summarized and include parts or entire organisms collected from nestlings.

The most common food item for Cattle Egrets was grasshoppers. Invertebrates rather than vertebrates were the more common food for the Cattle Egret. Small frogs were the most common vertebrates found in the regurgitated pellets of the Cattle Egrets.

The Little Blue Heron's diet consisted mainly of vertebrates such as tadpoles, frogs, and fish. The most common invertebrate food items for this species was crayfish.

There is very little competition for food among the various species at this heronry. Each species occupies its own niche and does not interfere with its allied species in feeding territories.

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