



# Food and Feeding Habits of Cattle Egret (*Bubulcus ibis*) in Thanjavur District, Tamil Nadu

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## Abstract

The cattle egret (*Bubulcus ibis*) is a cosmopolitan species of heron (family Ardeidae) and they are found in the tropics, subtropics and warm temperate zones. The cattle egret and grazing cattle in close association is a classic example of commensalism. Their feeding habitats include seasonally flooded grasslands, pastures, farmlands, wetlands and rice. They often accompany cattle or other large mammals, catching insect and small vertebrate prey disturbed by these animals. This study is a first attempt in the Cauvery delta region where the abundance and distribution of cattle egrets which are common. The study was conducted in the villages such as Thugili and Kanjanur which are situated in Thiruvidaimaruthur Taluk of Thanjavur District of Tamil Nadu. The methods used for this study was direct observation involves following the birds early in the morning between 7.00 am and 10.00 am and 4.00 pm - 6.00 pm in the evening. The observation was made on birds for feeding directly on the field. Samples of the food material eaten by the birds were collected for further observation. It fed mainly on arthropods species such as grasshoppers, cricket, caterpillars, flies, termites, ants, rarely on ticks and spiders and very rarely on plants which makes the bird to be an omnivorous. The diet of cattle egret reveals that order Orthopteran insects were the highest percentage (33.33%). This study recommends that all efforts should be taken to reduce further decline in the population of this birds so as to improve its conservation status in the environment.

**Keywords:** Cattle Egret; Food and Feeding; Interaction with Cattle; Cauvery Delta

## Introduction

The cattle egret (*Bubulcus ibis*) is a cosmopolitan species of heron (family Ardeidae) and they are found in the tropics, subtropics and warm temperate zones. It is the only member of the monotypic genus *Bubulcus*, although some authorities regard two of its subspecies as full species, the western cattle egret and the eastern cattle egret. Despite the similarities in plumage to the egrets of the genus *Egretta*, it is more closely related to the herons of *Ardea* [1]. Originally native to parts of Asia, Africa and Europe, it has undergone a rapid expansion in its distribution and successfully colonized much of the rest

of the world in the last century. It is a white bird adorned with buff plumes in the breeding season. It nests in colonies, usually near water bodies and often with other wading birds. The nest is a platform of sticks in trees or shrubs. Cattle egrets exploit drier and open habitats more than other heron species. Cattle Egrets are often found associated with cattle and occasionally with pigs, goats, and horses, and also with moving vehicles such as tractors [2-7]. They were also reported to be associated with other moving vehicles and their association with grazing cattle helps increase their prey captures and utilizes less energy than those of solitary feeders [8].

The cattle egret and grazing cattle in close association is a classic example of commensalism. The egrets always forage close to where the cattle are grazing because the cattle, as they move, stir up and flush out insects from the vegetation that otherwise might be difficult for the egrets to find and catch. The cattle egret is commensal in this interaction as it is getting benefited and the grazing cattle is neither benefited nor harmed. The demographic explosion and wide distribution of this species may be related to the increase of cattle-raising activities, in addition to the lack of competition with other species and their biotic potential [9]. Their feeding habitats include seasonally flooded grasslands, pastures, farmlands, wetlands and rice paddies [10-12]. They often accompany cattle or other large mammals, catching insect and small vertebrate prey disturbed by these animals. Some populations of the cattle egret are migratory and others show post-breeding dispersal. They can obtain their food from different environmental units of the aquatic system by means of the spatial differential use of the environment [13].

Egrets are able to exploit resources throughout the year and at different hours of the day. Many studies on the trophic ecology of Egrets, their association with habitats, food resources and feeding spectrum have been reported. Although Cattle Egret is very common and occupies a large geographic area, little is known about its feeding activity, with the only available contributions being those of Jobling in northern Argentina. The feeding can take place at any time of the day and depends on habit and foraging abilities of species and individual. The feeding method includes from a simple picking up a food item to more complex and energetic feeding like levering over object, digging into the ground, snatching, swooping, plucking and hawking. Food items are manipulated in different ways. They are simply swallowed whole by tossing a food item back from the bill tip into the throat. Some items are stripped of extraneous parts before being swallowed, such as fruits of their skins or insects of their wings and legs; some are softened before swallowing by passing them through and crushing them in the bill or cleaned of unwanted covering by being wiped back and forth over a

perch or along the ground. Sometimes instead of swallowing, the food is for courtship feeding [14]. There are few studies on the ecology of cattle egret especially in many areas in the globe, therefore a knowledge of the food and feeding habit will provides a very important information on the ecology of this species. This study is a first attempt in the Cauvery delta region where the abundance and distribution of cattle egrets which are common. Hence the study was conducted to identify the food of cattle egret and feeding habits cattle egrets and also to assess the interaction with cattles.

## Material and Methods

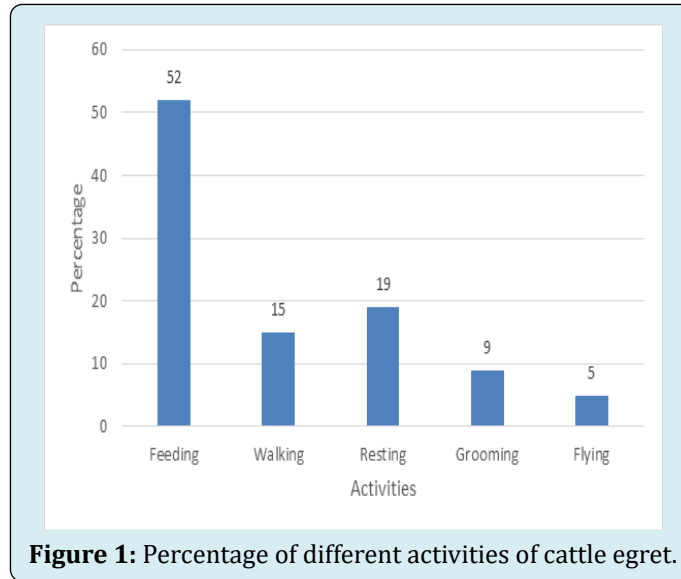
The study was conducted in the villages such as Thugili 11°044' N and 79°50' E and Kanjanur 11°06' N and 79°49' E which are situated in Thiruvudaimaruthur Taluk of Thanjavur District of Tamil Nadu. The methods used for this study was direct observation, the direct observation was involves following the birds early in the morning between 7.00 am and 10.00 am and 4.00 pm - 6.00 pm in the evening, the birds was watched for feeding directly on the field. Focal observations were carried on randomly selected foraging cattle egrets, during which number of strikes, successful captures (identified by the characteristic head-jerk swallowing behaviour [2,15-17]). The food materials which the birds consumed were noted and identified and recorded in the data sheets. Samples of the food material eating were collected for further observation. The studies covered a period of three months (January - March, 2023). Data generated were analyzed using descriptive statistics which comprises simple tables, percentages and frequency distribution.

## Results

Table 1 shows the checklist of food items consumed by cattle egret in the study area, it shows that the birds fed on wide variety of foods *i.e.* it fed mainly on animal species such as grasshoppers, cricket, caterpillars, flies, termites, ants, rarely on ticks and spiders and very rarely on plants which makes the bird to be omnivorous.

	Food Item	Order/Family	Name of Species
ANIMAL MATTER	INSECTS	Orthoptera	Grasshoppers and Cricket
		Coleoptera	Beetles
		Lepidoptera	Butterflies Caterpillars
		Diptera	Flies
		Isoptera	Termites
		Formicidae	Ants
		Alphididae	Aphids
	Annelida	Oligocheata	Earthworm
	Arachnids	Arachinidae	Tick and Spider

**Table 1:** Different Food items consumed by Cattle Egret in the study area.



The activity pattern of the birds was revealed in Fig.1, the results shows that feeding (52%) was the highest activities followed by that they spend most of their time on and follow by resting (19%) while flying (5%) was the least activity.

Table 2 showed the percentage of arthropods species found in the diet of cattle egret, it reveals that Orthoptera recorded the highest percentage (33.33%) follows by Formicidae (26%), Isoptera recorded 16%, Coleoptera recorded 10.33% while the least is recorded amongst Arachinidae.

Arthropod Species	Percentage (%)
Orthoptera	33.33
Coleoptera	10.33
Lepidoptera	5.3
Diptera	6.8
Isoptera	9.2
Formicidae	26
Aphididae	8.7
Arachinidae	2.1

**Table 2:** Composition of Arthropod in the diet of Cattle Egret.



## Discussion

Insects represent the main food of Cattle egret while plants were secondary categories. The results obtained basically agree with the works of Bo, et al. [18] which reported that the diet of this heron is distinctly carnivorous, being 80% represented by invertebrates, mostly insects (orthopterous, coleopterous, dipterous and lepidopterous in decreasing abundance). There is also agreement on the fact that arachnids and plants represent a minor percentage of the food [19]. These authors report reptiles (Anguillidae) as constituents of the egret's diet but these were not observed in the present study. Zaccagnini, et al. [20] found a total of 25 taxonomic entities being insects the largest category, followed by amphibians, fish and arachnids. In the area of the Parana' River, Beltzer, et al. [19] found 11 taxonomic items highlighting the orthopterous as the largest followed by arachnids, amphibians and other insects. Others studies elsewhere in its area of distribution agreed that the diet of the species is basically composed by insects of the order Orthoptera [21,22]. Siegfried [23] observed in South Africa a similar importance of Lepidoptera and Orthoptera. Siegfried [23] reported that the Cattle Egret's diet varied temporarily depending on the abundance of prey and indirectly depending on rainfall at some times of the year. Dietary selectivity was not significant, thus showing that the Cattle Egret has a high degree of plasticity in its diet. In these studies, cattle egret were seen to prey upon cattle ectoparasites which was in line with the result of Kaufman [24] and Seedikkoya, et al. [6]. This is probably why they were always following the animal because they were sure getting their highly delicious food. According to Szijj, usage of a particular habitat will be a function of, amongst other factors, food availability and accessibility [27-30]. In agreement with this concept, the Cattle Egret demonstrated a differential use of pastures where food is obtained more easily. The preference for this type of environment is a characteristic feature of the basically insectivorous species.

## Conclusion

The feeding and breeding requirements are driving forces that determine how egret species locate and consume preferred food, and where to place their nests. The dynamic nature of resources such as availability of cattle and nest tree availability for a variety of cattle egret species determine the movements, social structure, breeding season, productivity, and moult. The results show that cattle egret is found in large numbers mostly with cattle and they are diurnal animals. They are omnivorous animals but they fed mostly on insects of the order Orthoptera but they also fed on plants such as cotton and neem plants. They spend most of the time feeding and the least of their time flying. Their food source are available throughout the year. Therefore, availability of food resources

cannot be a factor contributing to a reduction in population of this bird in the study area. This study recommends that all efforts should therefore be taken to halt further decline in the population of this birds so as to improve its conservation status in the environment.

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