



# Prevalence of Chewing Lice Species on Cattle Egret (*Bubulcus ibis*) Birds in Al-Diwaniyah City, Iraq

Hussam Saeed Al-Aredhi<sup>1</sup>

<sup>1</sup>Department of Biology, College of Education, University of Al-Qadisiyah, Al-Diwaniyah city, Iraq

## Abstract

**Introduction:** Cattle egret (*Bubulcus ibis*) is one of the waterfowl birds residing in Iraq, lives in colonies and accompanies buffalo and cows in fields and pastures, it belongs to the family Ardeidae, which includes 60 species of waterfowl that inhabit temperate and tropical regions, it feeds on crustaceans and fish, and in some agroecosystems helps control insect pests, as well as, it cleans livestock from ticks and flies, however, it might potentially have a role in the dissemination of diseases carried by ticks to animals. The purpose of this study was to identify and isolate the species of louse that were found on 69 cattle egrets (*B. ibis*), which were collected between September 2023 and April 2024 from various locations throughout Al-Diwaniyah province.

**Methods:** Between September 2023 and April 2024 sixty-nine Cattle egret (*B. ibis*) birds including 37 males and 32 females were collected from various locations throughout the city of Al-Diwaniyah for this study, they were subsequently taken to the University of Al-Qadisiyah's parasite laboratory at the biology department of the College of Education. After being removed from the birds, the louse specimens were placed in Petri dishes containing 70% alcohol to remove any remaining feathers, cleaned in 10% (KOH) for one day, distilled water wash, and then placed on slides with Canada balsam, observed under a light microscope, and identify in accordance with Price et al.

**Results:** Forty-two of the birds (60.86%) from 69 were found to be infested, and five species of chewing lice were reported: *Ciconiphilus decimfasciatus*, *Menopon gallinae*, *Ardeicola ciconiae*, *Anaticola phoenicopterid*, and *Ciconiphilus quadripustulatus*. The results showed that the rate of infestation with chewing lice in male and female birds was (62.16%) and (59.37%) respectively, and the infestation rate with one species of louse was (30.95%), with two species (52.38%), while infestation rate with three species of louse was (16.66%).

**Conclusion:** This study showed that lice were present in a high percentage (60.86%) in Cattle egret (*Bubulcus ibis*) birds in the city of Diwaniyah, Iraq. There were five identified species of chewing lice in the current study: *Menopon gallinae*, *Ciconiphilus decimfasciatus*, *Anaticola phoenicopterid*, *Ardeicola ciconiae*, and *Ciconiphilus quadripustulatus*.

**Keywords:** Prevalence, *Bubulcus ibis* birds, Chewing lice species, Al-Diwaniyah city, Iraq

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## Introduction

There are over 9000 species of birds in class Aves, some of which are wild and others waterfowl, they are widely distributed throughout the world and consume fish, fruit, cereals, rodents, insects, dead animals, or smaller birds as well as represent an important source of animal protein that is essential to humans worldwide, in addition, play an important role in biological management by consuming dangerous pests including insects and some rodents, as a result, many nations forbid hunting them at specific periods of the year to prevent them hunting of birds to protect them from extinction (1).

Cattle egret *Bubulcus ibis* is one of the waterfowl birds residing in Iraq, lives in colonies and accompanies buffalo and cows in fields and pastures, it belongs to the family Ardeidae, which includes 60 species of waterfowl that inhabit temperate and tropical regions, it feeds on crustaceans and fish (2), and in some agroecosystems helps control insect pests (3), as well as, it cleans livestock from ticks and flies, however, it might potentially have a

role in the dissemination of diseases carried by ticks to animals (4).

Numerous parasites infect birds, including chewing lice, which are ectoparasites that have undergone structural and behavioral changes to enable them to live in close association with the host (5), and feed on feather fragments, dried clotted blood at the location of the infection, scales, skin secretions, and skin tissue debris, but does not absorb the blood (6).

Lice cause irritation to birds while feeding through mouthparts, restlessness, itching, loss of appetite, feather loss, annoyance, general weakness, lack of egg production in females, and anemia, in addition they also reduce the birds' resistance to diseases and thus the infected bird becomes prone to secondary infections (7), additionally, lice may act as a vector and reservoir for diseases including those that cause typhoid and avian cholera. (8).

Few studies have been conducted on chewing lice in waterfowl of Iraq, with the majority of studies focusing on farmed bird species like chickens and pigeons,



\*Corresponding Author: Hussam Saeed Al-Aredhi, Email: [hussam.saeed@qu.edu.iq](mailto:hussam.saeed@qu.edu.iq)

therefore, the current study's objective is to detect and diagnose chewing lice from cattle egrets in the city of Al-Diwaniyah.

## Materials and Methods

### Collection of samples

Between September 2023 and April 2024 sixty-nine Cattle egret (*Bubulcus ibis*) birds including 37 males and 32 females were collected from various locations throughout the city of Al-Diwaniyah for this study, they were subsequently taken to the University of Al-Qadisiyah's parasite laboratory at the biology department of the College of Education.

### Study site

Al-Diwaniyah is one of the cities of Al-Qadisiyah province, which is located in the country of Iraq. This city is located 200 km south of Baghdad and near the Diwaniyah River, which is one of the branches of the Euphrates River, which passes through the city of Al-Diwaniyah. Also, this city is one of the most fertile agricultural areas in Iraq for the cultivation of rice and date palm, for this reason, the population of this city has increased day by day and reached its current state.

### Examination Methods

After being removed from the birds, the louse specimens were placed in Petri dishes containing 70% alcohol to remove any remaining feathers, cleaned in 10% (KOH) for one day, distilled water wash, and then placed on slides with Canada balsam (9), observed under a light microscope, and identify in accordance with Price et al (10).

## Results

Results of an examination of sixty-nine cattle egret birds including thirty-seven males and thirty-two females birds in Al-Diwaniyah city revealed that 42 of the birds were infested, with an infestation rate of (60.86%), there have been reports of five chewing lice species in the current study as a Table 1 and Figures 1–5.

The infestation rates of chewing lice in male and female birds are 62.16% and 59.37%, respectively, as shown in Table 2.

The infestation rates were 30.95% for one species of lice, 52.38% for two species, and 16.66% for three species, as presented in Table 3.

**Table 1.** Lice Species Recovered From Cattle Egrets in the City of Al-Diwaniyah

Species of Lice	No. Infested	(%)
<i>Menopon gallinae</i>	22	52.38
<i>Ciconiphilus decimfasciatus</i>	17	40.47
<i>Anaticola phoenicopterid</i>	16	38.09
<i>Ardeicola ciconiae</i>	13	30.95
<i>Ciconiphilus quadripustulatus</i>	9	21.42

## Discussion

The current study's findings demonstrated that 42 (60.86%) of cattle egret birds were infested with chewing lice, that is less than the infestation rate (69.81%) recorded by Salah Eldein et al (11) in Egypt and higher than the infestation rate were recorded by both Abdel-Wahab (57.14%) (12) in Egypt and Girisgin et al (58.8%) (13) in wild birds in northwestern Turkey, the difference in recorded infestation rate is due to the difference in the number of samples examined, sample collection areas, and climatic conditions.

There were five identified species of chewing lice in the current study: *Menopon gallinae*, *Ciconiphilus decimfasciatus*, *Anaticola phoenicopterid*, *Ardeicola ciconiae*, and *Ciconiphilus quadripustulatus*, this is consistent with both Salah Eldein et al, (11) in their study in Egypt on the cattle egret birds and they isolated five species of ectoparasites: *Ctenocephalides canis* (1.88%), *Pseudolynchia* sp. (9.43%), *Argas persicus* larvae (11.32%), *Menopon gallinae* (45.28%) and *Ciconiphilus decimfasciatus* (67.92%) and Riad (14) who examined the ectoparasites on migrating birds in the Red Sea region of Gabel El Zeit and the eastern desert of Egypt among the species isolated were: *Calliphora* spp., *Ciconiphilus quadripustulatus*, *Ornithonyssus sylviarum*, *Ardeicola ciconiae*, *Neophilopterus incompletes* and *Anaticola phoenicopterid*.

The findings indicated that the infestation rate with chewing lice in male and female cattle egret birds was (62.16%) and (59.37%) respectively, this is consistent with research conducted in Zimbabwe by Permin et al (15), which found that every chicken sample they looked at was infected and Al-Aredhi (16) found no statistically significant variations in the rate of chewing lice infestation between male and female birds due to the mixing of the



**Figure 1.** *Menopon gallinae* (40×)



Figure 2. *Ciconiphilus decimfasciatus* (40×)



Figure 3. *Anaticola phoenicopterid*



Figure 4. *Ardeicola ciconiae* (40×)



Figure 5. *Ciconiphilus quadripustulatus* (40×)

Table 2. Rate of infestation with lice based on the bird's sex

Bird's Sex	No. Examined	No. Infested	(%)
Male	37	23	62.16
Female	32	19	59.37
Total	69	42	60.86

sexes while feeding and mating and their existence in the same environment.

The infestation rate with one species of louse was (30.95%), with two species (52.38%), while the infestation rate with three species of louse was (16.66%), this outcome agrees with the research done by Dovc et al (17) who pointed out that double infestations with ectoparasites are more prevalent than other infestations because a bird's immune system may get weakened by an acute infestation of one species of louse, which may then induce an infestation of another species, while Adang et al (18-21) stated that ectoparasites can cohabit without harming one another.

### Conclusion

This study showed that lice were present in a high percentage (60.86%) in Cattle egret (*Bubulcus ibis*) birds in the city of Diwaniyah, Iraq. There were five

Table 3. Type of infestation with lice in examined birds

Infestation Type	No. Infested	(%)
Single	13	30.95
Double	22	52.38
Triple	7	16.66

identified species of chewing lice in the current study: *Menopon gallinae*, *Ciconiphilus decimfasciatus*, *Anaticola phoenicopterid*, *Ardeicola ciconiae*, and *Ciconiphilus quadripustulatus*.

### Competing Interests

Not applicable.

### Ethical Approval

Not applicable.

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