

**ECTOPARASITES OF NESTING CATTLE EGRET  
BUBULCUS IBIS L. (CICONIIFORMES: ARDEIDAE)  
AT KAFR EL-SHEIKH CITY, EGYPT**

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**ABSTRACT**

*Nesting cattle egrets are considered nuisances when their breeding colonies are near structures used by humans due to noise, odour, spoiling the environment and concern over health hazards. Cattle egrets play an important role in disseminating many pathogenic micro-organisms, viral, bacterial, rickettsial and parasites to domestic birds, animals and man.*

*Ectoparasitic infection is one of the most important parasitic diseases of birds because they are not markedly host specific which makes infected foreign birds potentially dangerous carriers to other habitats. These ectoparasites may also be mechanical or biological vectors to the more serious viral and bacterial pathogens. So, this work aimed to study the ectoparasitic fauna of nesting cattle egrets at Kafr El-Sheikh city to elucidate their possible role of transmission of such parasites and infectious organisms to domestic birds and mammals.*

*In the present study, a total of 81 adult cattle egrets were captured from Kafr El-Sheikh city and examined for ectoparasitic infection during the period from June to September 2006. Results revealed that*

a total of 76 out of 81 (93.8%) birds were infected with ectoparasites. A total of 76 out of 81 (93.8 %) birds were infected with lice (*Menacanthus stramenius*), 23 out of 81 (28.4%) birds were infected with red mite (*Dermanyssus gallinae*) and 30 out of 81 (37%) birds were infected with tick (*Argas arboreus*). The highest percentage of infection and the highest intensity of the infection with the three recorded ectoparasites was in July and August, then in June followed by September.

## INTRODUCTION

The cattle egret is the most terrestrial heron, being well-adapted to many diverse terrestrial and aquatic habitats. It is also well-adapted to urban areas. In its breeding range, it often nests in heronries established by native ardeids. It is strongly migratory. However, distinguishing between migration and dispersal in cattle egrets is very difficult because they have a tendency to wander extensively (*Telfair, 1994*). The cattle egret is native to parts of Asia, Africa and Europe. A very successful colonizer, it is now also found in Australia, the Pacific, North America and South America. Most cattle egrets are permanent residents with some post-breeding dispersal, which may have led to the egret's range expansion (*Hancock and Elliott, 1978*).

Some heronries are considered nuisances when near structures used by humans due to noise, odour and concern over health hazards and potential danger to aircraft (*Telfair, 1994*). Cattle egrets may transmit parasites and other disease organisms to livestock and people. The role of cattle egrets in spread and transmission of new cattle disease virus was

proven by *Metwally (2004)* and its role in spread and transmission of West Nile virus was proven by *Mumcuoglu et., al (2005)* and *Reisen et., al (2005)*.

Ectoparasitic infection is one of the most important parasitic diseases of birds because they are not markedly host specific which makes infected foreign birds potentially dangerous carriers to other habitats (*Petrak, 1982*). These ectoparasites may also be mechanical or biological vectors to the more serious viral and bacterial pathogens (*El-Akabawy and Mahmoud, 1995*).

In the last few years, cattle egrets numbers are tremendously increased in Kafr El-Sheikh governorate, breeding colonies were extensively housed the trees in Kafr El-Sheikh city from June to September each year and caused many environmental problems. So, this study aimed to study the ectoparasitic fauna of nesting cattle egrets at Kafi El-Sheikh city to elucidate their possible role of transmission of such parasites and infectious organisms to domestic birds and mammals.

## **MATERIALS AND METHODS**

Eighty one adult cattle egrets Fig. (1) were captured alive from Kafr El-Sheikh city in the period from June to September 2006. Birds were brought to the laboratory of the Department of Parasitology, Faculty of Veterinary Medicine, Kafr El-Sheikh University.



**Fig. (1): Cattle egrets nesting on trees**

Each bird was thoroughly examined by naked eye and by the aid of hand lens and bright light to look for lesions and for any ectoparasites. Ticks, mites and lice were counted by the aid of a binocular microscope. The collected ticks, mites and lice were placed in 70% alcohol containing 5% glycerin. Specimens were cleared in lactophenol, mounted and identified according to *Baker et al (1956)*, *Baker and Wharton (1959)*, *Madbouly (1961)*, *Krantz (1970)*, *Guirgis (1971)*, *McDaniel (1979)* and *Manuel (1981)*. Some of the recorded ectoparasites were photographed using Leica Wild MPS32 photo microscope.

## RESULTS

A total of 76 out of 81 (93.8%) examined cattle egrets were infected with ectoparasites. As shown in Table (1) a total of 76 out of 81 (93.8%) were infected with the lice, *Menacanthus stramenius* (Fig. 2), 23 out of 81 (24.4%) birds were infected with the red mite, *Dermanyssus gallinae* (Fig. 3) and 30 out of 81 (37%) birds were infected with the Argasid tick, *Argas arboreus* (Fig. 4).



Fig. (2): *Menacanthus stramenius*

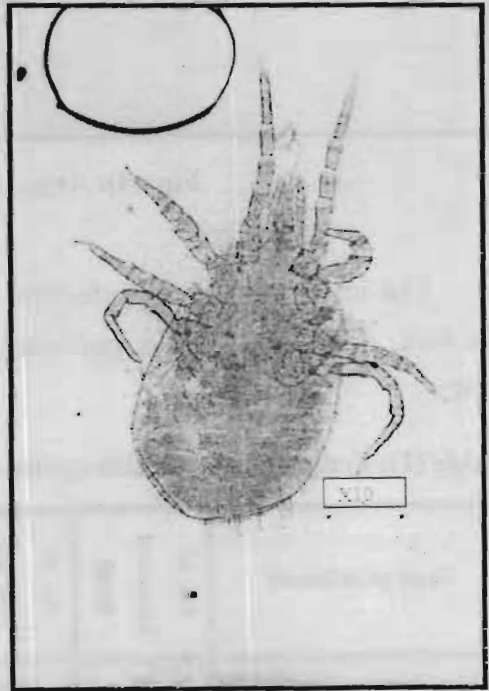


Fig. (3): *Dermanyssus gallinae*

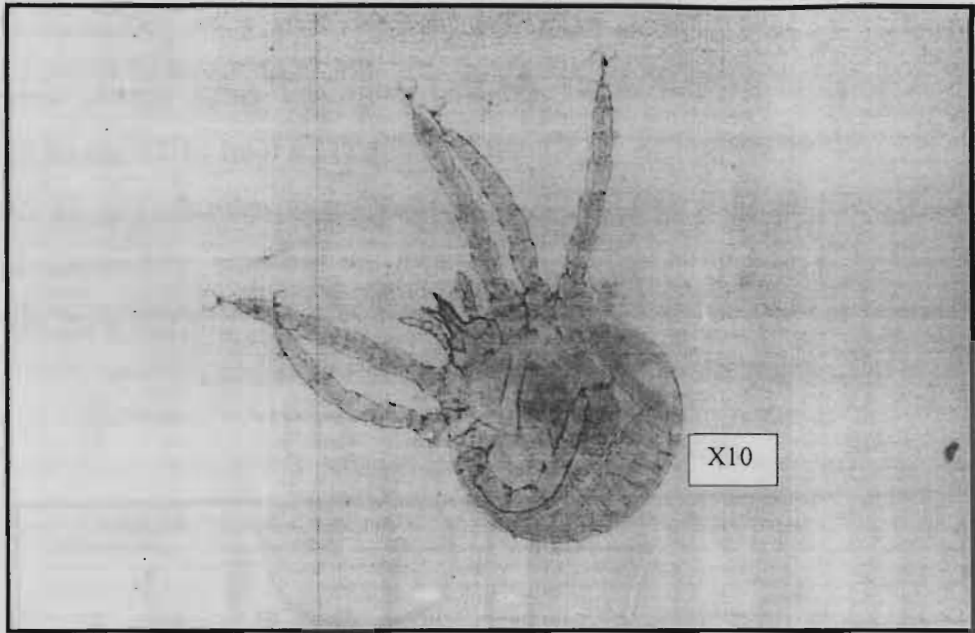


Fig. (4): *Argas arboreus* larva

The intensities of the infection were 53.7 *Menacanthus stramenius* per bird, 4.2 *Dermanyssus gallinae* per bird and 8 *Argas arboreus* per bird.

Table (1): Ectoparasites of cattle egrets nesting at Kafrelsheikh city.

| Type of infection                | No. of examined birds | No. of infected birds | Percentage (%) | Total No. of collected parasites | Intensity of the infection |
|----------------------------------|-----------------------|-----------------------|----------------|----------------------------------|----------------------------|
| 1) <i>Menacanthus stramenius</i> | 81                    | 76                    | 93.8           | 4087                             | 53.7                       |
| 2) <i>Dermanyssus gallinae</i>   | 81                    | 23                    | 28.4           | 97                               | 4.2                        |
| 3) <i>Argas arboreus</i>         | 81                    | 30                    | 37             | 240                              | 8                          |

Results in Table (2) showed that the highest percent of infection with ectoparasites was in July, August. (100%), then in June (88.9%) followed by September (84.21%). Regarding the intensity of the infection with the three recorded ectoparasites, the highest rates of infection was in July, then in August followed by June and the lowest rate was in September.

**Table (2):** Monthly prevalence and the mean intensity of the infection of cattle egrets with ectoparasites.

| Month     | No. of birds |          |       | Kind of infection             |       |                            |                             |       |                            |                       |       |                            |
|-----------|--------------|----------|-------|-------------------------------|-------|----------------------------|-----------------------------|-------|----------------------------|-----------------------|-------|----------------------------|
|           | examined     | infected | %     | <i>Menacanthus stramenius</i> |       |                            | <i>Dermanyssus gallinae</i> |       |                            | <i>Argas arboreus</i> |       |                            |
|           |              |          |       | No. of infected birds         | %     | Intensity of the infection | No. of infected birds       | %     | Intensity of the infection | No. of infected birds | %     | Intensity of the infection |
| June      | 18           | 16       | 88.9  | 16                            | 88.9  | 52.2                       | 5                           | 27.8  | 3.2                        | 5                     | 33.4  | 6.33                       |
| July      | 22           | 22       | 100   | 22                            | 100   | 56.91                      | 8                           | 36.4  | 5.3                        | 11                    | 54.5  | 9                          |
| August    | 22           | 22       | 100   | 22                            | 100   | 56.81                      | 7                           | 31.81 | 4.6                        | 11                    | 45.5  | 8.8                        |
| September | 19           | 16       | 84.21 | 16                            | 84.21 | 46.9                       | 3                           | 15.8  | 2.4                        | 7                     | 10.52 | 3                          |

## DISCUSSION

Nesting cattle egrets are considered nuisances when their breeding colonies are near structures used by human due to noise, odour, spoiling the environment and concern over health hazards. They transmit parasites and other organisms to our domestic birds, livestock and people.

In the present study, 81 cattle egrets were examined for the presence of ectoparasites 76 (93.8%) were found infected with ectoparasites. Concerning the prevalence and the population density of total ectoparasites, the highest population density of ectoparasites on cattle egrets was during July and August.

The obtained results concluded that the total prevalence of lice (*Menacanthus stramineus*) on cattle egrets was (93.08%) and the highest rate of infection was during July and August. **Jacobson and Hurst (1979)** recorded *Menacanthus stramineus* from wild turkey poults, **Ugochakwu and Omije (1986)** recorded *Menacanthus stramineus* from twenty commercial poultry farms with prevalence rate 20% .**George et. al(1992)** reported that the infection rate of domestic poultry with *Menacanthus stramineus* was 54.5%, while **Permin et al (2002)** found the prevalence of *Menacanthus Stramineus* in free-range chickens was 90%. **Sharshir and Desouky (2003)** recorded *Menacanthus stramineus* from both migratory and farm-raised quails in Kafr El-Sheikh Governorate and **Harfoush et al (2004)** recorded *Menacanthus stramineus* from cattle egrets in Kafr El-Sheikh Governorate with infection rate of 42.25%. **Lane et al (2006)** isolated ectoparasitic ticks and chicken body louse *Menacanthus stramineus* from wild turkey with infestation rate of (44.2% and 12.5%) respectively. **Nadeem et al (2007)** determined the prevalence of louse infestation in layer chicken farms (22.16%) and the prevalence of louse infestation was higher during summer months and at older ages. **Sychra et al (2008)** reported the prevalence of *Menacanthus stramineus* (48%) on chickens from 31 small private backyard flocks. **Mungube et al (2008)** estimated the prevalence of lice and mites on chicken with infection rates of (79.4%) in *Menacanthus stramineus* and (60%) in *Dermanyssus gallinae*. Higher prevalence of infection with lice in the present study may be attributed to the fact that the nesting egrets were under stress during the breeding season which lower the immune status and also the hot summer enhance the breeding cycle of lice.

Concerning the prevalence of ticks on cattle egrets (37%) and the highs intensity of infection was in July followed by August then June and the lowest intensity was in September. Similar results obtained by



*Belozarov et al (2003)* who studied the population structure of *Argus arboreus* ticks from heronries of cattle egret, *Bubulcus ibis* in south Africa. They concluded that the period of tick activity, including reproduction and development of eggs, larvae and nymphs is synchronized with the nesting and breeding season of their avian hosts. It begins during spring with the return of birds to the heronry and ceases in autumn through induction of reproductive diapause in engorged females and behavioural diapause in unfed nymphs and adult ticks. *George et al (1984)* reported isolation of a new arbovirus from the tick *Argus robertsi* from cattle egret colony in Australia. *Mumcuoglu et al (2005)* recorded the role of mites and ticks (*Argus arboreus*) collected directly from wild birds (cattle egret) and domestic birds and their nests in maintaining the endemic state of west Nile virus in Israel.

Regarding the percent of infection with Mite (*Dermanyssus gallinae*) was (28.4%) with highest intensity during July. *Kenlany et al. (1995)* recorded *Dermanyssus gallinae* from house sparrow from Kafr El-Sheikh Governorate. *Mazyad et al (1999)* recorded *Dermanyssus gallinae* from starling and migrant quails in North Sinai and Suez Canal zones. *Sharshir and Desouky (2003)* recorded *Dermanyssus gallinae* from both migratory and farm-raised quails in Kafr El-Sheikh Governorate. The ectoparasites of nesting cattle egrets reported in the present investigation were previously recorded from many species of wild and domestic birds and this may be attributed to the wide host range of these species of parasites. an opinion coincided with that of *Petrak (1982)*, *Badawy (1999)* and *Johnson et al (2002)*. It could be concluded that cattle egrets not only nuisances due to noise, odour, spoiling the environment and concern over health hazards but also spread dangerous parasites and other microorganisms to our domestic birds and animals.

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## الطفيليات الخارجية التي تصيب طائر أبو قردان المعشش في مدينة كفر الشيخ

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تلعب الطيور البرية دوراً خطيراً في نقل ونشر مسببات الأمراض البكتيرية والفيروسية وكذلك الأمراض الطفيلية للطيور الداجنة والإنسان والحيوان حيث تقوم هذه الطيور بدور العائل الخازن والناقل لكثير من الطفيليات وتصبح مصدراً مستمراً للعدوى بهذه الطفيليات وليس أدل على ذلك من إصابة الإنسان والحيوان ببعض الطفيليات التي كان يعتقد إنها خاصة بالطيور و تعد الإصابة بالطفيليات الخارجية من أهم الأمراض الطفيلية التي تصيب الطيور لأنها ليس لها عائل متخصص ولذلك إصابة الطيور البرية بها يكون في منتهى الخطورة لأنها تعتبر عائل خازن وناقل للإصابة للطيور الداجنة. و في الآونة الأخيرة ازدادت أعداد طيور أبو قردان المعششة فوق الأشجار بمدينة كفر الشيخ مما أدى إلى مشاكل بيئية خطيرة نتيجة للزرق و الرائحة الكريهة و سقوط البيض وصنار أبو قردان من فوق الأشجار والنضوضاء الناتجة عن أصوات الطيور مما أضطر الناس إلى قطع الكثير من الأشجار ولذلك كن من الضروري دراسة الدور الذي يمكن أن تلعبه هذه الطيور في التلوث البيولوجي للبيئة.

أجريت هذه الدراسة على عدد (81) من طيور أبو قردان المعششة و التي تم تجميعهم من مدينة كفر الشيخ وفحصهم لمعرفة الإصابة بالطفيليات الخارجية في الفترة من يونيو حتى سبتمبر 2006م.

وأوضحت النتائج أن نسبة الإصابة العامة بالطفيليات الخارجية كانت (93.8%) و أوضحت النتائج أن نسبة الإصابة بالقلمل كانت (93.8%) وأن نسبة الإصابة بطفيل الجرب الأحمر كانت (28.4%) بينما كانت نسبة الإصابة بالقراد النين كانت (37%). و كان أعلى معدل للإصابة وكذلك أعلى متوسط لشدة الإصابة بهذه الطفيليات في شهري يوليو وأغسطس ثم في شهر يونيو و نيه شهر سبتمبر. و هذه الطفيليات التي ثبتت إصابة طيور أبو قردان المعششة بها تصيب الطيور الداجنة وتسبب خسائر اقتصادية كبيرة و ذلك إما مباشرة عن طريق الإصابة بها أو لكونها تلعب دوراً خطيراً في نقل الكثير من الأمراض الفيروسية و البكتيرية الخطيرة و لذلك فان نتائج هذه الدراسة تبعت برسالة تحذير لمربي الدواجن لمراعاة تجنب دخول الطيور البرية إلى المزارع أو تجمعها بالقرب منها ويلعب طائر أبو قردان دور هام في وبائية هذه الطفيليات و انتشارها حيث أنه لا يبني أعشاش خاصة به في الغالب و يستخدم أعشاش الطيور الأخرى.