

# ***Cuclotogaster heterographus* (Phthiraptera: Philopteridae) Infestation on the Body Feathers of Turkey *Meleagris gallopavo* as a New Host from Erbil City, Kurdistan Region, Iraq.**

**Wand Kh. Ali \*Qaraman M. Koyee \*Rezan K. Ahmed Shamall M.A. Abdullah**

Biology Department - Education College/ Scientific Departments - Salahaddin Univ., Erbil- Iraq

\*Biology Department- Science College- Salahaddin Univ., Erbil- Iraq

[Shamall M A Abdullah@yahoo.com](mailto:Shamall M A Abdullah@yahoo.com)

## **ABSTRACT**

The louse *Cuclotogaster heterographus* (Nitzsch, 1866) was recorded in the present study for the first time in Erbil city-Kurdistan region-Iraq from feathers of the Turkey *Meleagris gallopavo*, which has been obtained within Erbil main bird market, during the period of March to the end of June, with the overall prevalence of infection reached 64.28% and the mean intensity was 18. Also, all the stages of the louse were described and illustrated. **Key Words:** Turkey, *Cuclotogaster heterographus*, Kurdistan region, Iraq.

**اصابة القملة *Cuclotogaster heterographus* لريش الديك الرومي *Meleagris gallopavo* كعائل جديد في مدينة اربيل، اقليم كردستان، العراق**

## **الخلاصة**

شملت الدراسة الحالية تسجيل القمل (*Cuclotogaster heterographus* (Nitzsch, 1866) لأول مرة في إقليم كردستان العراق على ريش الديك الرومي *Meleagris gallopavo* المأخوذة من سوق الطيور في مدينة اربيل ، خلال الفتره المحصوره من اذار الى نهاية ايار، وبنسبة الاصابة ٦٤.٢٨% ومعدل شدة الاصابة ١٨. كما تم اعطاء الوصف الكامل لجميع اطوار الحياة لهذا الطفيلي مع الصور.

## **INTRODUCTION**

Chewing lice *Cuclotogaster heterographus* (Nitzsch, 1866), belonging to Class: Insecta, Order: Phthiraptera, Family: Philopteridae (Junker and Boomker, 2007). These lice are permanent obligate ectoparasites and distributed worldwide through most of wild and domestic birds (Price *et al.*, 2003; Sychra, 2005). The avian lice not only affect the vitality and productivity of their hosts but also act as reservoirs and transmitters of pathogens causing fowl cholera, typhoid and toxoplasmosis (Saxena *et al.*, 1985; Kakarsulemankhel *et al.*, 2010). Their biting is usually irritating and painful, poultry become restless resulting decreasing in feed intake (Islam *et al.*, 1999; Shanta *et al.*, 2006).

The first record of *C. heterographus* in Iraq was given by Abu-Alhab (1975), who recorded it on the feather of the chickens *Gallus gallus domesticus* in Baghdad city. The information has been inadequate and the study restricted on composition of lice species and

distribution and did not provide complete life cycle and diagnostic features of the collected species. Chewing lice are permanent and obligate ectoparasites with a high degree of host specificity (Johnson and Clayton, 2003). Some are less host specific (Weckstein, 2004). Thus there is great value in knowing the geographic distribution of the lice. Faunistic surveys, given the poor level of knowledge of such ectoparasites in Iraq, increase the chance of discovering new hosts from which many chewing lice have been described. However, other important taxonomic characters of *C. heterographus* and life stages were not discussed or figured in detail in most Iraqi references which will be additional information in this paper and this attempt will not only serve as base line study of the taxonomy of mallophagan lice of poultry but also guide researchers in correct identification of these lice.

## MATERIALS AND METHODS

During the period of March to the end of June, 20 turkey birds *Meleagris gallopavo* were examined which were found around the Erbil city. All birds were inspected for ectoparasites. The manually collected lice from infested birds were preserved in the solution of 85% ethanol and 2% glycerin, in glass vials. For making permanent slides, lice were cleared for few hours in cold KOH solution and were then dehydrated with ascending grades of ethanol till absolute grade, thereafter washed by Xylene. Each louse was picked up with the help of fine brush and placed in Canada balsam on slides and identified under a light microscope. The identification of parasites was carried out in accordance with the methods of Wall and Shearer (2001). Photos were taken with Canon Power Shot Sd 1200 Is Digital Camera model 10.0 Mega Pixels.

## RESULTS AND DISCUSSION

*Meleagris gallopavo* were surveyed for parasitic chewing lice during the period of the present study. The survey showed the occurrence of *Cuclotogaster heterographus* on the feather of turkey. The overall prevalence was 64.28%, and the mean intensity was 18. Previously, *C. heterographus* was recorded in Iraq on the feather of the chickens *Gallus gallus domesticus* in Baghdad city (Abu-Alhab, 1975), in Mosul city (Al-Habaity, 1976; Hassan *et al.*, 1989), in Basrah city (Habeeb, 2000) and it was recorded on the feather of the turkeys in Ninevah city (Al-Ani *et al.*, 1994). In Kurdistan region, *C. heterographus* was recorded on the feather of the chickens in Erbil city (Abdul-Karim *et al.*, 1985; Al-Nakshabandi, 2002; Gurdy, 2005). Later, it was recorded on the head feather and neck of *A. chukar* in Erbil city (Khoshnaw, 2011). No more hosts are known for this parasite in Kurdistan region. So, *M. gallopavo* is considered as a new host for *C. heterographus*, and the present record represents the first record in Kurdistan region.

In the present study, the prevalence was 64.28%. Also, Al-Ani *et al.* (1994) reported *C. heterographus* with prevalence 66% on turkey in Ninevah city, Hassan *et al.* (1989) reported with prevalence 72.8% in chickens in Mosul. While, Khoshnaw (2011) recorded with prevalence 2.08% on *A. chukar* in Erbil city. The differences in the results could be related to various regions from which the birds were collected and to the host too. Lice comprise the only truly parasitic group amongst the exopterygote insects, and exhibit a remarkable level of host specificity, unequalled in most other metazoan parasites. As permanent, obligate ectoparasites, the distributions of lice have mostly parallel those of their hosts consequently; lice are found on every continent and in most habitats occupied by birds and mammals. All orders and most families of birds have records of hostspecific lice; of the few groups that do not, it is likely either that their lice are extinct or that the hosts have been searched insufficiently (Smith 2003). The current knowledge of the louse fauna on turkey *M.*

*gallopavo* in Iraq is quite incomplete. There is no comprehensive study on the louse infestation of turkey birds in Iraq except the paper of Al-Ani *et al.* (1994), even the data presented here are limited, but we try to give a detail description for all life stages.

### ***Cuclotogaster heterographus* (Nitzsch 1866)**

*Lipeurus heterographus* Nitzsch, C. L. In Giebel, C. G. A. 1866. Die im zoologischen Museum der Universität Halle aufgestellten Epizoen nebst Beobachtungen über dieselben. *Zeitschrift für die Gesammten Naturwissenschaften* Halle N. F. 2 28(11/12): 353-397 [381].

#### **Synonym:**

*Lipeurus pallidus* Giebel, 1874.

*Goniocotes burneiti* Packard. 1870.

*Goniodes eynsfordii* Theobald, 1896.

*Cuclotogaster laticorpus* Carriker, 1936.

#### **Description**

This louse has a rounded body with a large, slender head, which is rounded at the front. The adult is about 2-3mm in length. Three long bristles project from each side of the dorsal surface of the head and the five-segmented antennae are fully exposed. Each leg has two tarsal claws. The abdomen is barrel-shaped in the female and more elongate in the male. It bears a row of dorsal hairs on each segment and this agrees with the description made by (Kakarsulemankhel *et al.*, 2010).

**Female:** body length 1.6-1.9 mm, head 0.4-0.7 mm, antennae 0.2-0.4 mm. Long of prothorax 0.18-0.19 mm while width 0.25-0.30 mm, mesothorax long 0.12-0.19mm and width is 0.12-0.22 mm. Abdomens long 0.9-0.12 mm and width 0.5-0.8 mm. Pre antennal region long is 0.12-0.22 mm and post antennal region 0.20-0.30 mm (Fig. 1J).

**Male:** body length 1.4-1.9 mm. Head 0.25-0.45 mm. Long of prothorax 0.1-0.15 mm. Abdomens long 0.7-1.5 mm width 0.2-0.25 mm. Pre antennal region long 0.1-0.15 mm and post antennal region 0.1-0.2 mm (Fig. 1I).

**Nits (eggs):** are usually white and are small less than 1mm in length (Fig. 1B, C, D), unhatched eggs can be obvious because they glisten in reflected light. Hatched eggs remain attached to feathers and are grayish and flattened in appearance (Fig1E). Usually eggs attached to the base of feathers.

However, the species of the genus *Cuclotogaster* including the present species produce irritation and allergies which affect the host's sleeping, reproduction, and deficiency in egg production (Wall and Shearer, 1997). But we did not study these sites. Therefore, further studies on the lice associated with birds from other localities in Kurdistan region and in other Iraqi states are highly encouraged.

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A



B



C



D



E



F



G



H



I



J

**Fig. (1): Life stages of *Cuclostogaster heterographus* (Nitzsch 1866)**

**A.** Egg on feather (40X); **B.** Unhatched egg (40X); **C. D.** Beginning of hatching (40X); **E.** Hatched egg (40X); **F. G. H.** Nymphal stage (20X); **I.** Male (20X) **J.** Female (20X).