

The First Case of *Menacanthus pallidulus* (Neumann, 1912) (Phthiraptera: Amblycera: Menoponidae) on A Chicken (*Gallus gallus domesticus* Linnaeus, 1758) in Türkiye

Türkiye’de Bir Tavukta (Gallus gallus domesticus Linnaeus, 1758) İlk Menacanthus pallidulus (Neumann, 1912) (Phthiraptera: Amblycera: Menoponidae) Olgusu

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ABSTRACT

This case report was prepared to provide information about *Menacanthus pallidulus* (Neumann, 1912), which was detected for the first time on a domestic chicken in Hatay province of Türkiye. Louse specimens collected from a chicken by a student were brought to Hatay Mustafa Kemal University Faculty of Veterinary Medicine, Department of Parasitology, and sent to Selçuk University Faculty of Veterinary Medicine, Department of Parasitology, for identification of species and microscopic examination revealed the presence of *Menacanthus pallidulus* (Neumann, 1912). Thus, with this study, the presence of *M. pallidulus* on domestic chickens was recorded for the first time in Türkiye.

Keywords: Louse, *Menacanthus pallidulus*, domestic chicken, Türkiye

ÖZ

Bu olgu sunumu, Türkiye’nin Hatay ilinde, evcil bir tavukta ilk kez tespit edilen *Menacanthus pallidulus* (Neumann, 1912) hakkında bilgi vermek için hazırlanmıştır. Bir öğrenci tarafından tavuktan toplanan bit örnekleri Hatay Mustafa Kemal Üniversitesi Veteriner Fakültesi, Parazitoloji Anabilim Dalı’na getirilmiş, tür teşhisi için Selçuk Üniversitesi Veteriner Fakültesi, Parazitoloji Anabilim Dalı’na gönderilen örneklerin mikroskopik inceleme sonucu *Menacanthus pallidulus* (Neumann, 1912) olduğu anlaşılmıştır. Böylece bu çalışma ile evcil tavukta saptanan *M. pallidulus*’un, Türkiye’deki varlığı ilk kez kaydedilmiştir.

Anahtar kelimeler: Bit, *Menacanthus pallidulus*, evcil tavuk, Türkiye

INTRODUCTION

Chewing lice are an important problem for both commercial and small-scale poultry breeders among ectoparasite infestations due to their host specificity, frequent infestations, feeding on feathers and fleece, causing itching, restlessness, weakness, decrease in feed consumption and egg production and underestimated economic loss (1,2).

Menacanthus species are found around the chest, thighs and cloaca of birds, especially poultry (1). *Menacanthus* species, which are mostly common on birds in the order Passeriformes (songbirds), are also seen in poultry in the order Galliformes (landfowl), such as *Gallus gallus* (red junglefowl), *Gallus sonneratii* (gray junglefowl), *Bambusicola thoracica* (chinese bamboo partridge) (3).



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Menacanthus cornutus (Schömmer, 1913) and *Menacanthus stramineus* (Nitzsch, 1818) belonging to the genus *Menacanthus* in the family Menoponidae and *Menopon gallinae* (Linnaeus, 1758) in the genus *Menopon* were detected on chickens in studies conducted in Türkiye, but there is no record of *Menacanthus pallidulus* (4). *Menacanthus pallidulus* was first described as *Menopon (Menacanthus) pallidulum* by Neumann (1912), and later this species was accepted as *M. pallidulus* (3,5).

In this report, morphological information will be given about the male and female of *M. pallidulus* found on a domestic chicken in Hatay province.

CASE REPORT

The louse specimens that constitute the material of this study were obtained as a result of the homework given to the students of Hatay Mustafa Kemal University Faculty of Veterinary Medicine. Five louse samples (4♀ 1♂) collected from the chicken were preserved in a tube containing 70% alcohol and sent to Selçuk University Faculty of Veterinary Medicine, Department of Parasitology. The samples were cleared in 10% KOH for 24 hours, then fixed on the slides with Canada balsam. The lice examined under the microscope were identified as *M. pallidulus* according to the relevant literatures (3,6,7).

Morphological Characteristics

Female-the head is triangular and narrowed anteriorly. The width of the head is approximately one and a half times its length. The anterior part is circular, smooth and rounded, the antennae are long and located in the antenna groove. The hooks are quite long and extend to the posterior end of the hypopharyngeal sclerite. The head is very enlarged in the temporal region. Temporal setae are much longer than ocular setae. The hypopharynx is strongly sclerotized, the ocular and occipital nodes are not prominent. The gular plate is distinct, narrowed from anterior to posterior, with four setae on each side. The thorax is longer than the head. The prothorax narrows to connect to the head and pronotum is surrounded by a total of 12 setae on the each side. There are four bristles on the edges of the metathorax, and the lower edge is surrounded by long hairs. On the edges of the femurs there are bristles and a small number of spiny setae on the ventral side of the third pair of legs. Abdomen is oval, elongated, well developed, with

large and complete tergites (1-6 segments). Both of the males and females, tergites and sternites have a single row of setae on each abdominal segment and a spine and a bristle at the angles of each segment. There is a long spiny bristle on each side of the genital opening (Figure 1a). Some measurements of male and the female of *M. pallidulus* found on domestic chicken were made (Table 1).

Male-the male is similar to the female (Figure 1b). The prothorax, pterothorax and abdomen are narrower than in the female. Male genital sclerites are short, basal apodem is well hardened, parameres are well developed, externally curved and slender. The penis is short, the posterior margin of the endomeres is shorter than the posterior end of the parameres. The endomers become rounded and narrow towards the tip. Terminal segment is covered with a comb of short marginal hairs (Figure 1c).

DISCUSSION

Due to the economic importance of the domestic chicken *G. gallus domesticus* (Linnaeus, 1758), numerous studies have been conducted on its infectious and parasitic diseases. As a result, more is known about the lice fauna than other bird species, and a total of 22 species of chewing lice have been identified on domestic chickens worldwide (8). *M. gallinae* (Linnaeus, 1758), *M. cornutus* (Schommer, 1913), *M. stramineus* (Nitzsch, 1818), *Gonicotes gallinae* (De Geer, 1778), *Goniodes dissimilis* Denny, 1842, *G. gigas* (Taschenberg, 1879), *Cuclotogaster heterographus*

Table 1. Measurements (mm) of *Menacanthus pallidulus* found on domestic chicken

Body parts	Male (n=1)	Female (n=4)
Preocular width	0.37	0.38-0.39
Head length	0.32	0.35-0.36
Head (temple) width	0.50	0.52-0.58
Head index	0.64	0.62-0.67
Prothorax width	0.35	0.43-0.46
Pterothorax width	0.44	0.57-0.61
Thorax length	0.42	0.42-0.46
Abdomen length	0.74	1.10-1.16
Abdomen width	0.55	0.81-0.82
Total length	1.53	1.92-1.97

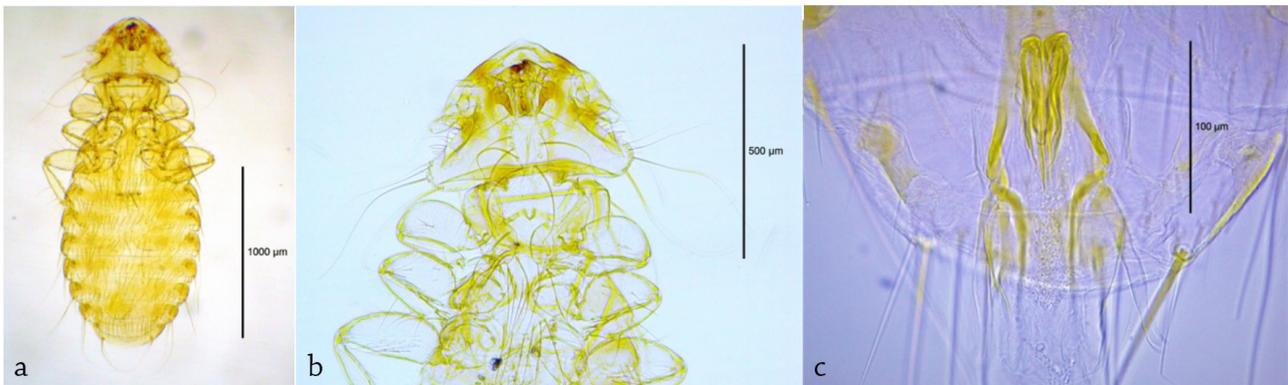


Figure 1. *Menacanthus pallidulus*, a) *M. pallidulus* female, b) Head and thorax of male *M. pallidulus*, c) Male genitalia of *M. pallidulus*

Nitzsch, 1866 and *Lipeurus caponis* Linne, 1758 have been recorded from domestic chickens in Türkiye (4). Besides these species, another Mallophaga species *M. pallidulus*, which has been found on domestic chickens in different countries of the world (2,9-11), has not been reported from Türkiye so far. In this study, 4♀, 1♂ of *M. pallidulus* was detected on a domestic chicken (*Gallus g. domesticus*).

Emerson (7) stated that, *M. pallidulus* has often been misidentified as the immature forms of *M. stramineus* for the reason that two are very similar. *M. stramineus* is larger than other menoponid lice found on chickens and the male genitalia are typical. There is one row of transversal setae on each of the abdominal tergites (3rd and 4th) of the male and female of *M. pallidulus*, and two rows in *M. stramineus*. It is also distinguished from *M. cornutus* by the difference in tergal setae and male genitalia. Moreover *M. gallinae* can be easily differentiated from *M. pallidulus* by the absence of spines on the ventral side of the head and terminates posteriorly in a pointed shape of of the abdomen in the female (7,12).

Menacanthus pallidulus is small size, dark yellow menoponid with a distinct gap between the mandibles and the frontal margin. The ventral spine is long and thick, and the hairs on gular region and the head index with a specific value distinguishing it from other related species on *Gallus g. domesticus*. Posterior femur as in *M. stramineus* but without extra hairs, only a prominent hair is present. Dorsum is covered with one row of setae and ventrum with two rows. The last abdominal segment is rounded and fringed with small hairs and the male genitalia has a very distinctive appearance (6,13). Similar features were observed in the samples obtained in this study.

In previous studies (6,10,14,15), the head length and width of male *M. pallidulus* specimens (0.29-0.31x0.49 mm) are close to the measurements in this study (0.32x0.50 mm). On the other hand, the abdominal length and width (0.91-1.05x0.73 mm) reported in the studies (6,10,14,15) are larger than our measurements (0.74x0.55 mm). The total length of male louse in this study was 0,53 mm which is consistent with previous studies (10,14,15) and smaller than the measurements (1.70-1.84 mm) reported in some studies (6,12).

According to the measurements obtained in previous studies (6,13), the head length and width of female *M. pallidulus* specimens (0.22-0.29x0.45-0.54 mm) were smaller than the measurements in the current study (0.35-0.36x0.52-0.58 mm). The abdominal length and width (0.94x0.54-0.59 mm) reported in the literature (6,13) are much smaller than our measurements (1.10-1.16x0.81-0.82 mm). The total length of female lice in this study (1.92-1.97 mm) was found to be much larger than the measurements (1.46-1.60 mm) in the other studies (6,12,13).

CONCLUSION

Consequently, this is the first report of *M. pallidulus* on domestic chickens in Türkiye. We provide some figures and information about morphological characteristics of *M. pallidulus* in the present study. Poultry breeders need to develop awareness for chewing lice to improve poultry conditions. Further studies are needed to determine the prevalence of this species on domestic chickens and other poultry in Türkiye.

* Ethics

Informed Consent: The louse specimens that constitute the material of this study were obtained as a result of the homework given to the students of Hatay Mustafa Kemal University Faculty of Veterinary Medicine.

* Authorship Contributions

Concept: İ.E., A.Z., B.D., M.Y., Design: F.N.Ş., İ.E., A.Z., B.D., M.Y., Data Collection or Processing: İ.E., A.Z., B.D., Analysis or Interpretation: F.N.Ş., B.D., M.Y., Literature Search: F.N.Ş., B.D., Writing: F.N.Ş.

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