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The First Case of *Hippobosca longipennis* (Diptera: Hippoboscidae) Detected in Dogs in Türkiye

Türkiye'de Köpeklerde İlk Kez Tespit Edilen *Hippobosca longipennis* (Diptera: Hippoboscidae) Vakası

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ABSTRACT

Hippobosca longipennis is an obligate blood-feeding ectoparasite of domestic and wild carnivores. This case report describes the presence of *Hippobosca longipennis* in seven stray dogs that were brought to a municipal animal care center in Istanbul for rehabilitation. During routine clinical examinations performed on the dogs, hippoboscid flies detected in their fur were carefully collected using forceps. The collected flies were preserved in glass bottles containing 70% ethyl alcohol and transported to the Laboratory of the Department of Parasitology, Istanbul University-Cerrahpaşa Faculty of Veterinary Medicine for species identification. The flies were morphologically examined under a stereomicroscope, and all specimens were identified as belonging to *Hippobosca longipennis*. This study presents the first report of *Hippobosca longipennis* in dogs in Türkiye and provides a significant contribution to the literature on the geographical distribution of this species.

Keywords: Dog louse fly, Ectoparasite, *Hippobosca longipennis*, Stray dogs

ÖZ

Hippobosca longipennis, evcil ve yabani etoburların zorunlu kanla beslenen bir ektoparazitidir. Bu vaka raporu, İstanbul'da belediyeye ait bir hayvan bakımevine, rehabilitasyon amacıyla getirilen yedi sokak köpeğinde, *Hippobosca longipennis* türünün varlığını bildirmektedir. Köpekler üzerinde gerçekleştirilen rutin klinik muayeneler sırasında, tüyleri arasında tespit edilen hippoboscid sinekler penset yardımıyla dikkatlice toplanmıştır. Toplanan sinekler, %70 etil alkol içeren cam şişelerde muhafaza edilerek tür teşhisi amacıyla İstanbul Üniversitesi-Cerrahpaşa Veteriner Fakültesi Parazitoloji Anabilim Dalı laboratuvarına getirilmiştir. Sineklerin morfolojik incelemeleri stereo mikroskop altında yapılmış ve tüm örneklerin *Hippobosca longipennis* türüne ait olduğu belirlenmiştir. Bu çalışma, Türkiye'de köpeklerde *Hippobosca longipennis*'in ilk raporunu sunmakta ve türün coğrafi dağılımına yönelik literatüre önemli bir katkı sağlamaktadır.

Anahtar Kelimeler: Köpek biti sineği, Ektoparazit, *Hippobosca longipennis,* Sokak köpekleri

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INTRODUCTION

Hippobosca longipennis, known as the dog louse fly, is an obligate blood-feeding ectoparasite of domestic and wild carnivores. This species parasitizes mammals such as those in the families Canidae (dogs, jackals, foxes), Felidae (lions, leopards, cheetahs, and domestic cats), Hyaenidae (hyenas), and Viverridae (civets, mongooses). Additionally, it has been reported on accidental hosts such as antelopes and birds, and it is occasionally known to bite humans.[1-3]

Hippobosca longipennis is a member of the family Hippoboscidae and order Diptera (suborder Cyclorrhapha). It is about 1 cm long and has a dorso-ventrally flattened body. Its body is covered with a flexible layer of chitin, which allows for expansion during blood-sucking. Morphological features include short antennae, large compound eyes and piercing-sucking mouthparts. The wings are long and well-developed and can fold along the body during rest. The vascularization of the wings is a distinctive feature, especially concentrated on the leading edge. Strongly built legs terminate in a pair of claws that allow it to cling tightly to the host's skin.[4]

Hippobosca longipennis has a highly specialized biology. Female flies give birth to one fully developed larva in each reproductive cycle. The larvae soon pass into the pupal stage, which can last between 19 and 142 days, depending on environmental conditions. Adult flies usually emerge from the pupal stage in the morning and search for a suitable host to suck blood. Mating takes place about 7 days after the adults settle on the host. Larvae complete development in the body of females in 3 to 8 days and are usually laid in cracks, under vegetation or organic debris. Female flies can give birth to 10-15 larvae in their lifetime and live for about 4-5 months.[5]

Hippobosca longipennis is adapted to hot, arid and semi-arid climates and has a wide geographical distribution in Africa, the Middle East and Asia. In Europe, its presence has been reported mostly from the Mediterranean basin countries and rarely from Central Europe.[1,3]

Hippobosca longipennis is one of the main vectors of the filarial nematode *Acanthocheilonema dracunculoides* and plays a critical role in the transmission of this parasite to dogs and other mammals.[6,7] It has also been found to have the capacity to mechanically transport the zoonotic *Cheyletiella yasguri*.[8] These characteristics suggest that the species may pose serious risks to both animal and human health.

CASE PRESENTATION

In September and October 2023, seven stray dogs, aged between 8 months and 10 years, 6 females, 1 male, all mixed breeds, collected from various districts of of Istanbul (Sultanbeyli [n=2], Maltepe [n=1], Pendik [n=1], Kartal [n=1], Başakşehir [n=1] and Sultangazi [n=1]) and brought to Istanbul Metropolitan Municipality Kisirkaya Animal Care Center for rehabilitation were subjected to routine clinical examinations. During the examinations, hippoboscid flies were observed on the ventral neck and anterior axillary regions of the dogs (Figure 1).

Figure 1. *Hippobosca longipennis* identified on one of the dogs examined in the present study

A total of 24 flies were carefully removed using forceps and placed in glass bottles containing 70% ethyl alcohol. The collected specimens were brought to the laboratory of Istanbul University-Cerrahpaşa Veterinary Faculty, Department of Parasitology for species identification. Morphological species identification of the collected flies was performed under a stereo microscope based on the identification key presented by Chalupsky[4],and all flies were identified as *Hippobosca longipennis* (18♀, 6♂) (figure 2).

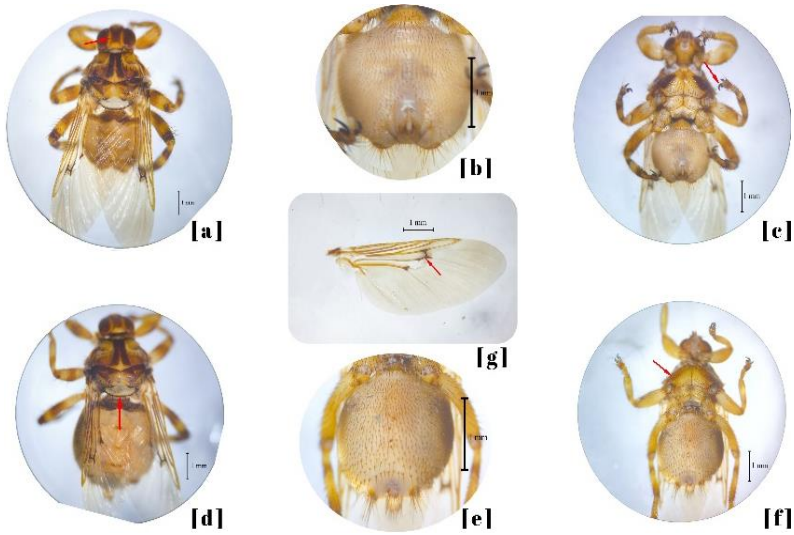

Figure 2. Morphological characteristics of *Hippobosca longipennis* (a) Dorsal view of the male, with a regular and sharp triangular apical lobe of the fronto-clypeus (red arrow)(b) Posterior end of the male (c) Ventral view of the male, showing the nail structure (red arrow) (d)

Dorsal view of the female, with an ivory-white scutellum (red arrow), (e) Posterior end of the female (f) Ventral view of the female, where the prosternum width is greater than its length (red arrow) (g) Wing structure, showing two cross veins (red arrow)

DISCUSSION

Hippobosca longipennis was first detected in Türkiye in 2020 in a red fox in Hatay province.[9] However, this species has not been encountered in previous studies on ectoparasite species diversity and prevalence in dogs in Türkiye. This study documents the presence of *Hippobosca longipennis* in dogs in Türkiye for the first time and provides an important contribution to the literature on the geographical distribution of the species.

Although the geographical distribution of *Hippobosca longipennis* appears to be mainly restricted to East Africa, North Africa, and the Middle East, the species has also been reported from Europe, Asia, and other regions. European records are generally from southern European countries with Mediterranean climates, particularly Italy, Greece, Cyprus, Bulgaria, and Spain. It has also been rarely reported in Central and Eastern European countries such as Hungary, Ukraine, Poland, Slovakia, and Romania.[1,3,10-12]

Hippobosca longipennis has been widely reported in Asia, mainly in India, Myanmar, Sri Lanka, Afghanistan and southern and central China. Its presence in South Korea and Japan has been reported to be limited and it is thought not to form permanent populations in these regions. However, it has also been recorded in arid and semi-arid areas in Central Asia, such as Afghanistan, Iran and Turkestan.[1]

International animal trade plays a critical role in the spread of *Hippobosca longipennis* to different regions. The species was transported to the United States with cheetahs imported from Africa to the San Diego Zoo, where it was recorded for the first time.[13] Similarly, *Hippobosca longipennis* was transported from Africa to the United Kingdom and Ireland with wild carnivores, and although it did not establish a permanent population in these regions, it demonstrates the importance of international transportation in moving exotic parasites to new geographies.[14,15]

Finally, *Hippobosca longipennis* is known to play an important role as a vector. This species acts as a mechanical vector of filarial nematodes, such as *Acanthocheilonema dracunculoides*, as well as a variety of pathogens of zoonotic importance.[6-8] The vectoring potential of this fly warrants further investigation of its effects on both animal and human health.

In conclusion, the geographical distribution of *Hippobosca longipennis* can be considered to continue to expand due to climate change and increased international animal transportation. The potential role of this species in the spread of zoonotic diseases is an important area of research for both veterinary and public health. More comprehensive studies in the future will provide more information on the dynamics of the species spread and vectoring potential.

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