

New records of chewing lice (*Brueelia chayanh*) species carried on the bird species of common myna (*Acridotheres tristis*) transported to Turkey by smuggling

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Abstract. Introduction: The present study was conducted to collect data on the lice species carried on common myna (*Acridotheres tristis*), which is a bird species that had no natural distribution in Turkey but was later included in the Turkish ornithofauna. **Material and Methods:** The bird carcasses were visually inspected and ectoparasite samples were randomly obtained from the back, abdomen, and underwing of each bird using a 4X lens, comb, fine forceps with good light source. The collected lice were placed in tubes containing 70% alcohol and were cleared in 10% KOH. After washing with distilled water, samples were passed through 70%, 80% and 90% alcohol series for three consecutive days, respectively, and were coated with Canadian balm. Lice were identified by light microscopy. **Results:** Of the 25 carcasses of common mynas inspected, 19 (76%) birds were found to be infested with lice, including 16 (84.2%) birds infested with both *Menacanthus eurysternus* and *Brueelia chayanh* and the remaining 3 (15.8%) birds infested with *Brueelia chayanh* only. The *Menacanthus eurysternus* lice were mostly collected from the dorsal region, while the *Brueelia chayanh* lice were mostly collected from the ventral region in the birds. **Conclusion:** To our knowledge, this is the first study to report *Brueelia chayanh* in common myna in Turkey.

Keywords: *Acridotheres tristis*, smuggling, chewing lice, parasite, bird, new record

Noi semnalări ale speciilor de păduchi malofagi (*Brueelia chayanh*) la speciile de păsări de myna comună (*Acridotheres tristis*) transportate în Turcia prin contrabandă

Rezumat. Introducere: Prezentul studiu a fost realizat pentru a colecta date despre speciile de păduchi malofagi la myna comună (*Acridotheres tristis*), o specie de pasăre care nu a avut distribuție naturală în Turcia, dar a fost inclusă ulterior în ornitofauna turcească. **Material și metode:** Carcasele de păsări au fost inspectate vizual și probele de ectoparaziți au fost obținute aleatoriu de pe spatule, abdomenul și sub aripile fiecărei păsări folosind o lupă 4X, pieptene, pense fină cu sursă bună de lumină. Păduchii colectați au fost plasați în tuburi care conțineau 70 % alcool și au fost introduse în KOH 10%. După spălare cu apă distilată, probele au fost trecute prin serii de alcool 70%, 80% și, respectiv, 90% timp de trei zile consecutive și au fost acoperite cu balsam canadian. Păduchii au fost identificați prin microscopie cu lumină. **Rezultate:** Din cele 25 de carcase de mynă comună inspectate, 19 (76%) păsări au fost găsite a fi infestate cu păduchi malofagi, inclusiv 16 (84,2%) păsări infestate atât cu *Menacanthus eurysternus*, cât și cu *Brueelia chayanh* și restul de 3 (15,8%) păsări infestate numai cu *Brueelia chayanh*. Păduchii *Menacanthus eurysternus* au fost colectați în mare parte din regiunea dorsală, în timp ce păduchii *Brueelia chayanh* au fost colectați în mare parte din regiunea ventrală de la păsări. **Concluzie:** Din informațiile noastre, acesta este primul studiu care raportează *Brueelia chayanh* la myna comună, în Turcia.

Cuvinte cheie: *Acridotheres tristis*, contrabandă, păduchi malofagi, parazit, pasăre, record nou.

Received 07.07.2022. Accepted 19.12.2022.

Introduction

Turkey hosts an exceptionally rich bird diversity due to its numerous habitat types (Kiziroğlu, 2015; Sezen, 2017). Since birds exhibit a wide range of behaviors throughout their lives due to various factors including age, season, type of foraging, mating, building nests, self-defense against predators, and migration, they live in a wide variety of habitat types to adapt to various environmental conditions and prefer various types of habitats according to these factors (Maturano et al., 2015; Sick, 1997; Stotz, 1996). As a result, birds are exposed to diverse parasite species that are categorized as ecto- and endo-parasites. Every bird carries its distinctive and specific type of ectoparasites such as chewing lice, mites, ticks, and flies on its body (Emerson, 1973; Marshall, 1981).

Chewing lice are persistent, obligate and host-specific ectoparasites of bird species primarily feeding on feathers and skin scales (Tomás et al., 2016). These lice can be harmful since they provoke small holes on the feathers of domestic and migratory bird species, reducing the heat regulation capacity, deteriorating the quality of

plumage, and increasing feather breakage (Booth et al., 1993; Kose and Møller, 1999; Vas et al., 2008). Intense lice infestation can have adverse effects on the bird's health and reproductive ability (Johnson and Clayton, 2003).

The Common Myna species, belonging to the Sturnidae family, order Passeriformes) is a bird species distributed in central and southern Asia, including the Indian subcontinent (Hart et al., 2020). Deliberate and accidental introduction of this bird into new areas has led to a significant increase in its global distribution. The common myna, is one of the 100 worst invasive bird species in the world. The breeding population of common myna in Turkey was first recorded in 1996 in Ankara (Bilgin, 1996). Common myna is frequently imported as a caged bird by pet shop owners in Turkey (Hart et al., 2020) and its current populations are likely due to escapes from captivity (Kirwan et al., 2008).

To our knowledge, the effect of ectoparasites on birds is still relatively poorly studied, particularly in relation to the changes induced by habitat modification/destruction due to

human activities. Given the scarcity of published records of lice in Turkey, investigation of the prevalence of chewing lice on birds is of paramount importance. To this end, the present study aimed to collect data on the lice species carried by common myna, bird species living in Turkey.

Materials and methods

The material of this study consisted of 25 common mynas, which were caught by the security forces while trying to be smuggled into Turkey from abroad in 2020 (Anadolu Agency, 2020) and died during transportation. Of the 100 common mynas caught by the security forces, 75 alive were delivered to the Van Yuzuncu Yil University Wildlife Protection and Rehabilitation Center (Figure 1). The study

material consisted of 25 common mynas that died during transportation. The bird carcasses were visually inspected and ectoparasite samples were randomly obtained from the back, abdomen, and underwing of each bird using a 4X lens, comb, fine forceps with good light source. The collected lice were placed in tubes containing 70% alcohol and were cleared in 10% KOH (Palma, 1978). After washing with distilled water, samples were passed through 70%, 80% and 90% alcohol series for three consecutive days, respectively, and were coated with Canadian balm. Lice were identified by light microscopy (Leica DM 500) according to the studies including (Kellogg and Champman, 1902; Hopkins and Clay, 1952; Borrer and White, 1998).



Figure 1. Common myna (*Acridotheres tristis*)

Results

Of the 25 samples inspected, 19 (76%) birds were found to be infested with lice, including 16 (84.2%) birds infested with both *Menacanthus eurysternus* and *Brueelia chayanh* and the remaining 3 (15.8%) birds infested with *B. chayanh* only. In total, 118 *M. eurysternus* lice

(67 females and 51 males) and 79 *B. chayanh* lice (43 females and 36 males) were collected. The *M. eurysternus* lice were mostly collected from the dorsal region, while the *B. chayanh* lice were mostly collected from the ventral region in the birds.



Figure 2. Genital structures of a male *Brueelia chayanh* lice



Figure 3. Genital structures of a male *Menacanthus eurysternus* lice

Discussions and Conclusions

Every bird carries its distinctive and specific type of ectoparasites on its body. Chewing lice are reported to infest bird species and parasitize on their specific host. Birds carry

different types of ectoparasites such as chewing lice, mites, ticks, and flies (Emerson, 1973; Marshall, 1981).

In studies investigating chewing lice carried by *A. tristis*, lice species including *M. eurysternus*

(Chandra et al., 1989; Naz et al., 2020; Saxena et al., 2007), *Myrsidea invadens* (Palma, 1978; Saxena et al., 2007) and *Myrsidea sp.* (Chandra et al., 1989) have been reported. Additionally, *B. chayanh* (Aslam Qurrat-ul-Ain et al., 2015; Chandra et al., 1989; Palma, 1978; Saxena et al., 2007), *Sturnidoecus affinis* (Chandra et al., 1989), *Sturnidoecus bannoo* (Saxena et al., 2007), and *Brueelia nebulosa* (Naz et al., 2020) have been reported to be parasitic. In the present study, *M. eurysternus* (Figure 2) and *B. chayanh* (Figure 3) were detected on the bird species of *A. tristis*.

In the diagnosis of *B. chayanh*, the shape and location of the genital organs of the male individuals and the similarity of the mesosomes and the head structure and abdomen of the females individuals were taken into consideration. It is noteworthy that the genital organs of male individuals are turned outwards and mesosome similarities, while the head structure of female individuals is narrower than other *Brueelia* species.

Studies have reported that *M. invadens* and *M. eurysternus*, which have a round body and powerful legs, prefer the back region of the birds, while *B. chayanh*, which has a long body and weak legs, prefers the abdomen (Palma, 1978; Saxena et al., 2007). Similarly, in our study, *M. eurysternus* was found to prefer the dorsal region of the birds and *B. chayanh* was found to prefer the ventral region.

In our study, birds were intensely infested with chewing lice (76%). This finding could be due to the fact that the birds spent time together in a narrow environment for a long time and spread the lice to each other through physical contact. In conclusion, chewing lice including *M. eurysternus* and *B. chayanh* were detected on the common mynas inspected in the study. To our knowledge, this is the first study to report *B. chayanh* in common myna in Turkey.

Acknowledgement

We thank Daniel R. Gustafsson (Guangdong Institute of Zoology) and Sarah Bush (The University of Utah) for their support in the identification of *Brueelia chayanh* lice.

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