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Original article (Orijinal araştırma)

First records of *Aulacus striatus* Jurine, 1807 (Hymenoptera Aulacidae) and its host, *Xiphydria picta* Konow, 1897 (Hymenoptera: Xiphydriidae), from Türkiye[1]

Aulacus striatus Jurine, 1807 (Hymenoptera Aulacidae) ve onun konukçusu *Xiphydria picta* Konow, 1897 (Hymenoptera: Xiphydriidae)'nın Türkiye'den ilk kayıtları

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Abstract

This study was performed in the Yeşilırmak delta of Samsun province located in northern Türkiye to reveal the diversity of rare wasp species. For this purpose, specimens belonging to the family Aulacidae and Xiphydriidae were collected with Malaise traps from various localities in the study area between 2022 and 2023. As a result, the occurrence of the parasitoid wasp *Aulacus striatus* Jurine, 1807 (Hymenoptera: Aulacidae) was reported for the first time in Türkiye. This is also the first record of genus *Aulacus* Jurine, 1807 (Hymenoptera: Aulacidae) from the country. Additionally, two putative hosts of *A. striatus*, *Xiphydria picta* Konow, 1897 and *Xiphydria prolongata* (Geoffroy, 1785) have been collected. Of these species, *X. picta* is new to the Turkish fauna. With these new records, the number of aulacids in Türkiye is raised up to six species in two genera, while the number of xiphydriids is raised up to three within one genus.

Keywords: Aulacidae, *Aulacus striatus,* new records, Xiphydriidae, *Xiphydria picta*

Öz

Bu çalışma, Türkiye'nin kuzeyinde yer alan Samsun ili Yeşilırmak deltasında nadir yaban arısı türlerinin çeşitliliğini ortaya koymak amacıyla yapılmıştır. Bu amaçla 2022-2023 yılları arasında çalışma alanında çeşitli lokasyonlardan Aulacidae ve Xiphydriidae familyasına ait örnekler Malaise tuzakları ile toplanmıştır. Sonuç olarak parazitoid yaban arısı *Aulacus striatus* Jurine, 1807 (Hymenoptera: Aulacidae)'un Türkiye'deki varlığı ilk kez rapor edilmiştir. Bu *Aulacus* Jurine, 1807 (Hymenoptera: Aulacidae) cinsinin de Türkiye'deki ilk kaydıdır. Ek olarak *A. striatus*'un varsayılan iki konukçusu da, *Xiphydria picta* Konow, 1897 ve *Xiphydria prolongata* (Geoffroy, 1785) toplanmıştır. Bu türlerden *X. picta* Türkiye faunası için yenidir. Bu yeni kayıtlarla Türkiye'deki aulacid sayısı iki cinste altı türe, xiphydriid sayısı ise bir cinste üçe yükseldi.

Anahtar sözcükler: Aulacidae, *Aulacus striatus,* yeni kayıtlar, Xiphydriidae, *Xiphydria picta*

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Introduction

Aulacidae is a small family of Hymenoptera belonging to the superfamily Evanioidea. The extant aulacids includes two genera: *Aulacus* Jurine, 1807 with 122 species and *Pristaulacus* Kieffer, 1900 with 188 species (Turrisi et al., 2009; Turrisi, 2017). The genus *Pristaulacus* is represented in all zoogeographic regions except Antarctica, and *Aulacus* is also absent from the Afrotropical region (Jouault & Nel, 2022). Aulacids endoparasitoid of xylophagous larvae of some Hymenoptera and Coleoptera. Species of *Aulacus* Jurine, 1807 and *Pristaulacus* Kieffer, 1900 (Hymenoptera: Aulacidae), are related to the larvae of *Xiphydria* Latreille, 1803 (Hymenoptera: Xiphydriidae), beetles and borers (Coleoptera: Cerambycidae, Buprestidae) (Turrisi & Vilhelmsen, 2010; Sundukov & Lelej, 2015).

Aulacids have been the subject of limited research in Türkiye due to their rarity. The first published records of Turkish Aulacidae were those by Oehlke (1983) and a few species were subsequently recorded by Turrisi (2007, 2011). The faunistic and taxonomic aspects of the superfamily in Türkiye were recently summarized by Can (2023). According to that contribution, the family Aulacidae in the Türkiye is represented by a total of five species, all of which belong to the genus *Pristaulacus*.

Xiphydriids are a small family of wood borer sawflies that include around 150 species in 27 genera distributed worldwide, except for the Afrotropical region (Taeger & Blank, 2018). In Türkiye, this family is represented by a single genus *Xiphydria*, consisting of mid-sized to giant wasps with the pronotum characteristically stretched into an elongated (Johansson & Larsson, 2020) and only two *Xiphydria* species have been recorded so far, *Xiphydria camelus* (L., 1758) and *Xiphydria prolongata* (Geoffroy, 1785) (Hymenoptera: Xiphydriidae) (Baş, 1973; Özay, 1997).

The present work aims to contribute to the knowledge of Türkiye Aulacidae and Xiphydriidae fauna. In this context, a new genus (*Aulacus*) record has been provided for Türkiye, with the identification of *Aulacus striatus* Jurine, 1807 (Hymenoptera: Aulacidae). Additionally, one of its putative hosts, *Xiphydria picta* Konow, 1897 (Hymenoptera: Xiphydriidae), has been recorded for the first time from this country. A new distribution record of *X. prolongata* has also been added.

Materials and Methods

The material of this study was collected from three localities of Yeşilırmak Delta (Samsun province) located in the Central Black Sea region of Türkiye (Figure 1).

Figure 1. General view of collection localities in Yeşilırmak Delta of Samsun province: a) Çarşamba, Bafracalı (41°12'43.2"N, 36°44'07.7"E); b) Terme, Geçmiş village (41°15'57.4"N, 36°50'39.5"E); c) Terme, Gölyazı village (41°15'48.9"N 36°59'14.0"E).

The specimens were collected by the Malaise trap during the spring-summer of 2022 and 2023 from mid-March to late September. The specimens were removed from the traps and sorted monthly, then transferred to 70% ethanol. Subsequently, the specimens were pinned in the laboratory and turned into standard museum material. The voucher materials are deposited in the Entomology Research Laboratory, Department of Biology, Tokat Gaziosmanpaşa University (Tokat, Türkiye). Identification keys and descriptions in Oehlke (1983, 1984), Sun & Sheng (2007), and Sundukov & Lelej (2015) were used to identify the *Aulacus* specimen. The photographs of the specimens were taken using a Leica M205C (Leica Microsystems GmbH, Germany) stereomicroscope controlled by Leica Application Suite 3 software.

Results

Order Hymenoptera

Suborder Apocrita

Family Aulacidae Shuckard, 1841

Genus *Aulacus* Jurine, 1807

Type species: *Aulacus striatus* Jurine, 1807

The species of *Aulacus* are distinct from the other aulacid genus *Pristaulacus* by the lack of the occipital carina (Figure 2b), the shape of hind coxae (Figure 2d), the simple tarsal claws (Figure 2e), and the presence of 2r-m in the forewing.

***Aulacus striatus* Jurine, 1807 (Figure 2)**

Material examined. Samsun: Çarşamba, Bafracalı, 41°12'43.2"N, 36°44'07.7"E, 30 m, 28.V-19.VI.2023, ♀.

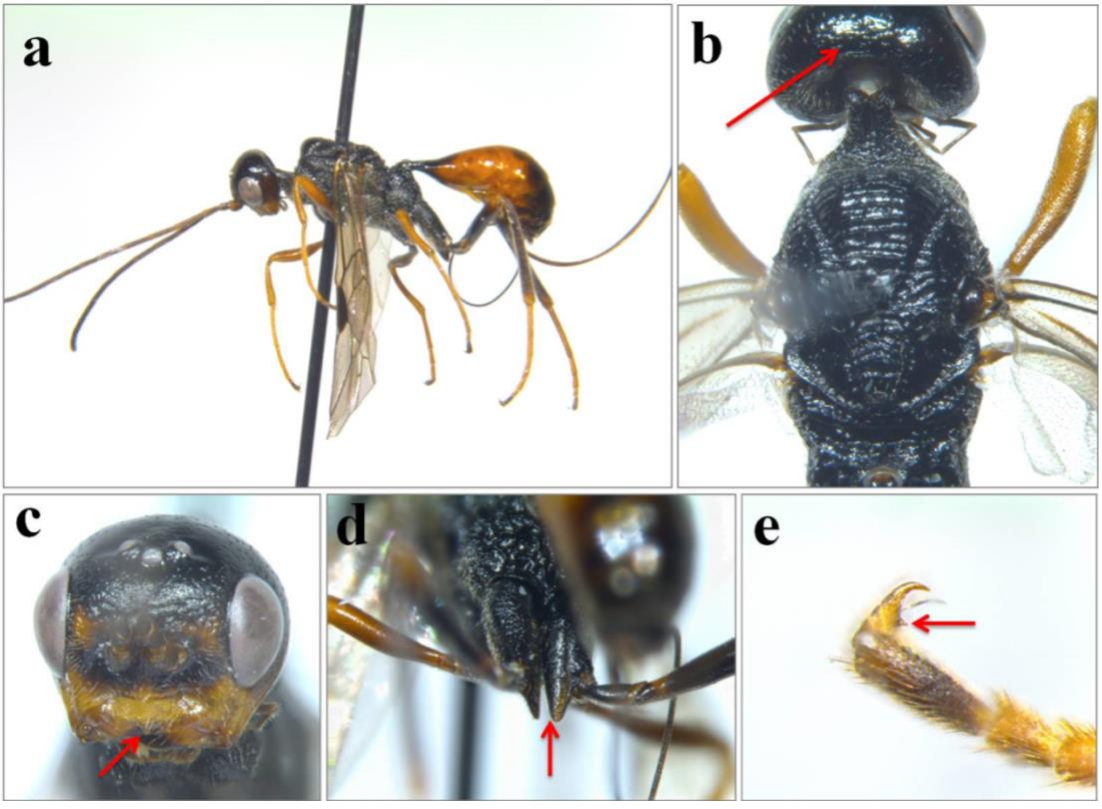

Figure 2. *Aulacus striatus* female: a) Lateral habitus; b) dorsal view of thorax; c) dorsal view of head; d) dorsal view of hind coxae; e) tarsal claws.

General distribution. Algeria, Austria, Belarus, Belgium, Czechia, England, Finland, France, Germany, Hungary, Kazakhstan, Netherlands, Norway, Poland, Russia (European), Slovakia, Sweden, Switzerland, Ukraine (Smith, 2001), Türkiye (new record).

Brief description. Body length (excluding ovipositor) is 7.4 mm (Figure 2a). Head mainly black (Figure 2c), with lower frons partly yellow; antenna entirely blackish-brown; clypeus dark yellow; mandible basally yellow and apically black (Figure 2c); coxae black; femora yellow except black hind femurs; tibiae and tarsi extensively reddish-orange; metasoma black with most of first tergite (except dorsal base) and second tergite reddish-brown; vertex shining, irregularly, and deeply punctured, frons between the antennal socket and ocelli oblique transverse carinulate; occiput with transverse-striate sculpture; anterior margin of clypeus with medial process (Figure 2c); propodeum weakly declivous; ovipositor 0.86 × forewing length.

Suborder Symphyta

Family Xiphydriidae Leach, 1815

Genus *Xiphydria* Latreille, 1803

Type species: *Ichneumon camelus* (L., 1758)

The species of *Xiphydria* are distinct from other Xiphydriidae genera with smooth and shiny vertex behind ocelli; hind wing with cell Rs; tarsal claws with distinct inner tooth; maxillary palpus with 5 or 6, labial palpus with 3 or 4 palpomeres.

***Xiphydria picta* Konow, 1897 (Figure 3a)**

Material examined. Samsun: Terme, Gölyazı, 41°15'48.9"N 36°59'14.0"E, 30 m, 28.V-19.VI, 2♀♀.

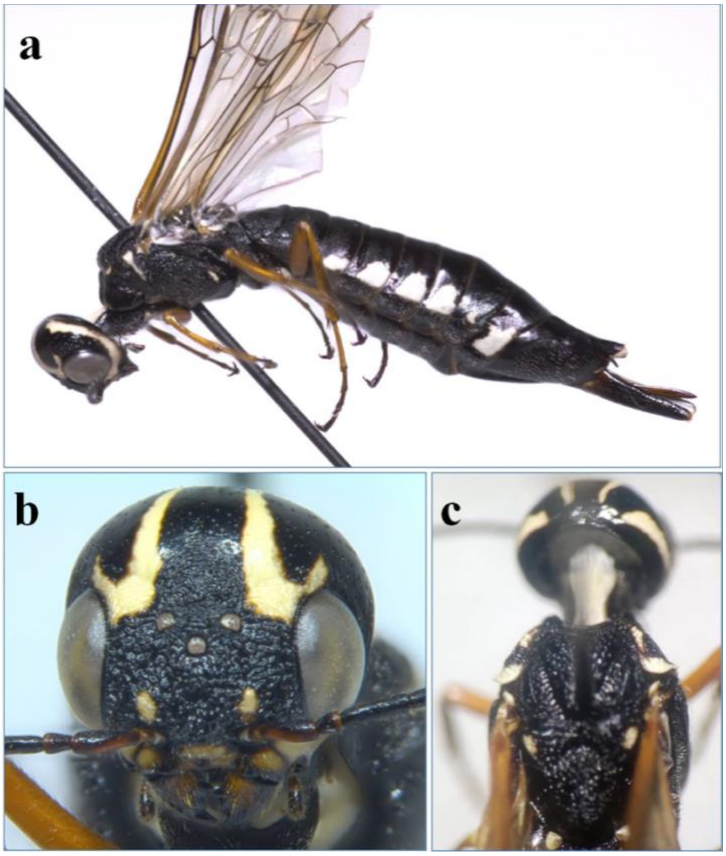

Figure 3. *Xiphydria picta* female: a) Lateral habitus; b) dorsal view of head; c) dorsal view of thorax.

General distribution. Austria, Croatia, Finland, France, Georgia, Hungary, Italy, Kazakhstan, Romania, Russia, Spain, Sweden, Switzerland, Ukraine (Sundukov, 2017), and Türkiye (new record).

Brief description. Body length (excluding ovipositor) is 15-17 mm. Head mainly black with two light white stripes extending from the eyes to the back; frons with white spots above antennal sockets; malar space, gena along outer genal carina up to the level of the top of eye with large creamy white mark; mandible medially yellow; clypeus yellowish-white except for black anterior edge; antenna black; thorax black with pronotal collar partly white; legs reddish brown, usually with coxae, trochanters, trochantelli blackish brown and tarsi blackish; abdomen black with white lateral spots usually on terga 2-8; that on tergum 8 largest and on terga 7 smallest. Frons and interantennal area coarsely reticulate; lateral part of clypeus, malar space and gena shallowly finely striate; vertex and upper part of gena smooth, shiny, with few shallow and irregular punctures (Figure 3b).

***Xiphydria prolongata* (Geoffroy, 1785) (Figure 4)**

Material examined. Samsun: Çarşamba, Bafracalı, 41°12'43.2"N, 36°44'07.7"E, 30 m, 28.V-19.VI.2023, 2♀♀.

General distribution. This species is spread throughout Europe, Russia, Türkiye and USA (Baş, 1973; Taeger & Blank, 2019).

Distribution in Türkiye. Afyonkarahisar, Ankara, Burdur, Bursa, Kırklareli, Kocaeli, Sivas (Baş, 1973; Özay, 1997; Budak & Korkmaz, 2023).

Remarks. This species was detected for the first time in Samsun province.

Figure 4. Lateral view of *Xiphydria prolongata* female.

Discussion

With this study, the genus *Aulacus* was recorded for the first time from Türkiye based on a female specimen belonging to *Aulacus striatus*. This species is mostly distributed in the Palaearctic region from England to China and from Scandinavia to Algeria. However, Chen et al. (2016) stated that the record in China (Inner Mongolia) is unclear. The present note adds important data to fill the distribution gap of the species in the Western Palaearctic region.

Aulacids are not easily observed in their natural environment due to their unique biological traits and are not often collected by most conventional collection methods. As a result, many species are known from a few or just one specimen (Huflejt & Wiśniowski, 2012; Turrisi, 2017). In this study, only one specimen of *A. striatus* was collected by Malaise traps during the two-year research period.

Xiphydria camelus, *Xiphydria longicollis* (Geoffroy, 1785), *X. picta*, *X. prolongata* are indicated as hosts of *Aulacus striatus* in Europe (Sundukov & Lelej, 2015). *X. camelus* was known from the Marmara and Eastern Black Sea regions of Türkiye and reported in *Alnus glutinosa* (L.) Gaertn. and *Betula* spp. (Fagales: Betulaceae) trees. *Xiphydria prolongata* was known from the Central Anatolia, Aegean, Marmara, and Mediterranean regions of Türkiye and reported in *Populus nigra* L., *Salix alba* L., *Salix fragilis* L. (Malpighiales: Salicaceae) and *Ulmus carpinifolia* Borkh. (Rosales: Ulmaceae) trees (Baş, 1973; Özay, 1997). In this study, the specimen of *A. striatus* was obtained together with its putative host, *X. prolongata* (Figure 4), in the same Malaise trap bottle. With this study, *X. prolongata* has been recorded for the first time from the Central Black Sea region.

In addition to the previously known species (*X. camelus* and *X. prolongata)* in Türkiye, the existence of *X. picta* was detected for the first time in this study. The characteristics of *X. picta* are similar to the widely distributed *X. camelus* and can be easily confused with it (Johansson & Larsson, 2019). However, *X. picta* can usually be distinguished by richer pale markings on the head and face (Figure 3b).

The present note makes an important contribution to the available knowledge of the Turkish Aulacidae and Xiphydriidae families. Based on the new records, the total number of Aulacidae in Türkiye has elevated to six species, and the total number of Xiphydriidae is three.

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References

Baş, R., 1973. Türkiye'de Orman Ağaçlarında Zarar Yapan Zar Kanatlılar (Hymenoptera) Üzerine Araştırmalar. T.C. Orman Bakanlığı, Orman Genel Müdürlüğü, Ankara, Türkiye, VII+169 pp (in Turkish).

Budak, M. & E. M. Korkmaz, 2023. "*Xiphydria prolongata* odun yaban arısında bağırsak bakteri florasının karakterizasyonu, 357-360". 2nd International Conference on Scientific and Academic Research, (March 14-16, 2023, Konya, Türkiye), 513 pp (in Turkish).

Can, İ., 2023. New contribution to the Evanioidea (Hymenoptera, Apocrita) of Türkiye with checklist of Turkish species. Journal of Insect Biodiversity and Systematics, 9 (3): 419-429.

Chen, H-Y., G. F. Turrisi & Z-F. Xu, 2016. A revision of the Chinese Aulacidae (Hymenoptera, Evanioidea). ZooKeys 587 (2016): 77-124.

Huflejt, T. & B. Wiśniowski, 2012. Materiały do znajomości krajowej fauny błonkówekz rodziny pokosowatych (Hymenoptera, Aulacidae). Nowy Pamiętnik Fizjograficzny, Warszawa, 7 (1-2): 25-34 (in Polish).

Johansson, N. & A. Larsson, 2019. *Xiphydria betulae* (Enslin, 1911) new to Sweden and new records of *Xiphydria picta* Konow, 1897 (Hymenoptera: Xiphydriidae) with additional notes on two rare ichneumonid parasitoids associated with xiphydriid wood wasps. Entomologisk Tidskrift, 140 (3-4): 145-155.

Jouault, C. & A. Nel, 2022. The oldest crown representative of the family Aulacidae (Hymenoptera:Evanioidea) from the Paleocene of Menat (France). Palaeoentomology, 5 (3): 269-275.

Oehlke, J., 1983. Revision der europäischen Aulacidae (Hymenoptera-Evanioidea). Beiträge zur Entomologie, 33 (2): 439-447.

Oehlke, J., 1984. Beiträge zur Insektenfauna der DDR: Hymenoptera-Evanioidea, Stephanoidea, Trigonalyoidea (Insecta) Faunistische Abhandlungen Staatliches Museum für Tierkunde in Dresden. 11 (13): 161-189 (in German).

Özay, F. Ş., 1997. Marmara Bölgesinde Söğütlerde Zarar Yapan Böcekler. Orman Bakanlığı Kavak ve Hızlı Gelişen Tür Orman Ağaçları Araştırma Enstitüsü, (Unpublished) PhD Thesis, Kocaeli, Türkiye, 155 pp (in Turkish with abstract in English).

Smith, D. R., 2001. World catalog of the family Aulacidae (Hymenoptera). Contributions on Entomology International, 4: 261-319.

Sundukov, Y. N. & A. S. Lelej, 2015. Review of the family Aulacidae (Hymenoptera: Evanioidea) in the Russian Far East. Euroasian Entomological Journal, 14 (2): 107-118 (in Russian).

Sundukov, Y. N., 2017. "Suborder Symphyta-sawflies and wood wasps". In: Annotated Catalogue of the Hymenoptera of Russia. Volume 1. Symphyta and Apocrita: Aculeata (Eds. S. A. Belokobylskij & A. S. Lelej). Trudy Zoologiceskogo Instituta Rossijskoj Akademii Nauk, Supplement, 6: 20-117.

Sun, S. P. & M. L. Sheng, 2007. *Aulacus* Jurine (Hymenoptera: Aulacidae) from China with a new species parasitizing *Xiphydria popovi* (Hymenoptera: Xiphydriidae). Proceedings of the Entomological Society of Washington, 109 (1): 121-124.

Taeger, A., A. D. Liston, M. Prous, E. K. Groll, T. Gehroldt & S. M. Blank, 2018. ECatSym-Electronic World Catalog of Symphyta (Insecta, Hymenoptera). Program version 5.0 (19 Dec 2018), data version 40 (23 Sep 2018). Senckenberg Deutsches Entomologisches Institut (SDEI), Müncheberg. (Web page: https://sdei.de/ecatsym/) (Date accessed: 14 October 2023).

Turrisi, G. F., 2007. Revision of the Palaearctic species of *Prsitaulacus* Kieffer, 1900 (Hymenoptera: Aulacidae). Zootaxa, 1433 (1): 1-76.

Turrisi, G. F., 2011. Systematic revision of the sibling species belonging to the *Pristaulacus compressus* group (Hymenoptera: Aulacidae). Insect Systematics & Evolution, 42 (1): 1-27.

Turrisi, G. F., 2017. The parasitoid wasp family Aulacidae (Hymenoptera: Evanioidea), with a revised World Checklist. Proceedings of the Entomological Society of Washington, 119 (sp1): 931-939.

Turrisi, G. F., J. T. Jennings & L. Vilhelmsen, 2009. Phylogeny and generic concepts in the parasitoid wasp family Aulacidae (Hymenoptera: Evanioidea). Invertebrate Systematics, 23 (1): 27-59.