Türk. entomol. derg., 2024, 48 (3): 291-304
DOI: http://dx.doi.org/10.16970/entoted.1489514

ISSN 1010-6960
E-ISSN 2536-491X

Original article (Orijinal araştırma)

New and additional records of Cryptinae and Phygadeuontinae (Hymenoptera: Ichneumonidae) Ağrı province and Mount Ararat in Türkiye[1]

Türkiye'de Ağrı ili ve Ağrı Dağı Cryptinae ve Phygadeuontinae (Hymenoptera: Ichneumonidae) için yeni ve ek kayıtlar

Gamze AYHAN[2] **Saliha ÇORUH[2*]**

Abstract

The study was conducted to detect the Cryptinae and Phygadeuontinae (Ichneumonidae) species of Ağrı province and Mount Ararat between 2022 and 2023. Adult samples were collected in the different habitats and altitudes using sweeping nets. The specimens were then pinned and properly labelled for identification. New faunistic data for ten species are provided. *Enclisis vindex* (Tschek, 1871), and *Endasys analis* (Thomson, 1883) are recorded for the first time from Türkiye. Also, present *Gelis vicinus* (Gravenhorst, 1829) and *Phygadeuon hercynicus* Gravenhorst, 1829 are new for East Anatolia. Additionally, collecting locality, date, altitude individual and sex counts, hosts, associated plants, distribution in Türkiye and general geographic distribution of the species are given.

Keywords: Cryptinae, Darwin wasps, Ichneumonidae, new records, Phygadeuontinae

Öz

Çalışma, Ağrı ili ve Ağrı Dağı'ndaki Cryptinae ve Phygadeuontinae (Ichneumonidae) türlerinin tespiti amacıyla 2022 ve 2023 yılları arasında gerçekleştirilmiştir. Yetişkin örnekleri, atrap kullanılarak farklı habitatlarda ve rakımlarda toplanmış, daha sonra iğnelenmiş, ve teşhis çin uygun hale getirilmiştir. On tür için yeni faunistik veriler sağlanmıştır. *Enclisis vindex (*Tschek, 1871) ve *Endasys analis* (Thomson, 1883) Türkiye'den ilk kez kaydedilmiştir. Ayrıca mevcut *Gelis vicinus* (Gravenhorst, 1829) ve *Phygadeuon hercynicus* Gravenhorst, 1829 Doğu Anadolu Bölgesi için yenidir. Ayrıca türlerin toplanma yeri, tarihi, rakım, birey ve cinsiyet sayıları, konukçuları, ilişkili bitkileri, Türkiye'deki yayılışları ve genel coğrafi dağılımları da verilmiştir.

Anahtar sözcükler: Cryptinae, Darwin arıları, Ichneumonidae, yeni kayıtlar, Phygadeuontinae

[1] This study was supported by Atatürk University, Scientific Research Unit, BAP, Türkiye, and Grant Project No: FDK-2023-12108.
[2] Atatürk University, Faculty of Agriculture, Department of Plant Protection, 25240, Erzurum, Türkiye
* Corresponding author (Sorumlu yazar) e-mail: spekel@atauni.edu.tr
Received (Alınış): 27.05.2024 Accepted (Kabul ediliş): 27.08.2024 Published Online (Çevrimiçi Yayın Tarihi): 04.09.2024

Introduction

The Ichneumonidae family, represent the most diverse group within Hymenoptera, with more than 40,000 taxa describes, and more than 25,000 species considered valid as of 2016 (Yu et al., 2016).

Cryptinae and Phygadeuontinae are subfamilies of Ichneumonidae. These two subfamilies are the most diverse subfamily of Ichneumonidae, with nearly 6,000 valid species (Yu et al., 2016) distributed worldwide. Most adults of these subfamilies have been described as idiobiont ectoparasitoids. Among these, their most common hosts are endopterygote pupae or prepupae enclosed in cocoons or plant tissue. Besides, there are some endoparasitic species in the Hedycryptina, Phygadeuontina, and Stilpnina. A few species may be koinobionts. Furthermore, some species parasitize the egg sacs of Pseudoscorpionida and Araneae, and many can develop as secondary parasitoids (Goulet & Huber, 1993).

Until Kolarov, (1995), only 66 species from these subfamilies, belonging to 44 genera have been documented in Türkiye (Sedivy, 1959; Tuatay et al., 1972; Soydanbay, 1976; Düzgüneş et al., 1982; Erkin, 1983; Kolarov, 1989; Öncüer, 1991). At present day, approximately 302 species from these subfamilies are known to occur in Türkiye (Yu et al., 2016; Çoruh et al., 2016, 2018, 2022a, b; Çoruh & Çalmaşur, 2016; Çoruh & Kolarov, 2016; Özdan & Gürbüz, 2016; Sarı & Çoruh, 2018; Çoruh, 2019; Çaylak & Çoruh, 2020; Kıraç & Gürbüz, 2020; Yurtcan et al., 2021; Barik, 2022; Birol, 2022; Doğru, 2022; İnecikli oğlu, 2022; Ataş & Çoruh, 2022; Kaplan & Riedel, 2022; Korkmaz & Çoruh, 2022; Kaplan, 2023, 2024; Barik & Çoruh, 2023).

This study was performed to determine Ichneumonidae from Türkiye (Mount Ararat, and Ağrı province) and evaluate their plant associations and distributions.

Materials and Methods

Data sampling

The specimens were collected from different altitudes from the foothills of Mount Ararat and from different localities in the province of Ağrı during 2022–2023 (Figures 1 & 2). All examined material was collected and photographed by Gamze Ayhan and determined by Dr. Janko Kolarov (Bulgaria) and Dr. Saliha Çoruh. All specimens are deposited in the collection of Department of Entomology, Atatürk University, Erzurum, Türkiye. After identification, each species was photographed by the digital shooting unit (Canon EOS 1100 D, Canon EF 100 mm, f/2.8L Macro lens, Kaiser digital), Lenovo brand computer and Helicon focus 6.7.1. using. New records of species from Türkiye are marked by an asterisk (*). Genera and species are listed in alphabetic order, and nomenclature follows Yu et al. (2016). Also, general distribution of species, hosts and associated plants are given from Yu et al. (2016).

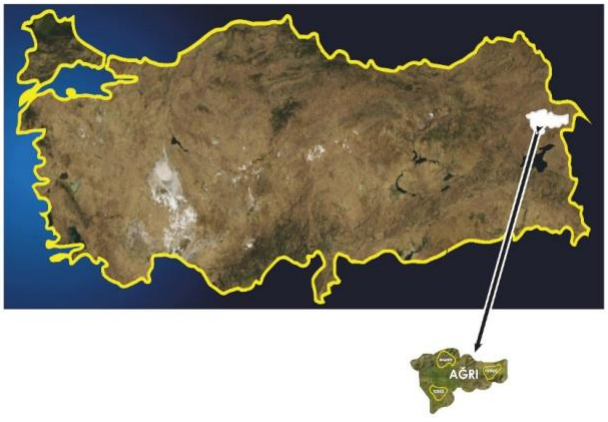


Figure 1. Map of study area.

Figure 2. Pictures of study area.

Study area

Ağrı province is extending from the Eastern Anatolia Region to the Iranian region. It is one of the highest regions in Türkiye because of its mountainous nature. Its old name was Karaköse until 1946, and before that, it was known as Karakilise.

Mount Ararat, with its height of 5137 m, is not only the highest peak in the country, but also the only mountain with a current ice cap of 10 km² (Anonymous, 2023). This Mount is a volcanic mountain made of basalt, which changes to andesite lava around 4000 m. Mount Ararat consists of two peaks. These are the 5137 m Atatürk Peak (Big Ararat) and the 3,898-meter İnönü Peak (Little Ağrı) (Anonymous, 2023).

It has a legendary significance, as is believed to be the final resting place of Noah's Ark. It is also mentioned in the Bible and has many names in different languages Ararat, Kuh-I Nuh and Jebel ul Harist. Mount Ararat has a fascinating appearance with its glaciers, geological formations and always snow-covered mountain meadows.

Results

Here we report 53 specimens belonging to 10 species of Cryptinae and Phygadeuontinae from Ağrı province and Mount Ararat. Among them, namely *Enclisis vindex* (Tschek, 1871), and *Endasys analis* (Thomson, 1883), are new records for the Turkish fauna. With the results presented here, the number of species of Ichneumonidae has reached around 1.460 in Türkiye. All species are new records for Ağrı Province. The provinces where each species is distributed in Türkiye are given in Table 1.

Table 1. Province-level records of Cryptinae and Phygadeuontinae species collected in Ağrı (Central and Mount Ararat), in Türkiye

Names of Taxa	Distributions in Türkiye
CRYPTINAE	
Genus *Cryptus*	
Cryptus viduatorius	Afyonkarahisar, Ağrı, Bilecik, Bitlis, Bolu, Burdur, Bursa, Diyarbakır, Erzurum, Isparta, İstanbul, Kayseri, Kırklareli, Konya, Mersin, Nevşehir, Rize, Sivas, Trabzon, Van
Genus *Enclisis*	
**Enclisis vindex*	New for Türkiye
Genus *Mesostenus*	
Mesostenus transfuga	Adana, Antalya, Aydın, Burdur, Bursa, Diyarbakır, Edirne, Erzurum, Hatay, Isparta, Kırklareli, Mersin, Tekirdağ
Genus *Trychosis*	
Trychosis ambigua	Bingöl, Çanakkale, Diyarbakır
Trychosis legator	Adana, Ankara, Antalya, Bingöl, Burdur, Çanakkale, Diyarbakır, Edirne, Erzurum, Gaziantep, Gümüşhane, Isparta, Istanbul, Kırklareli, Rize, Tekirdağ, Tunceli
Trychosis tristator	Çanakkale, Diyarbakır, Edirne, Isparta, Kırklareli, Tunceli
PHYGADEUONTINAE	
Genus *Blapsidotes*	
Gelis vicinus	Antalya, Burdur, Denizli, Isparta, Kastamonu
Genus *Endasys*	
**Endasys analis*	New for Türkiye
Genus *Mesoleptus*	
Mesoleptus vigilatorius	Erzurum
Genus *Phygadeuon*	
Phygadeuon hercynicus	Bursa

*New for Türkiye.

Cryptinae Kirby, 1837

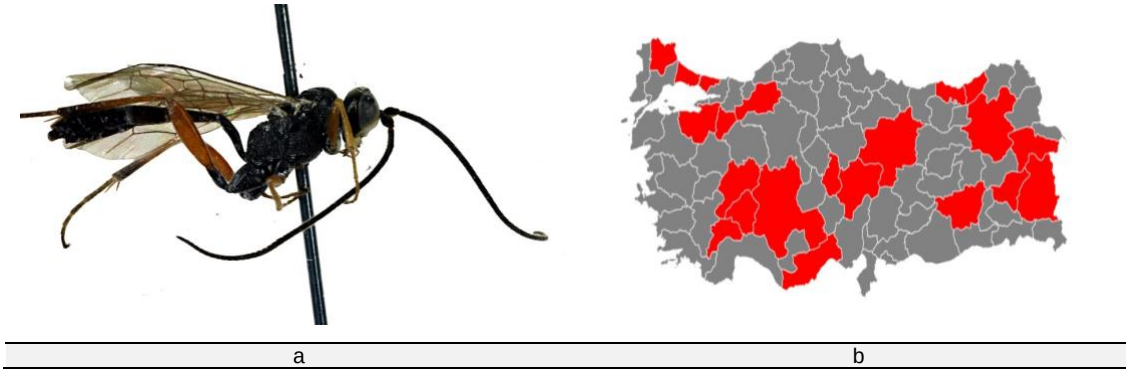
Cryptus viduatorius Fabricius, 1804 (Figure 3a)

Material examined. Ağrı: Hamur, Havalimanı, 39°38’47,69" N, 43°00’36.70" E, 1619 m, 3.VII.2022, ♀; 39°77’45,91" N, 43°11’77,86" E, 1639 m, 23.VII.2023, 2 ♂♂; Hamur, Derekenarı, 39°61’95,14" N, 43°00’34,20" E, 1680 m, 01.VI.2023, 2 ♂♂; Tutak, 39°26’32.68" N, 42°45’55.83" E, 21.VII.2022, 1679 m, 6 ♀♀.

Distribution. Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Czechoslovakia, Denmark, Finland, France, Georgia, Germany, Greece, Hungary, Iran, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Morocco, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkmenistan, Ukraine, United Kingdom, Uzbekistan, Yugoslavia, Yugoslavia Serbia (Yu et al., 2016); known from Türkiye (Kohl, 1905; Szepligeti,1916; Kolarov, 1995; Beyarslan & Kolarov, 1994; Öncüer, 1991; Kolarov et al., 1997a, 2016; Gürbüz & Kolarov, 2008; Çoruh & Çoruh, 2008; Gürbüz et al., 2009a; Çoruh & Çoruh, 2012; Özdan, 2014; Çoruh et al., 2014a, b, 2016, 2018; Schwarz, 2015; Çoruh & Kolarov, 2016; Özdan & Gürbüz, 2016; Sarı & Çoruh, 2018; Çoruh, 2019; Quicke et al., 2009; Yılmaz, 2020; Barik, 2022; Kaplan & Riedel, 2022; Barik & Çoruh, 2023) (Figure 3b).

Hosts. *Alsophila aescularia* Den. & Sch., 1775 (Lepidoptera: Geometridae), *Loxostege sticticalis* (L., 1761) (Lepidoptera: Crambidae), *Phlogophora meticulosa* (L., 1758) (Lepidoptera: Noctuidae), *Saperda populnea* (L., 1758) (Coleoptera: Cerambycidae), *Sparganothis pilleriana* Den. & Sch., 1775 (Lepidoptera: Tortricidae).

Associate plants. Associate plants. *Anethum graveolens* L. (Apiales: Apiaceae), *Angelica sylvestris* L. (Apiales: Apiaceae), *Daucus carota* L. (Apiales: Apiaceae), *Euphorbia nicaeensis* All. (Malpighiales: Euphorbiaceae), *Euphorbia virgata* Waldst & Kit. (Malpighiales: Euphorbiaceae), *Ferula communis* L. (Apiales: Apiaceae), *Heracleum sphondylium* L. (Apiales: Apiaceae), *Medicago sativa* L. (Fabales: Fabaceae), *Peucedanum oreoselinum* Moench (Apiales: Apiaceae).



a b

Figure 3. *Cryptus viduatorius* Fabricius, 1804: a) Habitus, b) distribution of Türkiye.

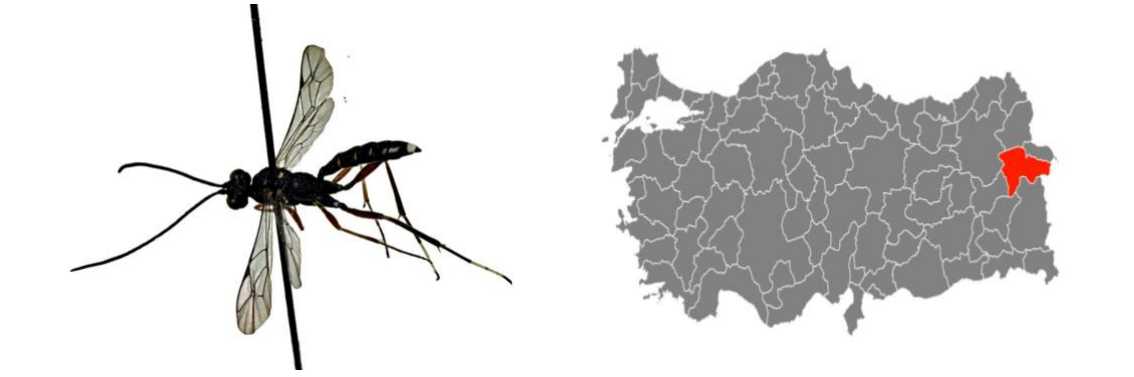
**Enclisis vindex* (Tschek, 1871) (Figure 4a)

Material examined. Ağrı: Mount Ararat, 39°68'23.31" N, 44°08'67.86" E, 1520 m, 23.VII.2023, 3 ♀♀; Hamur, Derekenarı, 39°61'95,14" K, 43°00'34,20" D, 1680, 01.VI.2023, 2 ♂♂.

Distribution. Austria, Belgium, Bulgaria, Czech Republic, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Spain, Sweden, Switzerland, United Kingdom, Yugoslavia (Yu et al., 2016); new for Türkiye (Figure 4b).

Hosts. *Diprion simile* (Hartig, 1834) (Hymenoptera: Diprionidae), *Epinotia nanana* (Treit., 1835), (Lepidoptera: Tortricidae), *Schizopleurus balteatus* (De Geer, 1776) (Diptera: Syrphidae), *Thanasimus formicarius* (L., 1758) (Coleoptera: Cleridae).

Associate plants. *Daucus carota*, *H. sphondylium*, *Picea excelsa* (Lam.) Link. (Pinales: Pinaceae).



a b

Figure 4. *Enclisis vindex* (Tschek, 1871): a) Habitus, b) distribution of Türkiye.

Mesostenus transfuga (Gravenhorst, 1829) (Figure 5a)

Material examined. Ağrı: 39°46’29.85" N, 43°07’30.83" E, 1677 m, 28.07.2022, ♀; Hamur, Derekenarı, 40°30’32" N, 41°27’38" E, 1680, 01.VI.2023, 2 ♂♂.

Distribution. Algeria, Austria, Azerbaijan, Azores, Belgium, Bulgaria, Canary Islands, Czech Republic, Czechoslovakia, Egypt, Finland, France, Germany, Greece, Hungary, Iran, Ireland, Israel, Italy Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Poland, Portugal, Romania, Russia, Spain, Sweden, Switzerland, Turkmenistan, Ukraine, United Kingdom (Yu et al., 2016); known from Türkiye (Soydanbay, 1976; Öncüer, 1991; Kolarov, 1995; Beyarslan & Kolarov, 1994, Kolarov et al., 1997a; Gürbüz & Kolarov, 2008; Gürbüz et al., 2009b; Çoruh & Çoruh, 2008; Çoruh, 2019; Barik, 2022; Kaplan & Riedel, 2022; Barik & Çoruh, 2023) (Figure 5b).

Hosts. *Cydia funebrana* (Treit., 1835) (Lepidoptera: Tortricidae), *Ephestia elutella* (Hübner, 1796), (Lepidoptera: Pyralidae), *Ephestia kuehniella* Zeller, 1879 (Lepidoptera: Pyralidae), *Phyllocolpa leucapsis* (Tisch., 1846) (Hymenoptera: Tenthredinidae), *Pontania gallarum* (Hartig, 1837) (Hymenoptera: Tenthredinidae), *Trichiosoma betuleti* (Klug, 1834) (Hymenoptera: Cimbicidae).

Associate plants. *Euphorbia seguieriana* Neck. (Malpighiales: Euphorbiaceae) *E. virgata*, *Fraxinus excelsior* L. (Lamiales: Oleaceae), *Pimpinella tragium* Vill. (Apiales: Apiaceae), *Seseli libanotis* (L.) W.D.J.Koch (Apiales: Apiaceae).

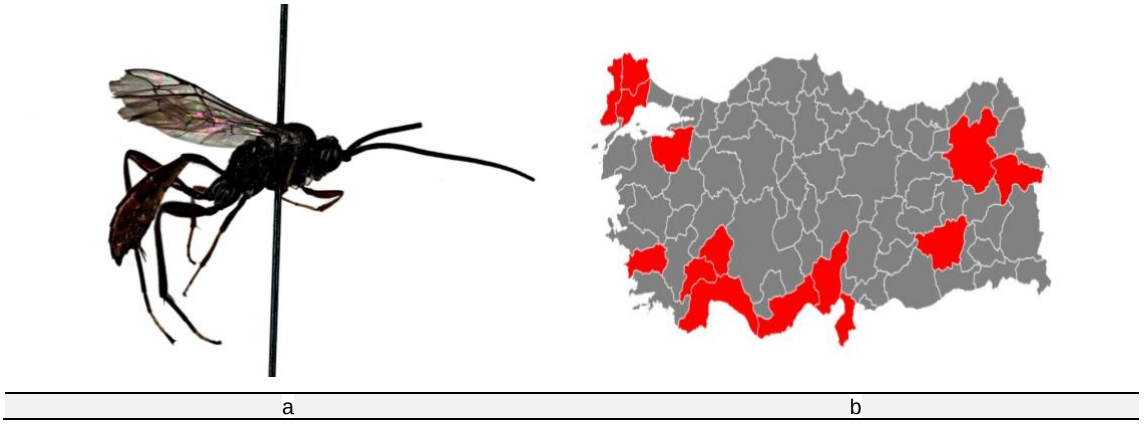


Figure 5. *Mesostenus transfuga* (Gravenhorst, 1829): a) Habitus, b) distribution of Türkiye.

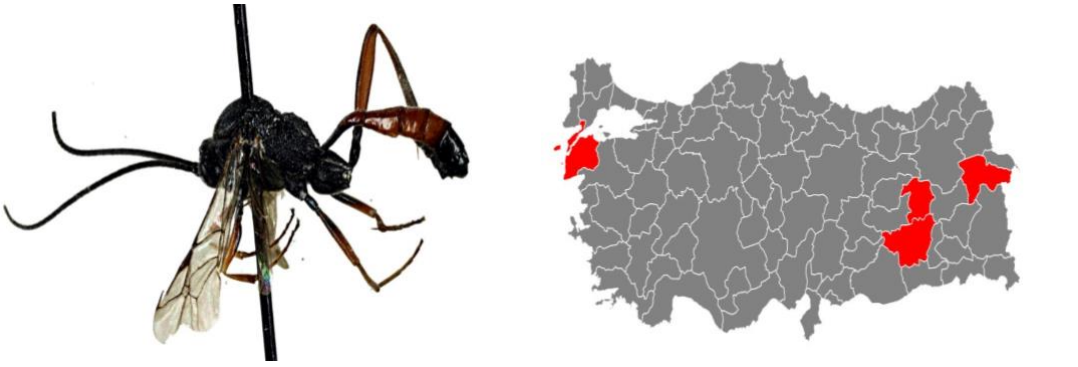
Trychosis ambigua (Tschek, 1871) (Figure 6a).

Material examined. Ağrı: 40°29’40" N, 41°30’07" E, 1249 m, 23.07.2023, 2 ♀♀; Patnos, Derekenarı, 41°31’31" N, 41°32’26" E, 1650 m, 27.VI.2023, 3 ♂♂, 2 ♀♀.

Distribution. Austria, Azerbaijan, Belgium, Bulgaria, Czech Republic, Czechoslovakia, Finland, France, Germany, Hungary, Israel, Moldova, Norway, Poland, Romania, Spain, Sweden, Yugoslavia (Yu et al., 2016); known from Türkiye (Kolarov et al., 1997a, Kaplan, 2023) (Figure 6b).

Associate plants. *Chaerophyllum* sp. L. (Apiales: Apiaceae), *D. carota*, *E. seguieriana*, *H. sphondylium*, *Quercus* spp. L. (Fagales: Fagaceae).

Remark: Fourth exact locality from Türkiye.



a b

Figure 6. *Trychosis ambigua* (Tschek, 1871): a) Habitus, b) distribution of Türkiye.

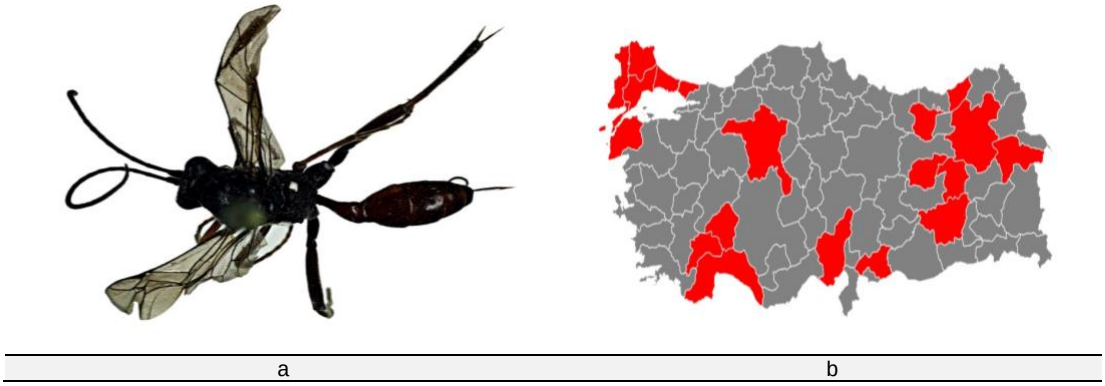
Trychosis legator (Thunberg, 1822) (Figure 7a).

Material examined. Ağrı: 39°46’29.85" N, 43°07’30.83" E, 1677 m, 28.07.2022, 3 ♂♂, 40°29’40" N, 41°30’07" E, 1249 m, 23.07.2023, 2 ♂♂; Tutak, 39°26’32.68" N, 42°45’55.83" E, 1679 m, 24.VIII.2022, 3 ♀♀.

Distribution. Albania, Algeria, Austria, Belgium, Bulgaria, Canary Islands, Croatia, Czech Republic, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Iran, Iraq, Ireland, Israel, Italy, Korea, Latvia, Lithuania, Macedonia, Madeira Islands, Moldova, Netherlands, Norway, Poland, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Tunisia, United Kingdom, Yugoslavia (Yu et al., 2016); known from Türkiye (Öncüer, 1991; Beyarslan & Kolarov, 1994; Kolarov, 1995; Kolarov et al., 1997b, 2014; Gürbüz & Kolarov, 2008; Çoruh et al., 2014b, 2016; Çoruh, 2019; Barik, 2022; Kaplan & Riedel, 2022; Barik & Çoruh, 2023) (Figure 7b).

Hosts. *Eupithecia tantillaria* Boisduval, 1840 (Lepidoptera: Geometridae), *L. sticticalis*, *Xysticus cristatus* (Clerck, 1757) (Araneae:Thomisidae)

Associate plants. *Anethum graveolens*, *Chaerophyllum bulbosum* L. (Apiales: Apiaceae), *Cornus sanguinea* L. (Cornales: Cornaceae), *D. carota*, *Euphorbia cyparissias* L. (Malpighiales: Euphorbiaceae), *E. nicaeensis*, *E. seguieriana*, *E. virgata*, *F. excelsior*, *H. sphondylium*, *Pastinaca* spp. Dekay (Apiales: Apiaceae), *P. oreoselinum*, *Quercus* spp.



a b

Figure 7. *Trychosis legator* (Thunberg, 1822): a) Habitus, b) Distribution of Türkiye.

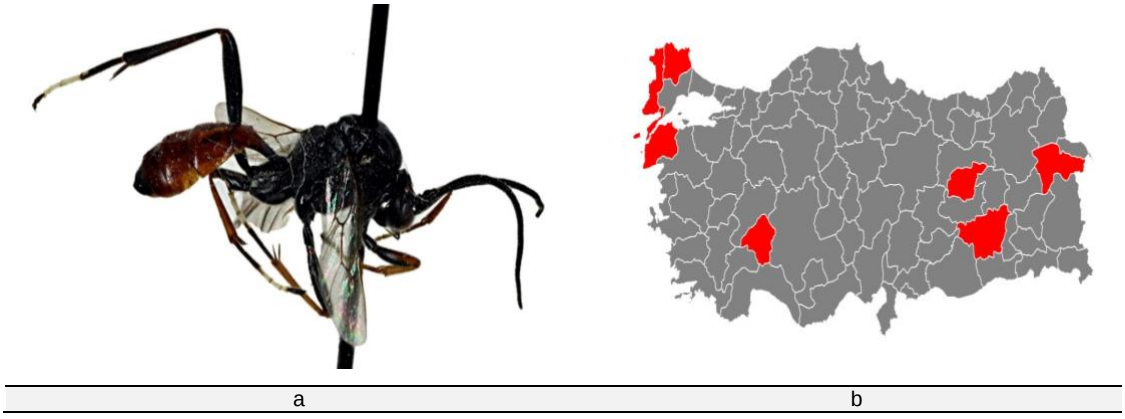
Trychosis tristator (Tschek, 1871) (Figure 8a).

Material examined. Ağrı: 40°29’40" N, 41°30’07" E, 1249 m, 23.VII.2023, 2 ♂♂; Mount Ararat, 39°39’13.39" N, 43°0’53.98" E, 1613 m, 03.VII.2022, ♂; Patnos, Derekenarı, 41°31’31" N, 41°32’26" E, 1650 m, 27.VI.2023, 2 ♂♂, ♀.

Distribution. Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Croatia, Czech Republic, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Lithuania, Moldova, Netherlands, Norway, Poland, Romania, Spain, Sweden, Switzerland, United Kingdom (Yu et al., 2016); known from Türkiye (Beyarslan & Kolarov, 1994; Kolarov et al., 1997b, 2014; Gürbüz & Kolarov, 2008; Çoruh et al., 2014b; Çoruh, 2019; Kaplan & Riedel, 2022) (Figure 8b).

Hosts. *Pisaura mirabilis* (Clerck, 1757) (Araneae: Pisauridae), *Tibellus oblongus* (Walckenaer, 1802), (Araneae: Philodromidae), *X. cristatus*, *Xysticus ulmi* (Hahn, 1831) (Arachnida: Thomisidae).

Associate plants. *Daucus carota*, *E. nicaeensis*, *E. seguieriana*, *H. sphondylium*, *Prunus cerasifera* Ehrh. (Rosales: Rosaceae).



a b

Figure 8. *Trychosis tristator* (Tschek, 1871): a) Habitus, b) Distribution of Türkiye.

Phygadeuontinae Förster, 1869

Gelis vicinus (Gravenhorst, 1829) (Figure 9a)

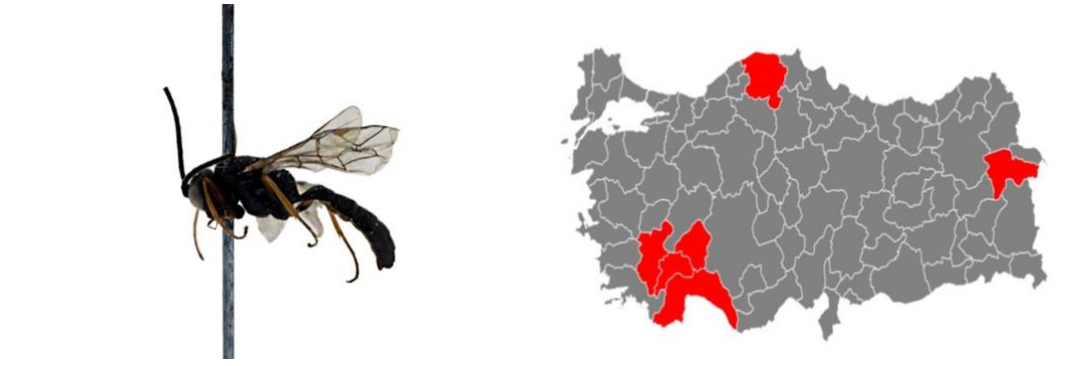
Material examined. Ağrı: Patnos, Derekenarı, 39°17’04,35" N, 42°47’14,20" E, 27.VI.2023, 1650 m, 3 ♂♂, 2 ♀♀.

Distribution. Austria, Bulgaria, Croatia, Czech Republic, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Iran, Ireland, Latvia, Macedonia, Netherlands, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, United Kingdom, Yugoslavia (Yu et al., 2016); known from Türkiye (Kolarov & Gürbüz, 2007; Kolarov & Yurtcan, 2008; Çoruh, 2019; Kıraç, 2012, Kıraç & Gürbüz, 2020) (Figure 9b).

Hosts. *Aglais urticae* (L., 1758) (Lepidoptera: Nymphalidae), *Aporia crataegi* (L., 1758) (Lepidoptera: Lycaenidae), *Argynnis paphia* (L., 1758) (Lepidoptera: Nymphalidae), *Blastophagus piniperda* (L., 1758) (Coleoptera: Scolytidae), *Coleophora hemerobiella* (Scop., 1763), *Coleophora valesianella* Zeller, 1849 (Lepidoptera: Coleophoridae), *Cotesia glomerata* L. 1758 (Hymenoptera: Braconidae), *Cynips collari* Hartig, 1843 (Hymenoptera: Cynipidae), *Exoteleia dodecella* (L., 1758) (Lepidoptera: Gelechiidae), *Hylurgus ligniperda* (J.C. Fabricius, 1787) (Curculionidae: Scolytinae), *Inachis io* (L., 1758) Lepidoptera: Nymphalidae), *Issoria lathonia* (L., 1758) (Lepidoptera: Nymphalidae), *Lobesia botrana* (Den. & Schif., 1775) (Lepidoptera: Tortricidae), *Magdalis phlegmatica* (Herbst, 1797), *Magdalis ruficornis* (L., 1758), *Magdalis violacea* (L., 1758) (Coleoptera: Curculionidae), *Microgaster subcompleta* Nees, 1834 (Hymenoptera: Braconidae),

Nymphalis antiopa (L., 1758) (Lepidoptera: Nymphalidae), *Pieris brassicae* L., 1758, *Pieris napi* (L., 1758), *Pieris rapae* L. 1758, (Lepidoptera: Pieridae), *Pissodes notatus* (De Geer, 1775) (Coleoptera, Curculionidae), *Pogonocherus fasciculatus* (De Geer, 1775) (Coleoptera: Cerambycidae), *Polygonia c-album* (L., 1758), (Lepidoptera: Nymphalidae), *S. populnea*, *Scolytus scotylus* (F., 1775) (Coleoptera: Curculionidae), *Taleporia triquetrella* (Fischer von Röslerstamm, 1837) (Lepidoptera: Psychidae), *Vanessa atalanta* (L., 1758) (Lepidoptera: Nymphalidae), *Zygaena lonicerae* (Scheven, 1777) (Lepidoptera: Zygaenida).

Remark: This species is new for East Anatolia.



a b

Figure 9. *Blapsidotes vicinus* (Gravenhorst, 1829): a) Habitus, b) distribution of Türkiye.

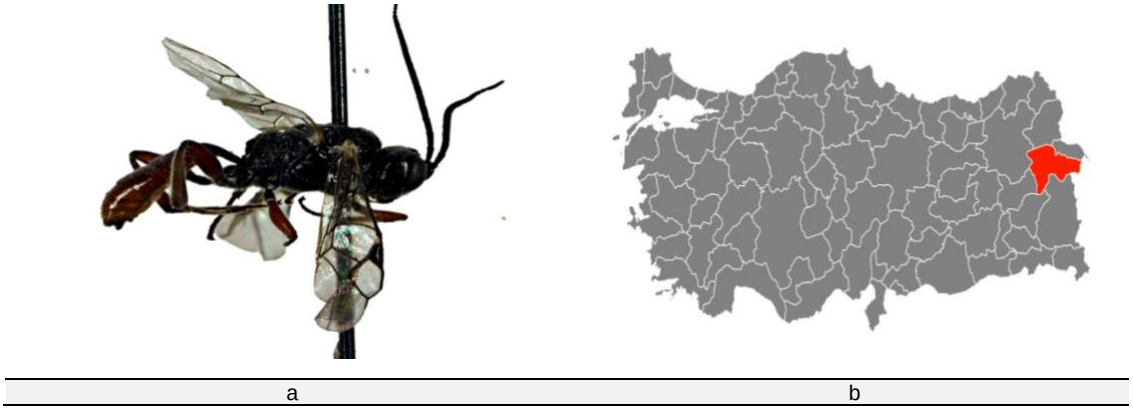
**Endasys analis* (Thomson, 1883) (Figure 10a)

Material examined. Ağrı: 39°77’45,91" N, 43°11’77,86" K, 1639 m, 23.VII.2023, ♂.

Distribution. Austria, Azerbaijan, Bulgaria, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Russia, Sweden (Yu et al., 2016); new for Türkiye (Figure 10b).

Host. *Pristiphora abietina* (Christ, 1791) (Hyrnenoptera: Tenthredinidae).

Associate plant. *Listera ovata* (L.) R.Br. (Asparagales: Orchidaceae).



a b

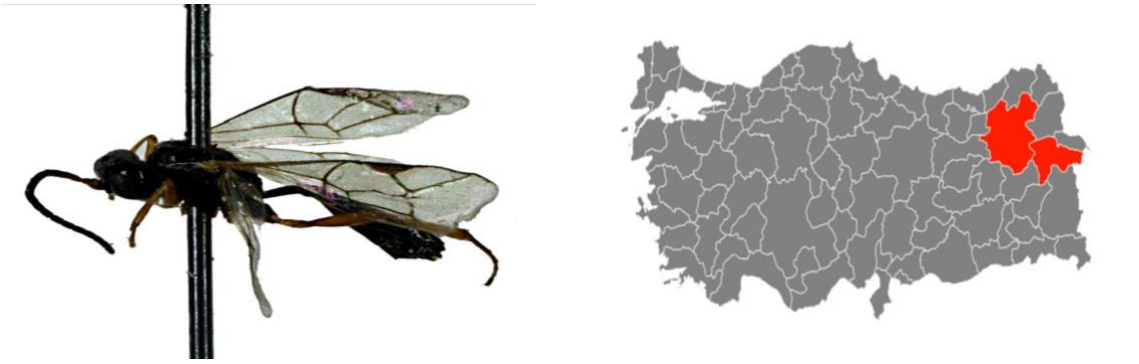
Figure 10. *Endasys analis* (Thomson, 1883) a) Habitus, b) distribution of Türkiye.

Mesoleptus vigilatorius (Förster, 1876) (Figure 11a)

Material examined. Ağrı: 40°29’40" N, 41°30’07" E, 1249 m, 23.07.2023, 2 ♂♂. Mount Ararat, 39°68’23.31" N, 44°08’67.86" E, 1520 m, 23.VII.2023, 2 ♀♀.

Distribution. Bulgaria, Czechoslovakia, Finland, France, Germany, Italy, Latvia, Norway, Poland, Russia, Switzerland, United Kingdom (Yu et al., 2016); known from Türkiye (Barik & Çoruh, 2023) (Figure 11b)

Remark: Second exact locality from Türkiye.



a b

Figure 11. *Mesoleptus vigilatorius* (Förster, 1876): a) Habitus, b) distribution of Türkiye.

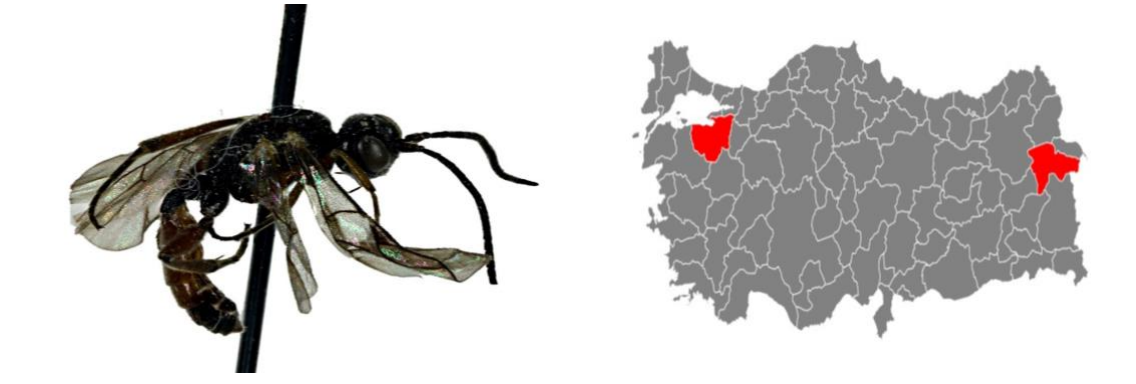
Phygadeuon hercynicus Gravenhorst, 1829 (Figure 12a)

Material examined. Ağrı: Tutak, 39°26’32.68" N, 42°45’55.83" E,1679 m, 21.07.2022, ♀; Oğlaksuyu, 40°02’46" N, 41°20’23" E, 1788 m, 07.VI.2023, 2 ♂♂, 2 ♀♀.

Distribution. Austria, Azerbaijan, Belgium, Czechoslovakia, Finland, Germany, Ireland, Norway, Poland, Russia, Sweden, United Kingdom (Yu et al., 2016); known from Türkiye (Çaylak & Çoruh, 2020) (Figure 12b).

Associate plant: *Angelica sylvestris*.

Remark: This species is new for East Anatolia.



a b

Figure 12. *Phygadeuon hercynicus* Gravenhorst, 1829: a) Habitus, b) Distribution of Türkiye.

Discussion

A total of 53 specimens belonging to eight genus and 10 species are recorded. Among them, *Enclisis vindex*, and *Endasys analis* are recorded for the first time from Türkiye. Also, present *Gelis vicinus* and *Phygadeuon hercynicus* are new for East Anatolia.

When evaluation is made according to the number of species and individuals possessed by the existing genera we see that one species (11 samples) belong to the genus *Cryptus* Fabricius, one species (five samples) belong to genus *Enclisis* Townes, one species (three samples) belong to *Mesostenus* Gravenhorst, three species (21 samples) belong to *Trychosis* Förster, one species (five samples) belong to *Blapsidotes* Förster, one species (one sample) belong to *Endasys* Förster, one species (four samples) belong to *Mesoleptus* Gravenhorst, one species (five samples) belong to *Phygadeuon* Gravenhorst. *Cryptus* is the genus with the most species in the world (Yu et al., 2016; Çoruh, 2019; Schwarz, 2015.).

As a result, when all genuses are compared, we can see that the number of individuals of the *Trychosis is* more dense than other genus. Among the species determined, *Cryptus viduatorius* (with 11 individuals), *Trychosis legator* (with 8 individuals) and *Trychosis ambigua* (with 7 individuals) were the most abundant in research areas. In contrast, *Endasys analis* (with 1 individual) was rarely found in this study.

Adult specimens were collected from different altitudes in collection areas in this study. Among the 10 species, all species were collected from Ağrı center and districts, while *Enclisis vindex*, *Trychosis tristator*, and *Mesoleptus vigilatorius* were collected from the foothills of Mount Ararat at the same time. *E. vindex* is the first species recorded as new in Mount Ararat.

When the species are analyzed in terms of geographic regions of Türkiye, it is seen that, *Cryptus viduatorius* and *Trychosis legator* were collected from seven regions (Çoruh et al., 2014 a, b, 2016; Schwarz, 2015), *Mesostenus transfuga* was collected from five regions (Çoruh, 2019; Barik, 2022; Kaplan & Riedel, 2022; Barik & Çoruh, 2023), *Trychosis tristator* was collected from four regions (Kolarov et al., 2014; Çoruh, 2019; Kaplan & Riedel, 2022) Besides, *Mesoleptus vigilatorius* and *Phygadeuon hercynicus* were collected from a single region (Çaylak & Çoruh, 2020).

According to these results, Palaearctic Region have the highest number of species. Among these species, *Cryptus viduatorius* showed distribution in 67 different countries (Yu et al. 2016; Çoruh, 2019). This species is almost a cosmopolitan species, similarly, *Trychosis legator* showed distribution in 49 different countries (Yu et al., 2016) and *Mesostenus transfuga* showed distribution in 41 different countries (Yu et al., 2016; Çoruh, 2019) in zoogeographical regions. These species, which are common worldwide, are also widely found in our country. Also, *Phygadeuon hercynicus* has the least widespread area among the species (12 countries) (Yu et al., 2016). In the same vein, this species was previously detected only in Bursa province (Çaylak & Çoruh, 2020). Ağrı province is the second locality for the species.

As a result, while Ağrı province was the new locality for 9 other species except *Cryptus viduatorius*, it became the second locality for *Phygadeuon hercynicus* and *Mesoleptus vigilatorius* and the fourth locality for *Trychosis ambigua*. The Eastern Anatolia region, which includes the province of Ağrı, is also a new record for *Phygadeuon hercynicus* and *Gelis vicinus*.

Every faunistic data study conducted will contribute to the diversity of Türkiye's Ichneumonidae and set an example for new studies

Acknowledgements

Thanks are due to Dr. Janko Kolarov (Bulgaria) for identifying several insects and confirming the identified samples and we are also indebted to Doğan Ayhan for collecting some of the reported species.

References

Anonymous, 2023. Ağrı sosyal yaşam. (Web page: https://en.wikipedia.org/wiki/A%C4%9Fr%C4%B1) (Date accessed: 16 August 2023).

Ataş, M. & S. Çoruh, 2022. Parasitoids of *Chlorophorus damascenus* (Chevrolat) (Coleoptera: Cerambycidae) in vineyards of Southeastern Anatolia Region. Acta Entomologica Serbica, 28 (2): 41-47.

Barik, G. & S. Çoruh, 2023. A faunistic study of Ichneumonidae (Hymenoptera) from Northeastern Anatolia Region (Erzurum: Yakutiye and Uzundere) of Türkiye. Turkish Journal of Entomology, 47 (1): 15-30.

Barik, G., 2022. Erzuum Yakutiye ve Uzundere İlçeleri Ichneumonidae (Hymenoptera) Türleri Üzerinde Faunistik Bir Araştırma. Atatürk Üniversitesi, Fen Bilimleri Enstitüsü, (Unpublished), Yüksek Lisans Tezi, Erzurum, 106 s (in Turkish with abstract in English).

Beyarslan, A. & J. Kolarov, 1994. Investigations on Ichneumonidae (Hymenoptera) fauna of Turkey. II. Cryptinae. Turkish Journal of Zoology, 18 (4): 227-231.

Birol, O., 2022. A study of Ichneumonidae (Hymenoptera) with new records to Turkish Fauna. International Journal of Sciences: Basic and Applied Research, 62 (2): 265-275.

Çaylak, F. Z. & S. Çoruh, 2020. Contribution to the knowledge of Ichneumonidae (Hymenoptera) of Bursa Uludağ National Park area including new records. Turkish Journal of Entomology, 43 (4): 503-517.

Çoruh, İ. & S. Çoruh, 2008. Ichneumonidae (Hymenoptera) species associated with some Umbelliferae plants occurring in Palandöken Mountains of Erzurum, Turkey. Turkish Journal of Zoology, 32 (2): 121-124.

Çoruh, S. & İ. Çoruh, 2012. Weeds visited by Ichneumonidae (Hymenoptera) species. Journal of Agricultural Faculty of Atatürk University, 43 (1): 13-16.

Çoruh, S. & J. Kolarov, 2016. Faunistic notes on the Ichneumonidae (Hymenoptera), with a new record from Northeastern Turkey. Acta Entomologica Serbica, 21 (1): 123-132.

Çoruh, S. & Ö. Çalmaşur, 2016. A new and additional record of the Ichneumonidae (Hymenoptera) from Turkey. Turkish Journal of Zoology, 40 (4): 625-629.

Çoruh, S., 2019.Taxonomic and biogeographic evaluations of the subfamily Cryptinae (Hymenoptera: Ichneumonidae). Turkish Journal of Entomology, 43 (3): 313-337.

Çoruh, S., J. Kolarov & İ. Çoruh, 2014a. Ichneumonidae (Hymenoptera) from Anatolia. II. Turkish Journal of Entomology, 38 (3): 279-290.

Çoruh, S., J. Kolarov & H. Özbek, 2014b. The fauna of Ichneumonidae (Hymenoptera) of eastern Turkey with zoogeographical remarks and host data. Journal of Insect Biodiversity, 2 (16): 1-21.

Çoruh, S., J. Kolarov & İ. Çoruh, 2018. Ichneumonidae (Hymenoptera) from Anatolia II. Linzer Biologishe Beitrage, 50 (1): 217-224.

Çoruh, S., J. Kolarov & İ. Çoruh, 2016. A study of Ichneumonidae (Hymenoptera) from northeastern Anatolia II, with new records. Turkish Journal of Entomology, 40 (3): 265-280.

Çoruh, S., J. Kolarov & Ö. S. Ercelep, 2022a. A contribution to the Ichneumonidae (Hymenoptera) of Trabzon. Atatürk University, Journal of Agricultural Faculty, 53 (1): 8-13.

Çoruh, S., S. Tezcan & N. Gülperçin, 2022b. Contribution to the knowledge of the Ichneumonidae (Hymenoptera) fauna of Western Turkey with first record of *Phygadeuan geniculatus* for Turkish fauna. Munis Entomology & Zoology, 17 (2): 1112-1119.

Doğru, T., 2002. Türkiye'de Konakları Saptanmış Ichneumonidae (Hymenoptera) Türleri. Trakya Üniversitesi. Fen Bilimleri Enstitüsü, (Unpublished), Yüksek Lisans Tezi, Edirne, Türkiye, 136 s (in Turkish with abstract in English).

Düzgüneş. Z., S. Toros, N. Kılınçer & B. Kovancı, 1982. Ankara Ilinde Bulunan Aphidoidea Türlerinin Parazit ve Predatörleri. T.C. Tarım ve Orman Bakanlığı Zirai Mücadele ve Zirai Karantina Genel Müdürlüğü Yayınları, 251 s (in Turkish).

Erkin, E., 1983. Investigations on the hosts' distribution efficiency on the natural enemies of the family Aphididae (Homoptera) harmful to pome and stone fruit trees in Izmir province of Aegean region. Türkiye Bitki Koruma Dergisi, 7 (1): 29-49.

Goulet, H. & J. T. Huber, 1993. Hymenoptera of the World: An Identification Guide to Families. Centre for Landand Biological Resources Research Ottawa, Ontario Canada Publication, 668 pp.

Gürbüz, M. F. & J. Kolarov, 2008. A study of the Ichneumonidae (Hymenoptera). IV. Cryptinae, Cryptini. Turkish Journal of Zoology, 32 (4): 373-377.

Gürbüz, M. F., M. Y. Aksoylar & A. Buncukçu, 2009a. A faunistic study on Ichneumonidae (Hymenoptera) in Isparta, Turkey. Linzer Biologische Beiträge, 41 (2): 1969-1984.

Gürbüz, M. F., H. Kırtay & O. Birol 2009b. A study of Ichneumonidae (Hymenoptera) of Kasnak Oak Forest Nature Reserve in Turkey with new records. Linzer Biologische Beiträge, 41 (2): 1985-2003.

İneciklioğlu, H., 2022. Trakya Bölgesi Ichneumonidae (Hymenoptera) Kontrol Listesinin Oluşturulması. Trakya Üniversitesi, Fen Bilimleri Enstitüsü, (Unpublished), Doktora Tezi, Edirne, Türkiye, 187 s (in Turkish with abstract in English).

Kaplan, E. & M. Riedel, 2022. New and additional records from Bingol and Diyarbakır Provinces for the Turkish Ichneumonidae (Hymenoptera) fauna. Transactions of the American Entomological Society, 148 (1): 35-49.

Kaplan, E., 2023. A new species of the genus *Trathala* (Hymenoptera: Ichneumonidae), with new and additional records of the family Ichneumonidae from Türkiye. Zoology in the Middle East, 69 (4): 364-371.

Kaplan, E., 2024. Four new species of Darwin wasps from Türkiye. Zootaxa, 5424 (17): 456-466.

Kıraç, A. & M. F. Gürbüz, 2020. Honaz Dağı Milli Parkı Ichneumonidae (Insecta, Hymenoptera) Faunası. Bilge International Journal of Science and Technology and Research, 4 (2): 150-159.

Kıraç, A., 2012. Honaz Dağı Milli Parkı (Denizli) ve Yakın Çevresinin Ichneumonidae (Hymenoptera) Faunası Üzerine Bir Araştırma. Süleyman Demirel Üniversitesi, Fen Bilimleri Enstitüsü, (Unpublished), Yüksek Lisans Tezi, Isparta, Türkiye, 94 s (in Turkish with abstract in English).

Kohl, F. F., 1905. Ergebnisse einer naturwissenschaftlichen Reise zum Erdschias Dagh (Kleinasien). Annalen des Naturhistorische Museum Wien, 20 (12): 220-246 (in German).

Kolarov, J. & M. F. Gürbüz, 2007. A study of the Turkish Ichneumonidae (Hymenoptera). V. Cryptinae, Phygadeuontini. Linzer Biologische Beitrage, 39 (2): 987-992.

Kolarov, J. & M. Yurtcan, 2008. A study of the Ichneumonidae (Hymenoptera) of the North Anatolia (Turkey). I. Brachycyrtinae, Cryptinae and Xoridinae. Acta Entomologica Serbica, 13 (1-2): 89-91.

Kolarov, J., 1989. Ichenumonidae (Hym.) from Balkan Peninsula and some adjacent regions. III. Ophioninae, Anamaloninae, Metopiinae, Mesochorinae, Acaenitinae, Oxytorinae, Orthopelmatinae, Collyriinae, Orthocentrinae, Diplazontinae and Ichneumoninae. Turkish Journal of Entomology, 13 (3): 131-140.

Kolarov, J., 1995. A cataloque of the Turkish Ichneumonidae (Hymenoptera). Zeitschrift für Entomologie, 7 (16): 137-188.

Kolarov, J., 1997. A review of the Cremastinae Balkan Peninsula Turkey and Cyprus with zoogeographical notes. Beitrage Entomologica, 47 (1): 169-199.

Kolarov, J., A. Beyarslan & M. Yurtcan, 1997a. Ichneumonidae (Hymenoptera) from the Gökçeada and Bozcaada Islands-Turkey. Acta Entomologica Bulgarica, 3 (4): 13-15.

Kolarov, J., M. Yurtcan & A. Beyarslan, 1997b. New and rare Ichneumonidae (Hym.) from Turkey. 1. Pimplinae, Tryphoninae, Phygadeuontinae, Banchinae and Ctenopelmatinae. Acta Entomologica Bulgarica, 3 (3/4): 10-12.

Kolarov, J., E. Yıldırım, S. Çoruh & M. Yüksel, 2014. Contribution to the knowledge of the Ichneumonidae (Hymenoptera) fauna of Turkey. Zoology in the Middle East, 60 (2): 154-161.

Kolarov, J., S. Çoruh & İ. Çoruh, 2016. Contribution to the knowledge of the Ichneumonidae (Hymenoptera) fauna of Turkey from northeastern Anatolia, Part I. Turkish Journal of Zoology, 40 (1): 40-56.

Öncüer, C., 1991. Türkiye Bitki Zararlısı Böceklerinin Parazit ve Predatör Kataloğu. Ege Üniversitesi, Ziraat Fakültesi Yayınları, 505, 354 s (in Turkish).

Özdan, A. & M. F. Gürbüz, 2016. Ichneumonidae (Hymenoptera) fauna of Gelincik Mountain Natural Park (Isparta, Turkey). Turkish Journal of Entomology, 40 (4): 425-444.

Özdan, A., 2014. Gelincik Dağı Tabiat Parkı ve Kovada Gölü Milli Parkı (Isparta) Ichneumonidae (Hymenoptera) Faunası. Süleyman Demirel Üniversitesi, Fen Bilimleri Enstitüsü, (Unpublished), Doktora Tezi, Isparta, 149 s (in Turkish with abstract in English).

Quicke, D. L., N. M. Laurenne, M. Fitton & G. R. Broad, 2009. A thousand and one wasps: a 28S rDNA and morphological phylogeny of the Ichneumonidae (Insecta: Hymenoptera) with an investigation into alignment parameter space and elision. Journal of Natural History, 43 (23-24):1305-1421.

Sarı, Ü. & S. Çoruh, 2018. Ichneumonidae (Hymenoptera) from Northeastern Anatolia Region (Erzurum, Aşkale). Turkish Journal of Entomology, 42 (3): 215-228.

Schwarz M., 2015. Zur Kenntnis palaarktischer *Cryptus*-Arten (Hymenoptera, Ichneumonidae, Cryptinae). Linzer Biologische Beitraege, 47 (1): 749-896 (in German with abstract in English).

Sedivy, J., 1959. Wissenschaftliche Ergebnisse der zoologischen Expedition des National Museums in Prag nach der Tuerkei. 26. Hymenoptera, Ichneumonidae. Acta Faunistica Entomologica Musei Nationalis, Pragae, 33: 107-116.

Soydanbay, M., 1976. The list of natural enemies of agricultural crop pests in Turkey. Part II. Turkish Journal of Plant Protection, 16 (1): 61-92.

Szepligeti, V., 1916. Ichneumoniden aus der Sammlung des ungarischen National Museums. Annales Musei Nationalis Hungarici, 14: 225-380 (in German).

Tuatay, N., A. Kalkandelen & N. Aysev, 1972. Insect Catalogue of Plant Conservation Museum (1961-1971). Zirai Mücadele ve Zirai Karantina Genel Müdürlüğü Yayınları, Mesleki Kitaplar Serisi, 119 s (in Turkish).

Yılmaz, N., 2020. Bayburt İli Hububat Alanlarındaki Böcek Faunasının Belirlenmesine Yönelik Çalışma. Atatürk Üniversitesi, Fen Bilimleri Enstitüsü, (Unpublished), Yüksek Lisans Tezi, Erzurum, 75 s (in Turkish with abstract in English).

Yu, D., S. Ki, C. Van Achterberg & K. Horstmann, 2016. Taxapad 2016, Ichneumonoidea 2015. Database on flash-drive. www.taxapad.com, Nepean, Ontario, Canada (Web page: http://www.taxapad.com (Date accessed: 14 March 2024).

Yurtcan, M., S. Çoruh, J. Kolarov, A. B. Özdan, M. F. Gürbüz & İ. Erkaya, 2021. Ichneumonidae (Hymenoptera) fauna of natural protection areas in the East Mediteranean Region of Turkey, Part II. Entomological News, 129 (5): 453-472.