ATATÜRK ÜNİVERSİTESİ YAYINLARI
ATATURK UNIVERSITY PUBLICATIONS

Araştırma Makalesi / Research Article DOI: 10.54614/AUAF.2022.909906

A Contribution to the Ichneumonidae (Hymenoptera) of Trabzon, III. Cryptinae

Trabzon'dan Ichneumonidae (Hymenoptera) Türlerine Katkılar III. Cryptinae

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ABSTRACT

The present contribution is based upon Cryptinae species collected from the Black Sea Region (Trabzon, Ortahisar) in 2017. A total of 10 species belonging to the subfamily Cryptinae are recorded. Among the collected samples, *Aptesis nigritula* (Thomson, 1885) and *Bathythrix montana* (Schmiedeknecht, 1905) are recorded for the first time from Anatolia. *Cryptus minator* (Gravenhorst, 1829), *Endasys plagiator* (Gravenhorst, 1829), *Gelis cursitans* (Fabricius, 1775), and *Ischnus migrator* (Fabricius, 1775) are rare in the study area. New data on the distribution of eight known species are presented.

Keywords: Cryptinae, Ichneumonidae, new records, Trabzon, Turkey

ÖZ

Bu çalışmada, 2017 yılında Karadeniz Bölgesi (Trabzon, Ortahisar)'den toplanan Cryptinae türleriyle katkı sağlanmıştır. Toplanan örneklerden, *Aptesis nigritula* (Thomson, 1885) ve *Bathythrix montana* (Schmiedeknecht, 1905) Türkiye için yeni kayıttır. *Cryptus minator* Gravenhorst, 1829, *Endasys plagiator* Gravenhorst, 1829, *Gelis cursitans* (Fabricius, 1775) ve *Ischnus migrator* (Fabricius, 1775) çalışma bölgesinde nadir tür durumundadır. Bilinen sekiz türün dağılımı ile ilgili yeni veriler de sunulmuştur.

Anahtar Kelimeler: Cryptinae, Ichneumonidae, yeni kayıt, Trabzon, Türkiye

Introduction

Parasitoid Hymenoptera are unique bioindicators because they are representative of the diversity of the hosts that they attack, and these constitute a great part of the diversity of all arthropods (Sharkey, 2007).

The Ichneumonidae Latreille, 1802 includes 45 subfamilies, 1601 genera, and 25,285 described species (Yu et al., 2016). According to recent studies, the number of Ichneumonidae of Turkey is 1298 species (Çaylak & Çoruh, 2020; Kıraç & Gürbüz, 2020; Teymuroğlu, 2021).

The Cryptinae (sensu Townes, 1970) are largest of all ichneumonid subfamilies, with more than 5000 species worldwide, and are distributed in all biogeographic regions except for Antarctica (Yu et al., 2016). Most of them are idiobiont ectoparasitoids that attack pupae or prepupae of holometabola insects, but there are some endoparasitoids and koinobiont species. A few cryptines parasitize diverse other hosts such as spider and pseudoscorpion egg sacs, weevil egg masses and gregarious eurytomid (Hymenoptera) larvae (Laurenne et al., 2006). Although the host relationships and behavior of some species are well known, little is known about biology because of their immense species diversity.

Lately, Santos (2017) split Cryptinae into three subfamilies (Ateleutinae, Cryptinae, and Phygadeuontinae).

Worldwide, the subfamily comprises about 403 genera and 5080 species (Yu et al., 2016). In this case, Cryptinae takes first place with the number of speceis in the Ichneumonidae. In the catalog, Ichneumonidae of Turkey (Kolarov, 1995) listed 66 cryptine species by different researchers. From 1995 to the present, the numbers of cryptine fauna of Turkey reached to 204 species (Çaylak & Çoruh, 2020; Çoruh et al., 2014a, 2014b, 2016, 2018, 2019; Çoruh & Çalmaşur, 2016; Çoruh

Geliş Tarihi/Received: 08.04.2021
Kabul Tarihi/Accepted: 15.11.2021

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Cite this article as: Çoruh, S., Kolarov, J., & Ercelep, Ö. S. (2022). A Contribution to the Ichneumonidae (Hymenoptera) of Trabzon, III. Cryptinae. *Atatürk University Journal of Agricultural Faculty, 53*(1), 8-13.

Figure 1.
Map of the Study Area

& Çoruh, 2008, 2012; Çoruh & Kesdek, 2008; Çoruh & Kolarov, 2016; Çoruh & Özbek, 2005, 2011; Eroğlu et al., 2011; Gürbüz & Kolarov, 2008; Jussila, 2001; Kırtay, 2008; Kolarov et al., 1997a, 1997b, 2002, 2014, 2016; Kolarov & Bordera, 2007; Kolarov & Gürbüz, 2007; Kolarov & Yurtcan, 2008; Gürbüz et al., 2009a, 2009b; Özdan & Gürbüz, 2016; Özdan, 2014; Özdemir & Güler, 2009; Quike et al., 2009; Sarı & Çoruh, 2018; Schwarz, 2005, 2007; Yurtcan et al., 2021).

The aim of this study was to contribute to the knowledge at the Turkish Ichneumonidae fauna.

Methods

Adult cryptine samples were collected by sweeping net on especially flowering plants and weeds of study area (Ortahisar, Trabzon, Turkey) (Figure 1) in 2017 summer.

Trabzon lies on a wide bay on the southeastern shore of the Black Sea backed by high ranges of the Pontic Mountains, which separate it from the central Anatolian Plateau. This city has been carefully protected with the civilizations. Many civilizations have made historical architectural works.

There is a lush vegetation in Trabzon, which receives abundant rainfall. Forests are found up to an altitude of 2300. There are large tea gardens in the east of the province. In total, 45% of the provincial land consist of forest, 33% cultivated-planted areas, and rest consist of meadows and pastures. 45% of the and

All adults samples were collected from three different altitutes (150 m, 350 m, and 750 m) in Ortahisar (Table 1). Ortahisar, which is the largest district of the city, also has evidence showing that is the oldest settlement with its historical and cultural heritage.

Samples were collected by the third author, identified by the first and second authors. The examined materials are deposited in the Entomological Museum, Erzurum, Turkey. Turkey distribution data for the species were obtained from different literatures (Table 4). Global distribution and hosts data mainly followed Taxapad (Yu et al., 2016). The newly recorded species are indicated with an asterisk (*) in the text. Different distributions information on the species is summarized in Table 2, 3, and 4.

Results and Discussion

We here report 26 samples belonging to 10 species, 10 genera for Trabzon, Ortahisar, two species are reported for the first time for the Turkish fauna.

***Agrothereutes hospes* (Tschek, 1871)**
Material examined: Ortahisar: Bostancı, 350 m, 04.VI.2017, 2 ♂♂; 12.VII.2017, 3 ♂♂. Dolaylı, 01.VIII.2017, 150 m, 2 ♂♂.

Global distribution: Austria, Belgium, Bulgaria, Czech Republic, Czechoslovakia, Finland, France, Germany, Gibraltar, Hungary, Iran, Italy, Latvia, Moldova, Norway, Poland, Romania, Serbia & Montenegro, Spain, Sweden, Switzerland, Turkey, and United Kingdom.

Table 1.
Data of Collected Species

	Locality	Year	Altitude (m.)
Trabzon Ortahisar	Bulak	2017	700
	Bostancı		350
	Dolaylı		150

Table 2.
Distribution in Turkey of Collected Species

Name of Taxa	Distribution in Turkey	References
***Agrothereutes hospes* (Tschek, 1871)**	Isparta, Giresun, Van	Beyarslan & Kolarov, 1994; Gürbüz et al., 2006; Gürbüz & Kolarov, 2008; Akdura et al., 2012; Çoruh et al., 2014a
****Aptesis nigritula* (Thomson, 1885)**	**New record from Turkey**	**Present study**
****Bathythrix montana* (Schmiedeknecht, 1905)**	**New record from Turkey**	**Present study**
***Cryptus minator* Gravenhorst, 1829**	Kütahya	Kolarov, 1987, 1995; Öncüer, 1991
***Endasys plagiator* Gravenhorst, 1829**	Anatolia, Erzurum, Isparta, Rize	Çoruh et al., 2014a, Gürbüz et al., 2009a; Kolarov et al., 2016; Kolarov, 1995; Kolarov & Bordera, 2007; Kolarov & Gürbüz, 2007; Sawoniewicz & Luhman, 1992
***Gambrus incubitor* (Linnaeus,1758)**	Isparta, Rize, Kahramanmaraş	Beyarslan & Kolarov, 1994; Çoruh et al., 2014a; Gürbüz & Kolarov, 2008; Gürbüz et al., 2009a
***Gelis cursitans* (Fabricius, 1775)**	Rize	Çoruh et al., 2014a
***Idiolispa analis* (Gravenhorst, 1807)**	Burdur, Isparta, Gaziantep, Tunceli	Beyarslan & Kolarov, 1994; Çoruh et al., 2014b; Gürbüz & Kolarov, 2008; Kolarov et al., 2014
***Ischnus migrator* (Fabricius, 1775)**	Adana, Isparta	Fahringer, 1922; Gürbüz et al., 2009a; Gürbüz & Kolarov, 2008 Kolarov, 1995
***Mesoleptus laevigatus* (Gravenhorst, 1820)**	Anatolia, Erzurum	Çoruh et al., 2014b; Fahringer, 1922; Kolarov et al., 2014

* New record for the Turkish fauna

Table 3.
Distributions of Collected Species

Geographical Regions	Aegean Region	Anatolia	Black Sea Region	Eastern Anatolia Region	Mediterranean Region	South Eastern Region
Agrothereutes hospes			●	●	●	
**Aptesis nigritula*			●			
**Bathythrix montana*			●			
Cryptus minator	●					
Endasys plagiator	●	●			●	
Gambrus incubitor			●		●	
Gelis cursitans			●			
Idiolispa analis				●	●	●
Ischnus migrator					●	
Mesoleptus laevigatus		●		●		

* New record for the Turkish fauna

Table 4.
Zoogeographic Distribution of Collected Species

Zoogeographical Regions	Afrotropical	Eastern Palearctic	Europea Mediterranean Region	Nearctic Mediterranean	Oriental	Western Palearctic
Agrothereutes hospes		●	●			●
**Aptesis nigritula*		●	●			●
**Bathythrix montana*			●	●		●
Cryptus minator			●			●
Endasys plagiator			●			●
Gambrus incubitor	●	●	●			●
Gelis cursitans			●			●
Idiolispa analis	●		●	●		●
Ischnus migrator		●	●			●
Mesoleptus laevigatus		●	●			●

* New record for the Turkish fauna

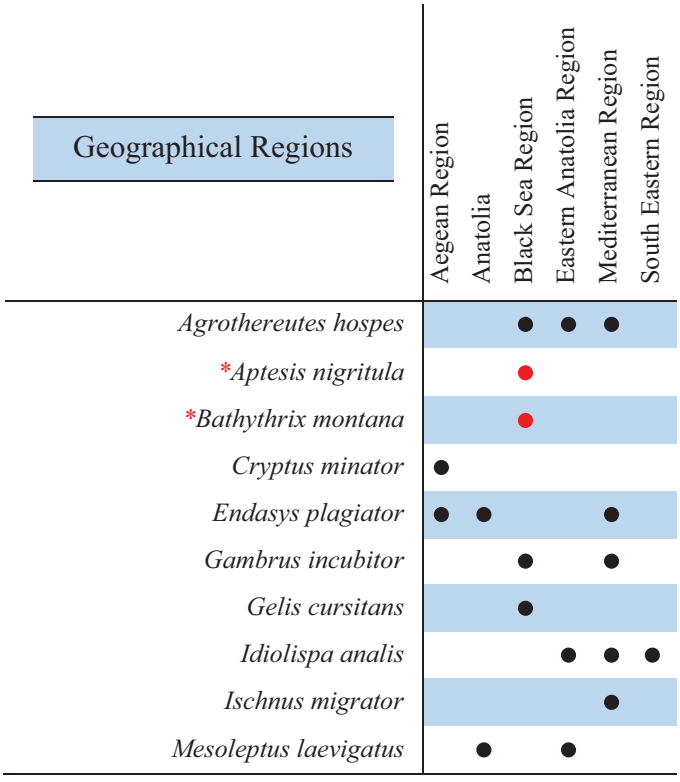

Figure 2.
Distributions of Collected Species
* New record for the Turkish fauna

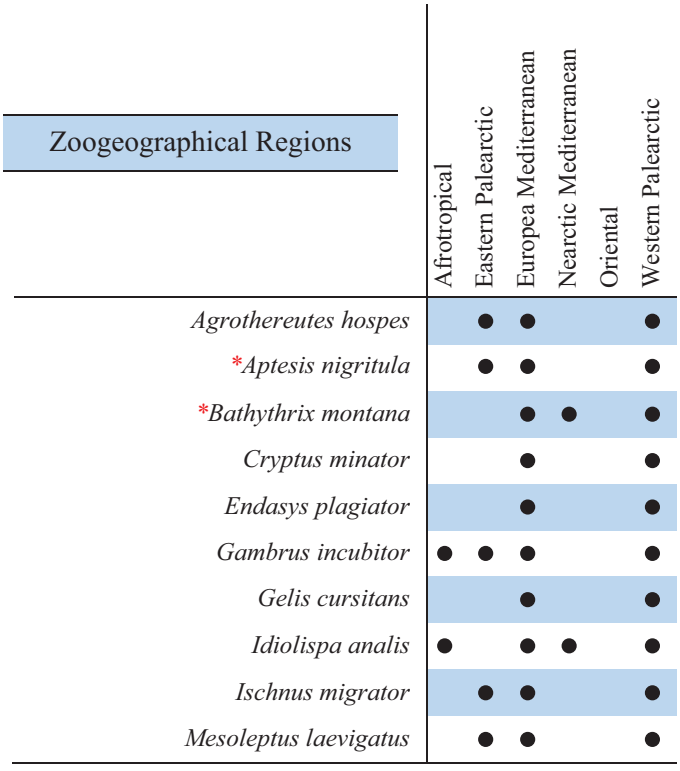

Figure 3.
Zoogeographic Distribution of Collected Species

Hosts: *Canephora hirsuta, Drymonia ruficornis, Eriogaster lanestris, Galleria mellonella, Lycaena dispar, Lymantria dispar, Saturnia spini, Sparganothis pilleriana, Zygaena angelicae, Z. carniolica, Z. filipendulae, Z. lonicerae, Z. minos, Z. scabiosae, Z. trifolii,* and *Z. viciae.*

***Aptesis nigritula* (Thomson, 1885)**
Material examined: Ortahisar: Dolaylı, 150 m, 18.VI.2017, 2 ♂♂.

Global distribution: Austria, Azerbaijan, Bulgaria, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, Poland, Russia, Ukraine, and United Kingdom.

New for Turkey.

***Bathythrix montana* (Schmiedeknecht, 1905)**
Material examined: Ortahisar: Bostancı, 350 m, 12.VII.2017, 2 ♂♂, 4 ♀♀.

Global distribution: Austria, Canada, Czechoslovakia, Estonia, Finland, Germany, Italy, Latvia, Moldova, Poland, Sweden, Switzerland, and USA.

Host: *Pristiphora abietina.*

***Cryptus minator* Gravenhorst, 1829**
Material examined: Ortahisar: Dolaylı, 150 m, 12.VII.2017, 1 ♀.

Global distribution: Austria, Bulgaria, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Romania, Spain, Sweden, Turkey, and United Kingdom.

Hosts: *Hesperophanes cinereus, Hylotrupes bajulus, Opilo domesticus*, and *Pristiphora erichsonii*.

***Endasys plagiator* Gravenhorst, 1829**
Material examined: Ortahisar: Bostancı, 350 m, 12.VI.2017, 1 ♂.

Global distribution: Austria, Belgium, Bulgaria, Croatia, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Italy, Macedonia, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and Yugoslavia.

***Gambrus incubitor* (Linnaeus, 1758)**
Material examined: Ortahisar: Bostancı, 350 m, 12.VI.2017, 1♀; Bulak, 700 m, 22.VI.2017, 1♂.

Global distribution: Austria, Azerbaijan, Belgium, Bulgaria, Croatia, Czech Republic, Czechoslovakia, Finland, France, Germany, Hungary, Iran, Ireland, Italy, Italy, Kenya, Latvia, Lithuania, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and Yugoslavia.

Hosts: *Macaria liturata, Panolis flammea, Pristiphora erichsonii, Saturnia pavonia, Synanthedon formicaeformis, Trichiosoma lucorum, Utetheisa jacobaeae, Zygaena filipendulae, Z. lonicerae,* and *Z. trifolii.*

***Gelis cursitans* (Fabricius, 1775)**
Material examined: Ortahisar: Dolaylı, 150 m, 24.VIII.2017, 1 ♂.

Global distribution: Austria, Belarus, Bulgaria, Croatia, Czech Republic, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Norway, Poland, Romania, Russia, Sweden, Switzerland, Ukraine, and United Kingdom.

Hosts: *Acanthopsyche atra, Aleiodes assimilis, Archips oporana, Canephora hirsuta, Charops cantator, Cimbex connata, C. femorata, Coleophora vibicella, Dendrolimus pini, Diprion pini, D. simile, Epichnopterix plumella, Gilpinia pallida, Liposthenes glechomae,*

Megalophanes viciella, Nematus pallipes, Neodiprion sertifer, Orgyia antiqua, Pachythelia villosella, Rhyacionia buoliana, Sterrhopterix hirsutella, Syspasis scutellator, Taleporia tubulosa, Trichiosoma nanae, and *Trichopsyche fusca*.

***Idiolispa analis* (Gravenhorst, 1807)**
Material examined: Ortahisar: Bostancı, 350 m, 13.VI.2017, 2 ♂♂. Bulak, 700 m, 22.VI.2017, 1 ♀.

Global distribution: Holarctic and Oriental Regions (84 country).

Hosts: *Gilpinia polytoma, Leucoma salicis, Lymantria dispar, Lymantria monacha, Saperda populnea*, and *Trochosa terricola*.

***Ischnus migrator* (Fabricius, 1775)**
Material examined: Ortahisar: Bostancı, 350 m, 05.VII.2017, 1 ♂.

Global distribution: Austria, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Czechoslovakia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Moldova, Netherlands, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, and United Kingdom.

Hosts: *Athalia rosae, Canephora graminella, Canephora hirsuta, Cerura erminea, C. vinula, Eristalinus sepulchralis, Eupoecilia ambiguella, Lasiocampa quercus, L. trifolii, Lobesia botrana, Macroglossum stellatarum, Megalophanes viciella, Pachythelia villosella, Pimpla rufipes, Polychrysia moneta, Saturnia pavonia, Scolioneura betuleti, Trichiosoma lucorum, Utetheisa jacobaeae, Zeiraphera griseana, Zygaena ephialtes, Z. filipendulae*, and *Z. punctum*.

***Mesoleptus laevigatus* (Gravenhorst, 1820)**
Material examined: Ortahisar: Dolaylı, 150 m, 17.VIII.2017, 2 ♂♂.

Global distribution: Austria, Azerbaijan, Belgium, Bulgaria, Croatia, Czech Republic, Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Sicily, Japan, Latvia, Lithuania, Luxembourg, Moldova, Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine, and United Kingdom.

Hosts: *Neodiprion sertifer,* and *Sarcophaga pseudoscoparia*.

Zoogeographical Characterization

The zoogeographical characterization mainly follows the chorotype classification of the near East fauna proposed by Taglianti et al. (1999). After 4541 investigations of the recent geographic distribution of the species listed above, they can be divided into the following groups:

1. The most large ranges (Holarctic and Oriental) have the species Idiolispa analis.
2. Ranges in two zoogeographical regions (Western Palaearctic and Afrotropical) have also the species Gambrus incubator.
3. Holarctic ranges have the species Bathythrix montana.
4. The most numerous are the species with European ranges. Here belong *Agrothereutes hospes, Aptesis nigritula, Cryptus minatory, Endasys plagiator, Gelis cursitans, Ischnus migrator,* and *Mesoleptus laevigatus*.

Etik Komite Onayı: N/A.

Hakem Değerlendirmesi: Dış Bağımsız.

Yazar Katkıları: Fikir – S.Ç., J.K., Ö.S.E.; Tasarım – S.Ç., J.K., Ö.S.E.; Denetleme – S.Ç., J.K., Ö.S.E.; Kaynaklar – S.Ç., J.K., Ö.S.E.; Malzemeler – S.Ç., J.K., Ö.S.E.; Veri Toplanması ve/veya İşlemesi – S.Ç., J.K., Ö.S.E.; Analiz ve/veya Yorum – S.Ç., J.K., Ö.S.E.; Literatür Taraması – S.Ç., J.K., Ö.S.E.; Yazıyı Yazan – S.Ç., J.K., Ö.S.E.; Eleştirel İnceleme – S.Ç., J.K., Ö.S.E.

Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

Finansal Destek: Yazarlar bu çalışma icin finansal destek almadıklarını beyan etmişlerdir.

Ethics Committee Approval: N/A.

Peer-review: Externally peer reviewed.

Author Contributions: Concept – S.Ç., J.K., Ö.S.E.; Design – S.Ç., J.K., Ö.S.E.; Supervision – S.Ç., J.K., Ö.S.E.; Resources – S.Ç., J.K., Ö.S.E.; Materials – S.Ç., J.K., Ö.S.E.; Data Collection and/or Processing – S.Ç., J.K., Ö.S.E.; Analysis and/or Interpretation – S.Ç., J.K., Ö.S.E.; Literature Search – S.Ç., J.K., Ö.S.E.; Writing Manuscript – S.Ç., J.K., Ö.S.E.; Critical Review – S.Ç., J.K., Ö.S.E.

Conflict of Interest: The authors declared that they have no conflict of interest.

Financial Disclosure: The authors declared that this study has received no financial support.

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