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Orijinal araştırma (Original article)

New and little known some Ichneumonidae (Hymenoptera) species from Turkey with some ecological notes

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Summary

The present contribution is based upon the ichneumonids collected from eastern and northeastern part of Turkey between 1994–2007. A total of 16 species and subspecies have been recorded in belonging to Acaenitinae, Banchinae, Ctenopelmatinae, Cryptinae, Ichneumoninae, Metopiinae, Mesochorinae, and Pimplinae. Among them, *Acroricnus seductor elegans* Mocsary, *Hoplocryptus femoralis* (Gravenhorst, 1829), *Ichneumon curtulus* Kriechbaumer and *Astiphromma splenium* (Curtis, 1833) are new records for the Ichneumonidae fauna of Turkey. New distribution areas for previously known species were added. The zoogeographical characterization of the present species was established. In addition to the ecological notes for some of the species were evaluated.

Key words: Ichneumonidae, new records, distribution, ecology, habitat, Turkey

Anahtar sözcükler: Ichneumonidae, yeni kayıt, dağılış, ekoloji, habitat, Türkiye

Introduction

The biggest hymenopteran family is the Ichneumonidae with some 42 generally recognized subfamilies and more than 21 443 described species (Yu et al., 2005). However, it should be emphasized that every year many new species are added to this number. The real number of species was estimated by Townes (1969) to be far higher, with probably up to 60 000 species (Gauld, 1991). Many species are important as biological control agents, parasitizing larvae and pupae of various groups of insects. The most usual insect groups of hosts are Lepidoptera, Coleoptera and Diptera to a less extend spiders and the egg sacs of spiders and pseudoscorpions. The biology of ichneumonids is very

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variable in general, and all forms of parasitism are represented, but common to all ichneumonids is that they kill their host (Laurenne, 2008).

Studies on the family Ichneumonidae of Turkey accelerated, particularly, last one and a half decades. Çoruh & Özbek (2008a) indicated that the presence of 757 species are in 265 genera of Ichneumonidae in Turkey. With the below mentioned contributions (Gürbüz & Aksoylar, 2005; Kolarov & Gürbüz, 2006; Kolarov & Gürbüz, 2007; Yurtcan, 2007; Çoruh, 2008; Riedel, 2008; Çoruh & Özbek 2008b; Kolarov & Çoruh, 2008; Kolarov & Yurtcan, 2008a, b, Çoruh, 2009, Gürbüz et al., 2009, Kolarov et al., 2009; Riedel et al., 2010) these numbers reached to 898 and 278, respectively. It has to be noted that among the above mentioned studies, Riedel (2008) described three new species, Kolarov et al. (2009) described one new species and Riedel et al. (2010) described three new species from Turkey.

This study is based upon material of family Ichneumonidae collected from different localities of northeastern Anatolia in Turkey between 1994–2007. The aim of this study is to present the complete records of preserved material to researchers and relevant people.

Material and Methods

Examined specimens were collected between 1994–2007 in Artvin, Bayburt, Erzincan, Erzurum and Kars (Figure 1) provinces by using a standard sweeping net and Malaise traps. In the confirmation and determination of the material, Dr. Matthias Reidel helped us. All the specimens were deposited in Entomology Museum, Erzurum, Turkey (EMET).

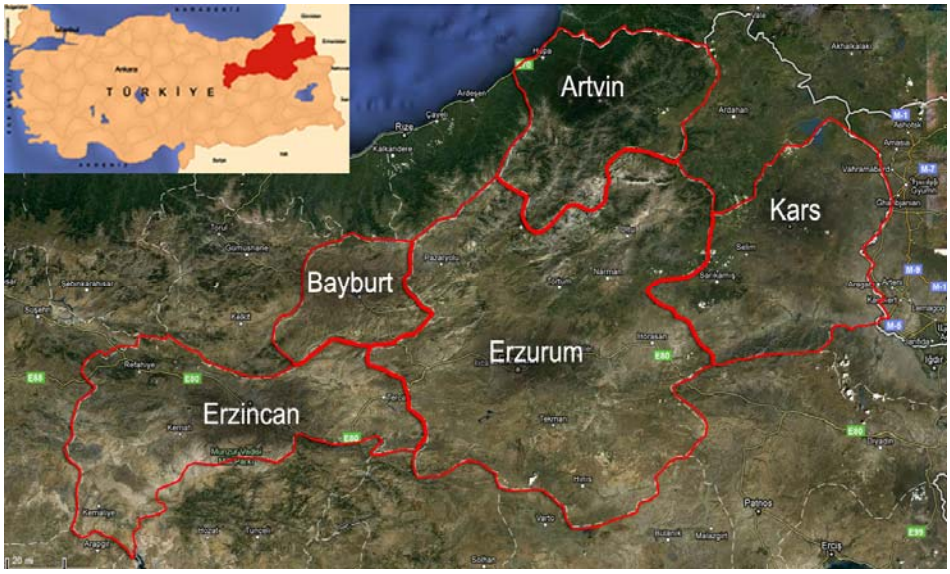

Figure 1. Map of study region.

Results

In total 16 species and subspecies in 14 genera of Acaenitinae, Banchinae, Ctenopelmatinae, Cryptinae, Ichneumoninae, Metopiinae, Mesochorinae, and Pimplinae were determined. The species list is given below.

Subfamily: Acaenitinae

***Phaenolobus saltans* (Gravenhorst, 1829)**

Material examined: Erzincan: Bahçe Kültürleri Araştırma Enstitüsü, 1300 m, 12.VII.1994, ♀, leg. E. Yıldırım.

Distribution in Turkey: Edirne and Erzurum (Kolarov et al., 2002).

General Distribution: Middle and South Europe, Syria and Kazakhistan (Kolarov, 1997; Kolarov et al., 2002).

Subfamily: Banchinae

***Exetastes segmentarius* Perez, 1895**

Material examined: Erzincan, Bahçe Kültürleri Araştırma Enstitüsü, 1300 m, 19.VII.1997, ♀, leg. S. Çoruh; Erzurum: Palandöken Mt., 2400 m, 23.VII.1997, ♂, leg. S. Çoruh.

Distribution in Turkey: Aksaray and Erzurum (Özdemir, 1996; Pekel (Çoruh), 1999).

General Distribution: Afghanistan, Europe and Middle Asia (Pekel (Çoruh), 1999).

***Glypta cylindrator* (Fabricius, 1787)**

Material examined: Erzincan: Mercan, Demirkapı, 1375 m, 24.V.2004, ♂, leg. S. Çoruh.

Distribution in Turkey: Osmaniye (Amanos Mts.) (Castillo, 1989) and Erzurum (Pekel (Çoruh), 1999).

General Distribution: Europe, Sakhalin and Siberia (Kolarov, 1995).

Subfamily: Ctenopelmatinae

***Trematopygus triangulator* Aubert, 1981**

Material examined: Kars: Karakurt, Şeytangeçmez, 1500 m, 23.VI.2005, ♀, leg. E. Yıldırm.

Distribution in Turkey: Hinz (1985) indicated that this species is present in Turkey, but no location.

General Distribution: Israel and Turkey (Kolarov, 1995).

Remark: The border north distribution area of the species is Kars.

Subfamily: Cryptinae

***Acroricnus seductor elegans* Mocsary, 1883**

Material examined: Erzurum: Oltu, Çamlıbel, 1750 m, 02.VII.1997, ♀, leg. E. Yıldırım.

New record for Turkey.

General Distribution: Eastern and Western Palaearctic (Yu et al., 2005).

Remark: although *A. seductor elegans* hasa wide distribution area in the world, only one specimen of it has been reported in Turkey so far.

***Hoplocryptus femoralis* (Gravenhorst, 1829)**

Material examined: Artvin: Yusufeli, 2–8 km SW Altıparmak, 1300 m, 26.VII.2005, 4 ♀♀, leg. H. Özbek; Erzurum: Hınıs, Söylemez, 1650 m, 28.V.2006, ♂, leg. E. Yıldırım.

New record for Turkey

General Distribution: Palaearctic (Yu et al., 2005).

***Meringopus calescens persicus* Heinrich, 1937**

Material examined: Erzurum: Ilıca, Ağzıaçık Pass, 2300 m, 19.VII.2003, ♀, leg. H. Özbek.

Distribution in Turkey: Erzurum (Kolarov & Yurtcan, 2008a).

General Distribution: Azerbaijan, Kyrgyzstan, Iran, Mongolia, and Turkey (Kolarov & Yurtcan, 2008a).

Remark: although many studies have been conducted on ichneumonids in Turkey this subspecies has been recorded only in Erzurum so far and the border western distribution area of the species is Erzurum.

***Meringopus titillator* (Linnaeus, 1758)**

Material examined: Erzurum: Hınıs, Söylemez, 1650 m, 28.VI.2005, ♀, leg. E. Yıldırım; Ilıca, Ortabahçe, Kırklar, 1915 m, 04.VII.2005, ♂, leg. S. Çoruh, Ağzıaçık Geçidi, 2000 m, 19.VII.2003, ♂, leg. H. Özbek, Pasinler, Köprüköy, Kayabaşı, 1600 m, 14.VI.2004, ♂, leg. S. Çoruh; Kars: Sarıkamış, Karakurt, 1501 m, 40º 07' 872" N, 42 º 31' 887"E, 20.VI.2007, ♂, leg. H. Özbek, 40º 07' 879" N, 42º 31' 855" E, 8–23.VI.2005, ♂ (from malaise trap).

Distribution in Turkey: Antalya and Isparta (Kolarov, 1995; Kolarov & Gürbüz, 2007).

General Distribution: Palaearctic (Yu et al., 2005).

Remark: *M. titillator* is recorded for the first time from eastern Anatolia.

Subfamily: Ichneumoninae

***Ichneumon curtulus* Kriechbaumer, 1882**

Material examined: Bayburt: Kop Mt., 2400 m., 13.VIII.1997, ♂, leg. Ö. Çalmaşur; Erzurum: Palandöken Mt., 2400 m, 26.VI.1997, ♀, leg. S. Çoruh.

New record for Turkey.

General Distribution: Palaearctic (Yu et al., 2005).

Subfamily: Metopiinae

***Colpotrochia cincta* (Scopoli, 1763)**

Material examined: Artvin: Genya Mt., 1600 m, 10.VI.2005, ♂, leg. C. Güçlü, Yusufeli, İşhan, 900 m, 26.X.2004, ♀, leg. S. Çoruh; Erzurum: Uzundere, Altınçanak, 1150 m, 08.IX.2005, ♂, leg. H. Özbek.

Distribution in Turkey: Isparta (Kolarov et al., 2009).

General Distribution: Palaearctic (Kolarov et al., 2009).

Remark: *C. cincta* has been recently recorded from Mediterranien Region by Kolarov et al. (2009). It has recorded from eastern and northeastern parts of the country in the present study.

***Colpotrochia triclistor* (Aubert, 1979)**

Material examined: Kars: Sarıkamış, Karakurt, 40º 07' 879" N, 42º 31' 855" E, 1501 m, 27.VI.-13.VII.2006, ♀ (Malaise trap).

Distribution in Turkey: Erzurum (Oltu) (Kolarov & Özbek, 1998), Erzurum (Aşkale, Narman) (Çoruh et al., 2002), Nevşehir (Kolarov et al., 2009), Şanlıurfa (Aubert, 1979).

Distribution in Turkey: Endemic to Anatolia.

***Exochus castaniventris* Brauns, 1896**

Material examined: Kars: Sarıkamış, Karakurt, 40º 07' 879" N, 42º 31' 855" E, 1501 m, 16.IX.-7.X.2004, ♀ (Malaise trap).

Distribution in Turkey: Antalya, Adana, Isparta, Hatay and Kahramanmaraş (Kolarov et al., 2009).

General Distribution: Palearctic (Yu et al., 2005).

Remark: The border north distribution area of the species is Kars.

***Drepanoctonus tricoloratus* (Sedivy, 1971)**

Material examined: Kars: Sarıkamış, Karakurt, 40º 07' 879" N, 42º 31' 855" E, 1501 m, 7–19.VIII.2003, ♀ (Malaise trap), 29.VII–8.VIII.2003, ♂ (Malaise trap), 19.VIII.2003, ♂, leg S. Çoruh.

Distribution in Turkey: Kars (Kolarov et al., 2009).

General Distribution: Europe, Georgia, Siberia and Kazakhstan (Kolarov et al., 2009).

Remark: *D. tricoloratus* was first recorded from Turkey (Kars) by Kolarov et al. (2009). Interestingly, although many surveys have been conducted by authors and other researchers to various provinces of the country for collecting Ichneumonidae, particularly since 1990s, it has been found only in Kars so far due to probably is a very rare species in Turkey.

***Metopius pinatorius* Brullé, 1846**

Material examined: Erzurum: Olur, Süngübayır, 1750 m, 20.VII.1994, ♂, leg. İ. Aslan; Pazaryolu, Akbulut, 03.VII.1997, 1400 m, ♂, leg. S. Çoruh.

Distribution in Turkey: It is known from Turkey (Kolarov, 1995) but locality was not indicated.

General Distribution: Palaearctic (Yu & Horstmann, 1997).

Subfamily: Mesochorinae

***Astiphromma splenium* (Curtis, 1833)**

Material examined: Erzurum: Tortum, Esendurak, 1350 m, 31.VII.2004, ♀, leg. S. Çoruh.

New record for Turkey.

General Distribution: Nearctic and Palaearctic (Yu & Horstmann, 1997).

Remark: although *A. splenium* has very common distribution area in the world it has recorded from Turkey for the first time with only one specimen.

Subfamily: Pimplinae

***Strongylopsis belua* Kuzin, 1950**

Material examined: Erzurum: Ilıca, Atlıkonak, 2100 m, 21.VI.2004, ♂, leg. S. Çoruh.

Distribution in Turkey: Erzurum (Çoruh et al., 2002).

General Distribution: Central and South European part of former USSR, Caucasus, Kazakhstan, Middle Asia, South Siberia and Mongolia (Çoruh et al., 2002).

Remark: *S. belua* was first recorded from Turkey (Erzurum) by Çoruh et al. (2002). In the present study it was recorded from different locality in Erzurum Province. It is remarkable to emphasize that although many surveys have been conducted by authors and other researchers to various provinces of the country for collecting Ichneumonidae, particularly since 1990s, it has been found only in Erzurum so far due to probably is a very rare species in Turkey.

Zoogeographic Characterizations

The zoogeographical characterization is based on the chrotype classification of the Near East fauna, which was proposed by Vigna Taglianti et al. (1999). The geographic distribution of above mentioned species can be divided into the following groups: One species, *Astiphromma splenium* has Nearctic and Palaearctic; seven species, *Acroricnus seductor elegans*, *Hoplocryptus femoralis, Meringopus titillator, Ichneumon curtulus*, *Colpotrochia cincta*, *Exochus castaniventris*, and *Metopius pinatorius* have Palaeactic distribution; three species, *Phaenolobus saltans*, *Exetastes segmentarius, Strongylopsis belua* have Centralasiatic-European chorotype; two species, *Glypta cylindrator* and *Drepanoctonus tricoloratus* have Sibero-European chorotype; one species, *Trematopygus triangulator* has SW-Asiatic chorotype; one species, *Meringopus calescens persicus* has Turanian chorotype; one species, *Colpotrochia triclistor* is Anatolian endemic. This zoogeographical characterization reveals that 50% of the species have very common distribution. Only one species, *C. triclistor* is Anatolian endemic.

Some ecological notes

Species composition: Plant-insect relationship are of great impotance to ecosystem. Pemberton & Hoover (1980) listed the records of insect associated with plants. Table 1 and 2 shows forest plantation and grassland plants of study area which from ichneumonidae species collected (Çoruh & Çoruh, 2008). These species were found associated with these vegetation. All of these plant species could be popular food sources for ichneumonid species due to the fact that ichneumonids feed largely on the nectar of the flowers of these plants. As a result, we can say that these species can be adapted these vegetation.

Table 1. Forest plantation of the study regions

Species	Regions				
	Artvin	Bayburt	Erzincan	Erzurum	Kars
Pinus sylvestris L.	+	+	+	+	+
Fagus sp.	+				
Pinus nigra Arnold.		+			
Abies sp.	+				
Picea orientalis (L.)	+				
Quercus sp.	+		+	+	
Carpinus sp.	+				
Acer sp.	+				
Castanea sativa Mill.	+				
Ulmus glabra Huds.	+				
Populus sp.		+			

Table 2. Grassland plant of the study regions

Species	Regions				
	Artvin	Bayburt	Erzincan	Erzurum	Kars
Acer monspessulanum L.	+	+	+	+	v
Achillea biebersteinii Afan.			+	+	v
Achillea biserrata M.	v	+			
Achillea millefolium L.			+	+	+
Alchemilla pseudocartalinica Juz.	+	+			
Antemis cretica L.			+	+	+
Antemis tinctoria L.	+	+			
Ammi visnaga (L.)	+	+			
Arabis caucasica Willd.			+	+	+
Arctium minus (Hill)	+	+			
Astragalus christianus L.			+	+	+
Astrantia maxima Palas	+	+			
Carum carvi L.			+	+	+
Centaurea macrocephala Muss.	+	+			
Chaerophylum aureum L.	+	+			
Cirsium arvense (L.)			+	+	+
Coronilla orientalis Mill.	+	+	+	+	+
Cotinus coggyria Scop.			+	+	+
Eguisetum ramosissimum Desf.			+	+	+
Ephedra major Host			+	+	+
Eryngium billardieri Delar			+	+	+
Euphorbia virgata Waldst. & Kit.			+	+	+
Ferula communis L.			+	+	+
Ferula orientalis L.			+	+	+
Galium incanum Sm.			+	+	+
Gypsophila bicolor (Freyn & Sint.)			+	+	+
Heracleum sphondylium L.	+	+			
Hypericum hyssopifolium Chaix			+	+	+
Hypericum scabrum L.			+	+	+
Irıs pseudacarus L.	+	+			
Juniperus communis L.			+	+	+
Linum mucronatum Bertol.			+	+	+
Papaver orientale L.			+	+	+
Pimpinella corymbosa Boiss.	+	+			
Pimpinella tragium Vill.			+	+	+
Potentilla crantzii (Grantz)	+	+			
Primula elatior (L.)	+	+			
Ranunculus cuneatus Boiss.			+	+	+
Rhus coriaria L.			+	+	+
Senecio platyphyllus DC.	+	+			
Seselis libanotis (L.) W. Koch	+	+	+	+	+
Trifolium ambiguum M. Bieb.			+	+	+
Trifolium hybridum L.			+	+	+
Silene saxatilis Sims	+	+			
Sisymbrium alatum K.			+	+	+
Tanacetum punctatum (Boiss. & Noe)	+	+			
Veronica orientalis Miller			+	+	+
Ziziphora clinopodioides Lam.	+	+			
Zosima absinthifolia (Went.)			+	+	+

Habitat distribution: As shown in Table 3, species prefer the zonal type habitat. When consider all regions, it can be said that *Meringopus titillator* (Linnaeus) is more common than the others (as individuals). On the other hand, *Exetastes segmentarius* Perez, *Hoplocryptus femoralis* (Gravenhorst), *Meringopus titillator* (Linnaeus), *Ichneumon curtulus* Kriechbaumer and *Colpotrochia cincta* (Scopoli) are collected two different regions. The other species are collected from only one areas.

Table 3. Collected provinces of these Ichneumonids species

Species	**Regions**				
	Artvin	Bayburt	Erzincan	Erzurum	Kars
Phaenolobus saltans (Gravenhorst, 1829)			+		
Exetastes segmentarius Perez, 1895			+	+	
Glypta cylindrator (Fabricius, 1787)			+		
Trematopygus triangulator Aubert, 1981					+
Acroricnus seductor elegans Mocsary, 1883				+	
Hoplocryptus femoralis (Gravenhorst, 1829)	+			+	
Meringopus calescens persicus Heinrich, 1937				+	
Meringopus titillator (Linnaeus, 1758)				+	+
Ichneumon curtulus Kriechbaumer, 1882		+		+	
Colpotrochia cincta (Scopoli, 1763)	+			+	
Colpotrochia triclistor (Aubert, 1979)					+
Exochus castaniventris Brauns, 1896					+
Drepanoctonus tricoloratus (Sedivy, 1971)					+
Metopius pinatorius Brullé, 1846				+	
Astiphromma splenium (Curtis, 1833)				+	
Strongylopsis belua Kuzin, 1950				+	

Seasonal activity: In general species collected between 5 th and 10 th months of the years. However, 6 th and 7 th months had more dense population (Table 4). Samples collected different altitude (900-2500) (Table 5).

Table 4. Collected months of these Ichneumonids species

Species	Months					
	5	6	7	8	9	10
Phaenolobus saltans (Gravenhorst, 1829)			+			
Exetastes segmentarius Perez, 1895			+			
Glypta cylindrator (Fabricius, 1787)	+					
Trematopygus triangulator Aubert, 1981		+				
Acroricnus seductor elegans Mocsary, 1883			+			
Hoplocryptus femoralis (Gravenhorst, 1829)	+		+			
Meringopus calescens persicus Heinrich, 1937			+			
Meringopus titillator (Linnaeus, 1758)		+	+			
Ichneumon curtulus Kriechbaumer, 1882		+		+		
Colpotrochia cincta (Scopoli, 1763)		+			+	+
Colpotrochia triclistor (Aubert, 1979)		+	+			
Exochus castaniventris Brauns, 1896					+	+
Drepanoctonus tricoloratus (Sedivy, 1971)			+	+		
Metopius pinatorius Brullé, 1846			+			
Astiphromma splenium (Curtis, 1833)			+			
Strongylopsis belua Kuzin, 1950		+				

Table 5. Collected altitude of these Ichneumonids species

Species	Altitude (m)					
	900-1250	1251-1500	1501-1750	1751-2000	2001-2250	2251-2500
Phaenolobus saltans (Gravenhorst, 1829)		+				
Exetastes segmentarius Perez, 1895		+				+
Glypta cylindrator (Fabricius, 1787)		+				
Trematopygus triangulator Aubert, 1981		+				
Acroricnus seductor elegans Mocsary, 1883			+			
Hoplocryptus femoralis (Gravenhorst, 1829)		+	+			
Meringopus calescens persicus Heinrich, 1937						+
Meringopus titillator (Linnaeus, 1758)			+	+		
Ichneumon curtulus Kriechbaumer, 1882						+
Colpotrochia cincta (Scopoli, 1763)	+		+			
Colpotrochia triclistor (Aubert, 1979)			+			
Exochus castaniventris Brauns, 1896			+			
Drepanoctonus tricoloratus (Sedivy, 1971)			+			
Metopius pinatorius Brullé, 1846		+	+			
Astiphromma splenium (Curtis, 1833)		+				
Strongylopsis belua Kuzin, 1950					+	

Özet

Türkiye'den yeni ve az bilinen Ichneumonidae (Hymenoptera) türleri ile bazı ekolojik notlar

Bu çalışmada 1994–2007 yılları arasında Doğu Anadolu ve Kuzey Doğu Anadolu bölgelerinden toplanan Ichneumonid örnekleri incelenmiş ve Acaenitinae, Banchinae, Ctenopelmatinae, Cryptinae, Ichneumoninae, Metopiinae, Mesochorinae ve Pimplinae altfamilyalarına mensup 16 tür tespit edilmiştir. Bunlardan *Acroricnus seductor elegans* Mocsary, *Hoplocryptus femoralis* (Gravenhorst), *Ichneumon curtulus* Kriechbaumer ve *Astiphromma splenium* (Curtis) türleri Türkiye faunası için yeni kayıt durumundadır. Daha önceden bilinen türler için yeni yayılış alanları ilave edilmiştir. Mevcut türlerin zoocoğrafik konumları belirtilirken, ayrıca türlere ait bazı ekolojik notlar da verilmiştir.

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