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The current knowledge of some hymenopterous families (Insecta: Hymenoptera) in Turkey

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A b s t r a c t : The current knowledge of 13 hymenopterous families: Chrysididae, Sapygidae, Mutillidae, Bradynobaenidae, Vespidae, Ampulicidae, Sphecidae, Crabronidae, Pompilidae, Tiphidae, Evaniidae, Gasteruptiidae and Stephanidae fauna of Turkey were evaluated. Currently 370 species and 42 subspecies in 22 genera of Chrysididae; 15 species in six genera of Sapygidae; 70 species and three subspecies in 22 genera of Mutillidae; two species in one genus of Bradynobaenidae; 269 species and 32 subspecies in 53 genera of Vespidae; two species in one genus of Ampulicidae; 70 species and five subspecies in 12 genera of Sphecidae; 522 species and 15 subspecies in 65 genera of Crabronidae; 205 species and six subspecies in 35 genera of Pompilidae; 20 species in seven genera of Tiphidae; five species in two genera of Evaniidae; 12 species in one genus of Gasteruptiidae and one species in one genus of Stephanidae were recorded from Turkey. In total, 1563 species and 103 subspecies in 228 genera and 36 subfamilies of 13 family are known from Turkey.

The type localities of 45 species and 17 subspecies of Chrysididae; six species of Sapygidae; nine species of Mutillidae; 73 species and 16 subspecies of Vespidae; five species and one subspecies of Sphecidae; 69 species and 10 subspecies of Crabronidae; 23 species and one subspecies of Pompilidae and six species of Tiphidae. In total, the type localities of four genera, 236 species that 15% of all species and 45 subspecies that 43.7% of all subspecies are located in Turkey.

Among the recorded taxa, 43 species and 15 subspecies of Chrysididae, three species of Sapygidae, five species of Mutillidae, 56 species and 11 subspecies of Vespidae, five species and one subspecies of Sphecidae, 44 species and six subspecies of Crabronidae, 19 species of Pompilidae and one genus and six species of Tiphidae. In total one genus, 181 species that 11.6% of all species and 33 subspecies that 32% of all subspecies are endemic for Turkey.

K e y w o r d s : Hymenoptera, Chrysididae, Sapygidae, Mutillidae, Bradynobaenidae, Vespidae, Ampulicidae, Sphecidae, Crabronidae, Pompilidae, Tiphidae, Evaniidae, Gasteruptiidae, Stephanidae, fauna, Turkey.

Introduction

The kingdom Animalia is here estimated to have a total of 1.659 420 described species in 40 phyla. Among these, the most successful phylum Arthropoda alone represents 1.302 809 species, or about 78.5% of the total. The Insecta 1.070 781 species are the most successful group, and it alone accounts for over 80% of all arthropods (ZHANG 2013). The Hymenoptera are one of the four largest insect orders, with over 152.677 described recent species around the world. The families Chrysididae, Sapygidae, Mutillidae,

Bradynobaenidae, Vespidae, Ampulicidae, Sphecidae, Crabronidae, Pompilidae, Tiphidae, Evaniidae, Gasteruptiidae and Stephanidae are cosmopolitan and number 29.622 species in 1131 genera in the World (AGUIAR et al. 2013). In this study, 1563 species in 228 genera are determined in Turkey. According to these results, 5.28% of total insects number in the world to this families are present in Turkey.

The fauna of these families of Turkey contains a large number of species in comparison with others Mediterranean countries, which are well known for their high biodiversity. The great richness and diversity of these families in the Turkish fauna is the result of the various topographic and climatic structure of the country. In other hand, Turkey is a boundary of East Mediterranean, Sumerian and Irano-Turanian provinces of Palearctic Region that caused the richness of the fauna.

Results

Currently 1563 species and 103 subspecies in 228 genera and 36 subfamilies of families Chrysididae, Sapygidae, Mutillidae, Bradynobaenidae, Vespidae, Ampulicidae, Sphecidae, Crabronidae, Pompilidae, Tiphidae, Evaniidae, Gasteruptiidae, and Stephanidae are recorded from Turkey. The type localities of 236 species and 45 subspecies are located in Turkey; one genus, 181 species and 33 subspecies are endemic for the Turkish fauna (Table 1).

Chrysididae

A total 370 species and 42 subspecies in 22 genera of the subfamilies Cleptinae, Chrysidinae and Parnopinae were recorded from Turkey (STRUMIA & YILDIRIM 2007; ROSA & YILDIRIM 2017). The type localities of 45 species and 17 subspecies of this family are located in Turkey; 43 species and 15 subspecies are endemic for Turkish fauna.

Sapygidae

A total 15 species in six genera of the subfamilies Fedtschenkiinae and Sapyginae are recorded from Turkey (YILDIRIM 2016). The type localities of six species of this family are located in Turkey; three species are endemic for Turkish fauna.

Mutillidae

A total 70 species and three subspecies in 22 genera of the subfamilies Myrmosinae, Kudakrumiinae, Pseudophotopsidinae, Myrmillinae, Mutillinae, and Dasylabrinae are recorded from Turkey (LELEJ & YILDIRIM, 2009; YILDIRIM & LELEJ 2012). The type localities of nine species of this family are located in Turkey; five species are endemic for Turkish fauna.

Bradynobaenidae

Two species of the genus *Apterogyna* LATREILLE from the subfamily Apterogyninae are recorded from Turkey (YILDIRIM 2006).

Vespidae

A total 269 species and 32 subspecies in 53 genera of the subfamilies Vespinae, Polistinae, Eumeninae, and Masarinae are recorded from Turkey (YILDIRIM 2012; YILDIRIM & GUSENLEITNER 2012, 2015). The type localities of 73 species and 16 subspecies of this family are located in Turkey; 56 species and 11 subspecies are endemic for Turkish fauna.

Ampulicidae

Two species from the genus *Dolichurus* LATREILLE from the subfamily Ampulicinae are recorded from Turkey (LJUBOMIROV & YILDIRIM 2008; YILDIRIM et al. 2016).

Sphecidae

A total 70 species and 5 subspecies in 12 genera of the subfamilies Sceliphrinae, Sphecinae and Ammophilinae are recorded in Turkey (YILDIRIM 2014, YILDIRIM et al 2016). The type localities of five species and one subspecies of this family are located in Turkey; five species and one subspecies are endemic for Turkish fauna.

Crabronidae

A total 522 species and 15 subspecies in 65 genera of the subfamilies Astatinae, Bembicinae, Philanthinae, Pemphredoninae, Mellinae, Dinetinae and Crabroninae are recorded from Turkey (YILDIRIM 2014, YILDIRIM et al 2016). The type localities of 69 species and 10 subspecies of this family are located in Turkey; 44 species and 6 subspecies are endemic for Turkish fauna.

Pompilidae

A total 205 species and six subspecies in 35 genera of the subfamilies Ceropalinae, Pepsinae, and Pompilinae are recorded from Turkey (YILDIRIM & WAHIS 2010, 2011). The type localities of 23 species and one subspecies of this family are located in Turkey; 19 species are endemic for Turkish fauna.

Tiphiidae

A total 20 species in 7 genera of the subfamilies Metochinae, Myzininae and Tiphiinae are recorded from Turkey (YILDIRIM 2015). The type localities of six species of this family are located in Turkey; six species are endemic for Turkish fauna.

Evaniidae

A total five species in two genera of the subfamily Evaniinae are recorded from Turkey (YILDIRIM 2008).

Gasteruptiidae

Twelve species of the genus *Gasteruption* LATREILLE from the subfamily Gasteruptiinae are recorded from Turkey (YILDIRIM et al. 2004).

Stephanidae

Foenatopus turcomanorum (SEMENOV) from the subfamily Foenatopinae is recorded from Turkey (YILDIRIM & KOLAROV 2006).

Zusammenfassung

Vorliegende Arbeit gibt eine Zusammenfassung über den Stand der 13 Hymenopterenfamilien Chrysididae, Sapygidae, Mutillidae, Bradynobaenidae, Vespidae, Ampulicidae, Sphecidae, Crabronidae, Pompilidae, Tiphidae, Evaniidae, Gasteruptiidae und Stephanidae in der Türkei. In Artenzahlen ausgedrückt leben in der Türkei Chrysididae (370 Arten, 42 Unterarten, 22 Gattungen), Sapygidae (15 Arten, 6 Gattungen), Mutillidae (70 Arten, drei Unterarten, 22 Gattungen), Bradynobaenidae (zwei Arten, eine Gattung), Vespidae (269 Arten, 32 Unterarten, 53 Gattungen), Ampulicidae (zwei Arten, eine Gattung), Sphecidae (70 Arten, fünf Unterarten, 12 Gattungen), Crabronidae (522 Arten, fünfzehn Unterarten, 65 Gattungen), Pompilidae (205 Arten, sechs Unterarten, 35 Gattungen), Tiphidae (20 Arten, sieben Gattungen), Evaniidae (fünf Arten, zwei Gattungen), Gasteruptiidae (12 Arten, eine Gattung) sowie Stephanidae (eine Art, eine Gattung). Somit sind diese Familien in der Türkei insgesamt mit 1563 Arten, 103 Unterarten, und 228 Gattungen und 36 Unterfamilien vertreten.

Der locus typicus von 45 Arten und 17 Unterarten Chrysididae, 6 Arten Sapygidae, neun Arten Mutillidae, 73 Arten und 16 Unterarten Vespidae, fünf Arten und einer Unterart Sphecidae, 69 Arten und 10 Unterarten Crabronidae, 23 Arten und einer Unterart Pompilidae sowie sechs Arten Tiphidae liegt in der Türkei

The type localities of 45 species and 17 subspecies of Chrysididae; six species of Sapygidae; nine species of Mutillidae; 73 species and 16 subspecies of Vespidae; five species and one subspecies of Sphecidae; 69 species and 10 subspecies of Crabronidae; 23 species and one subspecies of Pompilidae and six species of Tiphidae. In total, the type localities of four genera, 236 species that 15% of all species and 45 subspecies that 43.7% of all subspecies are located in Turkey.

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Table 1: The current knowledge of the present situation of some families of Hymenoptera in Turkey

Number of present in Turkey					Number of type localities situated in Turkey			Number of Endemic	
Family	Subfamily	gen.	sp.	ssp.	gen.	sp.	ssp.	sp.	ssp.
Chysididae	Cleptinae								
	Chrysidinae								
	Parnopinae	22	370	42	-	45	17	43	15
Sapygidae	Fedtschenkiinae								
	Sapyginae	6	15	-	-	6	-	3	-
Mutillidae	Myrmosinae								
	Kudakrumiinae								
	Pseudophotopsidinae								
	Myrmillinae								
	Mutillinae								
	Dasylabrinae	22	70	3	-	9	-	5	-
Bradynobaenidae	Apterogyninae	1	2	-	-	-	-	-	-
Vespidae	Vespinae								
	Polistinae								
	Eumeninae								
	Masarinae	53	269	32	3	73	16	56	11
Ampulicidae	Ampulicinae	1	2	-	-	-	-	-	-
Sphecidae	Sceliphrinae								
	Sphecinae								
	Ammophilinae	12	70	5	-	5	1	5	1
Crabronidae	Astatinae								
	Bembecinae								
	Philanthinae								
	Pemphredoninae								
	Mellinae								
	Dinetinae								
	Crabroninae	65	522	15	-	69	10	44	6
Pompilidae	Ceropalinae								
	Pepsinae								
	Pompilinae	35	205	6	-	23	1	19	-
Tiphidae	Methochinae								
	Myzininae								
	Tiphiinae	7	20	-	1	6	-	6	-
Evaniidae	Evaniinae	2	5	-	-	-	-	-	-
Gasteruptiidae	Gasteruptiinae	1	12	-	-	-	-	-	-
Stephanidae	Stephaninae	1	1	-	-	-	-	-	-
Total: 13	36	228	1563	103	4	236	45	181	33

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