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A Faunistic Study And Some Ecological Observations On Eumenidae (Insecta: Hymenoptera) Species Of Ankara

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Abstract: In this study, the Eumenidae family (Insecta: Hymenoptera) has been investigated faunistically and within the family, adult individuals' natural habitats and their food plants have been determined at the end of the natural ecological observations. 78 species and subspecies have been recorded from Ankara. 50 species and subspecies are new records for the Fauna of Ankara. *Eumenes punctaticlypeus punctaticlypeus* G.S., 1943 is a new record for the Fauna of Turkey.
Keywords: *Hymenoptera, Eumenidae, Fauna, Ecology, Ankara.*

Ankara İli Eumenidae (Insecta: Hymenoptera) Faunası Üzerine Bir Çalışma ve Bazı Ekolojik Gözlemler

Özet: Bu çalışmada Eumenidae familyası (Insecta: Hymenoptera) faunistik olarak araştırılmış, ekolojik gözlemler yapılarak ergin bireylerin doğal habitatları ve besin bitkileri saptanmıştır. Ankara'dan 78 tür ve alt tür tespit edilmiştir. 50 tür ve alt tür Ankara Faunası için yeni kayıttır. *Eumenes punctaticlypeus punctaticlypeus* G.S., 1943 Türkiye Faunası için yeni kayıttır.
Anahtar Kelimeler: *Hymenoptera, Eumenidae, Fauna, Ekoloji, Ankara.*

1. Introduction

The family Eumenidae includes 3000 species through the world. They are in Aculeata group of Apocrita subordo. They live soliter. They make their nests with mud and clay, collect Lepidoptera (Geometridae, Tortricidae) carterpillars and Coleoptera (Curculionidae, Chrysomelidae) larvae for their offspring [1]. They have an important role in biological control. The adult wasps feed on carbohydrates from the nectaries of flowers and the honey dew of aphids. The species of flowers visited by eumenid wasps according to the flowering period of the plants and the flight periods of the wasps [2].

The study area, Ankara province, covering the northern part of middle-Anatolia is within the Iran-Turan floristic region. The plain under 1000m altitude are covered with Iran-Turan origined steps while those over 1000m are covered with antropogenic mountain steps. The studied area is mountainous through the north and west. The region is under the influence of Black sea climate. There are natural coniferous forests and oak groves. In the south and the east of the area, the Mediterranean climate is mostly active. It is possible to come across with the components of Mediterranean flora. Within the vicinity of Salt Lake (Tuz Gölü), there are salty areas with halophilic plants [3].

The Eumenidae family represents 250 species from 43 genus in Turkey [4]. There were known totally 49 species and subspecies from Ankara province [4-10].

With this study it is aimed to expose the Fauna of Eumenidae of Ankara province, their habitat preferences, food plants.

2. Material and Method

In the Study, 203 (146♀♀, 57♂♂) samples from Ankara, collected from May 1999 to October 2003, were identifed. They were prepared as standart museum materials. Samples were identified according to their morphology [6,7,8,10-35]. Some of samples were identified by Prof. Dr. Josef Gusenleitner (Linz-Austria).

Samples were collected mostly near the surface of standing water, mud and stones near creek and they were at the height of 5-6 cm from ground during flying. Some of samples were collected over plants. Plants were identified in Herbarium of Ankara University. The habitats were classified according to their ecological features and vegetation types. The habitat, the species prefer, were attempted to be determined.

Studied areas divided into 11 catagories: Plain Steppe (Nonwooded steppe with herbaceous plants, thorny plants mostly under 1000-1200m altitude); Salty Steppe (Salty areas on plain steppe with halophytic plants, It is near Salt like in Middle Anatolia); Mountain Steppe (Wooded steppe with herbaceous plants mostly over 1200m altitude); Humid Meadows (Grassy areas near and around creek and water basin. *Mentha* species are dominat); Gallery Forest (Natural woods that become near stream in valleys); Coniferous Forest (*Pinus* species dominate); Mixed Quercus Forest (Q*ercus* species dominate); Ruderal (Near roads); Segetal (Wet or dry agricultural areas); Culturvated Areas (The places around the city with cultuvated plants); Water Sources (Natural or artificial water sources).

3. Results

The number of species discovered within the research area and analyzed, the months species collected, the altitude and the plants records of the regions the collection made, and the nature of habitat are presented in schedule 3.1.

Schedule 3.1.

Species	Material Examined	Months	Altitute	Plants Record	Habitat
Alastor (A.)mocsaryi (André,1884)	4♀♀	June-July	900-1250m		2,7,8,10
Alastor (A.) thymbrinus Blüth., 1956	1♀	July	1380m		5,11
Alastor (M.) m. mediomaculatus G.S., 1952	1♀	July	1250m		10
Allodynerus d. delphinalis (Giraud, 1866)	1♀, 1♂	July	1380m		1,2
Allodynerus nigricornis (Mor., 1885)	1♀	June	900m		2,11
Allodynerus rossii (Lep.,1841)	3♀♀	June-August	900m		2,5
Ancistrocerus a.auctus (Fab., 1793)	1♀	June	800m		2,8,9
Ancistrocerus dusmetiolus (Strand, 1914)	2♀♀	May-July	1400m	*Quercus* sp.	2,6
Ancistrocerus gazella (Panzer, 1798)	2♀♀	July-October	850-1300m	*Doucus* sp., *Medicago* sp.	8,10,11
Ancistrocerus nigricornis (Curtis, 1826)	3♀♀	May-July	1400m	*Pinus nigra*	5
Ancistrocerus parietum (Linné, 1758)	3♀♀	July-August	1210-1400m	*Pinus nigra*	2,5,7,8
Antepipona albosignata Gus., 1986	1♂	June	900m		10
Antepipona d. deflenda (Saund., 1853)	28♀♀, 2♂♂	July-October	900-1450m	*Quercus* sp.	2,6,8
Antepipona i. insana (G.S., 1943)	3♀♀	May-July	950-1230m	*Astragalus* sp.	2,11
Antepipona iconia (Blüth., 1951)	2♀♀	August	900-1000m		1,3,8
Antepipona laevigata (Blüth., 1951)	6♀♀, 1♂	July-September	900-1250m		2,4,6
Antepipona o. orbitalis (Her.-Schiff., 1839)	4♀♀, 2♂♂	June-July	750-1370m	*Mentha* sp.	2,4,5
Antepipona tenuis Gus.,1988	1♀	June	900m		3,8
Brachyodynerus kusdasi Gus., 1967	1♀, 1♂	July	750-1050m		1,11
Brachyodynerus quadrimaculatus (André, 1884)	3♀♀	June-July	900-1380m		1,3,6,11
Cephalochilus draco G.S., 1939	4♀♀, 3♂♂	July	900m		3,11

Chlorodynerus ypsilon rhodius Blüth., 1954	3♀♀	July	900-1000m		1,2,3,11
Delta u. unguiculatum (Villers, 1789)	1♀, 1♂	June-August	850-900m		2,4,6,11
Eumenes coarctatus lunulatus Fab., 1804	58♀♀, 45♂♂	June-September	750-1400m	*Mentha* sp., *Vitis* sp., *Ferulago* sp., *Eryngium* sp.	1,2,3,4,6,7,8,9,10
Eumenes coronatus detonsus Blüth., 1943	8♀♀, 2♂♂	June-September	900-1600m	*Pinus nigra*	2,5,11
Eumenes d. dubius Sauss., 1852	25♀♀, 34♂♂	June-September	600-1380m	*Mentha* sp.	1,2,4,5,6,11
Eumenes jarkandensis Blüth., 1938	4♀♀, 2♂♂	July-August	850-1210m	*Mentha* sp.	4,6,7,11
Eumenes m. mediterraneus Kriech., 1879	19♀♀, 10♂♂	June-October	850-1380m	*Mentha* sp., *Rubus* sp., *Jnula* sp.	1,2,4,6,8,9,10,11
Eumenes p. papillarius (Christ, 1791)	1♀, 10♂♂	July-September	1000-1400m		5,10,11
Eumenes p. punctaticlypeus G.S., 1943	1♀	June	1300m		5
Eumenes p. pomiformis (Fab., 1781)	29♀♀, 36♂♂	July-October	750-1600m	*Pinus nigra, Quercus* sp., *Astragalus* sp.	2,5,6,11
Eumenes sareptanus insolatus Müler, 1923	26♀♀, 9♂♂	June-October	700-1800m	*Euphorbia* sp.	2,4,5
Eumenes subpomiformis Blüth., 1938	8♀♀, 8♂♂	June-September	900-1280m		2,11
Euodynerus (E.) curictensis Blüth., 1940	5♀♀, 8♂♂	June-August	840-1280m		1,2,7,10
Euodynerus (E.) d. disconotatus (Lich., 1884)	1♀, 2♂♂	July	900-950m		2,7,10,11
Euodynerus (E.) d. dantici (Rossi, 1790)	11♀♀, 3♂♂	June-September	900-1400m	*Astragalus* sp.	1,2,3,11
Euodynerus (E.) fastidiosus (Sauss., 1853)	1♀, 2♂♂	July	900-950m		1,3,11
Euodynerus (E.) s. semisaecularis (Dalla Torre, 1889)	5♀♀, 3♂♂	June-August	900-1000m		1,2,5

Euodynerus (P.) n. notatus (Jurine, 1807)	1♀	June	900m		1,11
Eustenancistrocerus (E.) israilensis G.S., 1938	1♀, 1♂	July-September	750-1300m		2,9
Eustenancistrocerus (E.) j. iconius Blüth., 1957	8♀♀, 9♂♂	June-August	700-1000m		1,3,11
Eustenancistrocerus (P.)a.amadanensis (Sauss., 1855)	8♀♀, 5♂♂	July-October	900-1200m	*Mentha* sp	*2,3,4,8*
Gymnomerus l. laevipes (Schuckard, 1837)	3♀♀, 1♂	May-July	950-1350m		2,5
Hemipterochilus aberrans (Mor., 1885)	2♀♀, 4♂♂	June-July	900-1050m		2,7,11
Ischnogasteroides picteti teunius (Mor., 1888)	5♀♀	July-August	900-950m		3,11
Jucancistrocerus jucundus (Mocsary, 1883)	18♀♀	June-August	1100-1300m	*Rubus* sp.	*1,2,8,11*
Katamenes d. dimidiatus (Brullé, 1832)	11♀♀	June-August	700-1380m		1,2,7
Katamenes flavigularis (Blüth., 1951)	5♀♀, 5♂♂	June-July	750-1350m		1,2,5
Katamenes s. sichelii (Sauss., 1852)	2♀♀, 7♂♂	June-July	550-980m		1,2,7,8
Leptochilus (E.) limbiferus anatolicus Blüth., 1955	3♀♀, 3♂♂	June-July	650-970m	*Alhagi* sp., *Xsanthium spinosum*	*2,8,10*
Leptochilus (L.) m. membranaceus (Mor., 1867)	1♀	July	750m		4
Leptochilus (L.) mimulus turcicus Gus., 1971	1♀	June	900m		8
Leptochilus (L.) n. neutralis (G.S., 1943)	1♀	July	1000m	*Quercus* sp.	2
Leptochilus (L.) tarsatiformis (G.S., 1943)	1♀	May	900m		2,4
Leptochilus (N.) regulus (Sauss.,1855)	1♀, 2♂♂	August-September	950-1050m		3,4
Microdynerus (*A.) microdynerus* (Dalla Torre, 1889)	1♀	July	1200m		10
Microdynerus (M.) confinis Gus., 1979	1♀	July	950m		4
Microdynerus (P.) eurasius Blüth., 1938	1♀	July	750m	*Rubus* sp.	4,8

Odynerus (O.) melanocephalus armeniacus (Mor.,1885)	1♀	June	900m	*Mentha* sp.	2,4,11
Odynerus (O.) poecilus Sauss., 1856	2♀♀	June-July	1000-1350m		6
Onychopterochilus hellenicus syriacus (Blüth.,1952)	1♀	May	950m		10
Paragymnomerus amitinorum Blüth.,1938	1♂	July	1250m		2
Pareumenes (N.) l. laminatus (Kriech., 1879)	2♀♀	July	900m		8,11
Parodontodynerus e. ephippium (Klug, 1871)	11♀♀, 2♂♂	June-September	750-1750m	*Mentha* sp	1,2,4,5
Pseudopipona (P.) h. herrichii (Sauss., 1856)	3♀♀, 5♂♂	June-July	600-1750m		1,2,11
Pseudopipona (D.) i. ionia (Sauss.,1855)	1♀	July	1050m		5
Pseudopipona (D.) ankarensis G.S.,1970	1♀	July	750m		1,11
Pseudopipona (P.) l. lativentris (Sauss., 1855)	2♀♀, 4♂♂	July-September	800-1800m	*Echinops* sp., *Eryngium* sp.	1,2,7,11
Psilioglossa o. odyneroides (Saund.,1872)	1♀, 2♂♂	June-July	850-1250m		10
Raphiglossa e. eumenoides Saund.,1850	1♀	August	1000m	*Alhagi* sp.	1,2
Stenodynerus a. aequisculptus (Kostl.,1940)	1♀, 2♂♂	June-September	900-1250m	*Rubus* sp.	2,9
Stenodynerus bluethgeni van der Vecht, 1971	1♀	July	850m	*Mentha* sp., *Rubus* sp.	4,8
Stenodynerus chevrieranus (Sauss., 1855)	8♀♀	June-July	850-900m	*Mentha* sp	1,2,4,10
Stenodynerus fastidiosissimus difficilis (Mor.,1867)	2♀♀, 1♂	August-September	950-1400m		2,3,11
Stenodynerus simulatus Gus.,1981	3♀♀, 2♂♂	June-September	900-1050m	*Mentha* sp, *Pinus nigra*	5,8,10
Syneuodynerus e. egregius (Her.-Schiff., 1839)	9♀♀, 1♂	June-August	650-1400m		2,3,4,8

Tachyancistrocerus rhodensis (Sauss.,1855)	9♀♀, 10♂♂	June-October	750-1250m	*Mentha* sp., *Prangos* sp., *Polygonum* sp.	4,10
Tropidodynerus i. interruptus (Brullé, 1832)	2♂♂	July	1200m		10

Habitat Types: 1. Plain Steppe, 2. Mountain Steppe, 3. Salty Steppe, 4. Humid Meadows, 5. Coniferous Forest, 6.Mixed Quercus Forest, 7.Gallery Forest, 8. Ruderal, 9. Segetal, 10.Culturvated Area, 11. Water Source

4. Conclusion

78 species and subspecies were determinated. 28 of these were recorded in literature. But the other 50 species and subspecies at total are new records for the Fauna of study region.

Eumenes punctaticlypeus punctaticlypeus G.S., 1943 is a new record for the Turkish Fauna. *Eumenes punctaticlypeus kostylevi* Kurzenko, 1976 was known from eastern part of Anatolia [4].

Species were collected between May and October which they were in active months. Most were collected between June and July. Samples were mostly found at the altitude of 750-1400m. Habitat preference of the individuals were established. Species of Eumenidae have been rarely found at the dry and deeply watered areas. They prefer habitats that are mostly humid places at steppes with surfaced-water floor, near water streams, near water basin and near little creek with plants. Humid places that steppe intersects with forest, oak groves and coniferous woods.

The food plants were tried to be determined as possibly while some of them were not determined. It was because some species were not collected over plants. *Mentha* sp., *Quercus* sp., *Alhagi* sp., *Xsanthium spinosum, Rubus* sp., *Prangos* sp., *Astragalus* sp., *Pinus nigra, Echinops* sp., *Eryngium* sp. were visited by some species in study area.

The most common species in study area are *Eumenes coarctatus lunulatus* Fabricius, 1804, *Eumenes d. dubius* Saussure, 1852 and *Eumenes p. pomiformis* (Fabricius, 1781). The common species are *Eumenes m. mediterraneus* Kriechbaumer, 1879, *Eumenes sareptanus insolatus* M.Müller, 1923, *Antepipona d. deflenda* (S.S.Saunders, 1853). The others are rare species.

There were important habitat changes in the study region. The steppes and forest have been destructed due to dry and wet agricultural processing. Moreover, the pollution caused by over pesticiding the fields, industrializing and urbanizing the habitats are another causes of habitat changes.

With this study, Ankara Eumenidae Fauna, habitat types and food plants attempted to be exposed. Samples were stored at the Museum Entomology of Ankara University.

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