

List of Vespidae, Scoliidae and Tiphidae (Hymenoptera) of Gölcük Natural Park in Isparta Province, Turkey

George Japoshvili^{1,*}, İsmail Karaca²

¹ Ili State University, Entomology and Biocontrol Research Centre, Tbilisi, Georgia

² Süleyman Demirel University, Agricultural Faculty, Plant Protection Department, 32260, Isparta, Turkey

*Corresponding author e-mail: giorgij70@yahoo.com

Received: 03 August 2010, Accepted: 26 September 2010

Abstract: Vespidae, Scoliidae and Tiphidae were collected during 2008-2009 in Gölcük Natural Park, which belongs to Isparta Province. The material was collected by pitfall, yellow pan and malaise trapping methods. Additionally we include data from material collected previously and housed in the entomological museum of the agriculture Faculty of Süleyman Demirel University (EMIT). 26 species from 16 genera were recorded during this survey (19 species from 12 genera of Vespidae, 5 species from 3 genera of Scoliidae and 2 species from 1 genus of Tiphidae). 16 species were recorded for the first time from Isparta Province.

Key words: Vespidae, Scoliidae, Tiphidae, Isparta, Gölcük

Isparta (Türkiye) İlinin Gölcük Doğal Parkı'nın Vespidae, Scoliidae ve Tiphidae (Hymenoptera) Listesi

Özet: Bu çalışmada, Isparta iline bağlı Gölcük Doğal Park alanlarından 2008-2009 yıllarında çukur tuzak, sarı renk kap tuzağı ve malezya tuzak yöntemleri ile toplanan örnekler ve Süleyman Demirel Üniversitesi, Ziraat Fakültesi, Bitki Koruma Bölümü bünyesinde bulunan böcek müzesinde (EMIT, Entomological Museum of Isparta, Turkey) bulunan böceklerden yararlanılmıştır. Ele alınan örneklerde Vespidae, Scoliidae ve Tiphidae (Hymenoptera) familyalarına ait 16 cins ve 26 tür saptanmıştır. Bunların Vespidae familyasından, 12 cinse bağlı 19 tür, Scoliidae familyasından 3 cinse bağlı 5 tür ve Tiphidae familyasından 1 cinse bağlı 2 tür olduğu belirlenmiştir. Belirlenen bu türlerden 16'sı Isparta ili faunası için yeni kayıt niteliğindedir.

Anahtar kelimeler: Vespidae, Scoliidae, Tiphidae, Isparta, Gölcük

1. Introduction

The distributional list of Vespidae [1] provided a comprehensive list of this group from Turkey. As a group vespids are almost cosmopolitan. List of Scoliidae species first was given in Tezcan et al. [2], however data about Isparta province is not represented in this study. Later one new record was given in Japoshvili et al. [3]. Gölcük National Park represents an arid place, it is located 8 km southwest of Isparta province and its special characteristics make it an important recreation area. With its diverse vegetation and wildlife, geomorphological structure, aesthetically pleasing landscape and recreational opportunities, GNP is one of the most important areas of the Lakes District in Turkey. GNP, with a total area of 5,925 ha (700 ha lost from intro.), is now a proclaimed National Park, but its condition is deteriorating since it has no master plan and minimal management [4].

The present survey covers the faunistic research on the wasp families Vespidae and Scoliidae from the Golcuk Natural Park, Isparta Province.

2. Materials and methods

The insect samples were collected from March to October, 2008 and 2009, using the Pitfall trap, yellow pan trap and Malaise trapping methods. The lowest altitude for trapping was 1227 m and the highest was 1611 m. At all sampling places, 10 yellow pan traps and 10 pitfall traps were set. The yellow pan trapping method involved the use of small yellow 16 cm diameter dishes filled with water to which detergent has been added to break the surface tension. The dishes were placed on the ground in conspicuous places in the early morning. When flying insects land on the surface of the water, they rapidly sink and drown. The pan traps were checked on the second day because insects begin to decompose quickly in water. The collecting process was repeated every two weeks. The pitfall traps consisted of circular pots, each 11cm in diameter. 11 cm deep, and were dug into the soil with the opening at the soil surface. At the beginning of the study, dry traps were used, but a month later, it was necessary to slightly change the methodology, material were damage by the insects themselves, and other animals such as mice, shrews and lizards. We put in the traps 2% formaldehyde, to avoid this type of damage. Traps were checked weekly. Malaise traps were set at three places first Pilav Tepe at an altitude of 1520 m, Acacia reforested area close to mean entrance of GNP with altitude 1414 m and area which was used as an agricultural cultivating area 1452 m. Traps were checked and material was taken every 10 days. After collecting the captured insects, they were transferred to jars of 75% alcohol or dried and pinned promptly. Material in alcohol was later dried and mounted. To the list we added additional material from Plant protection Entomology Collection, which was collected by different collectors in different time.

All material is preserved in the entomological collection of Plant Protection Department of Suleyman Demirel University, Isparta, Turkey (EMIT, Entomological Museum).

Material of Vespidae was identified by Prof. Dr. E. Yıldırım (Ataturk University, Agricultural Faculty, Plant Protection Department, Erzurum), Scoliidae and Tiphiidae were identified by the first author.

The species list is arranged alphabetically for each one family. After the recent valid name of the relevant taxon follows the records (if available) of the authors with the locality, date and collector name. New taxa for Isparta province are marked with an asterix (*).

The following institutional abbreviations are used: GNP – Golcuk Natural Park; EMIT – Collection of Insect Museum of Plant Protection Department of Faculty of Agriculture, Suleyman demirel University, Turkey (EMIT); Pitfall Trap – PT; YPT – Yellow Pan Trap; MT - Malaise Trap. Complete distribution throughout Turkey are given in previous papers [1,5,6]

3. Results

List of species

VESPIDAE
EUMENINAE

Ancistrocerus Wesmael, 1836

1. *Ancistrocerus auctus* (Fabricius, 1793)*

Material examined: GNP, 24.VII.2008, ♀, PT, G. Japoshvili (EMIT).

2. *A. oviventris* (Wesmael, 1836)*

Material examined: GNP, 03.VII.2008, ♀, YPT, G. Japoshvili; GNP, 19.VI.2009, ♀, YPT, B. Aslan; GNP, 12.VII.2009, 3 ♀♀, PT, G. Japoshvili; GNP, 24.IX.2009, ♀, MT, H. Celik; GNP, 05.X.2009, ♀, MT, G. Japoshvili (EMIT).

Delta deSaussure, 1855

3. *Delta unguiculatum* (Villers, 1789)

Material examined: Isparta: Gönen, 21.VI.2005, ♀, D. Ferah (EMIT).

Eumenes Latreille, 1802

4. *Eumenes coarctatus lunulatus* Fabricius, 1804*

Material examined: GNP, 23.X.2008, ♂, PT, B. Aslan (EMIT).

Euodynerus Dalla Torre, 1904

5. *Euodynerus curictensis* Blüthgen, 1940*

Material examined: GNP, 12.VII.2009, ♀, PT, G. Japoshvili (EMIT).

Gymnomerus Blüthgen, 1938

6. *Gymnomerus laevipes* (Shuckard, 1837)*

Material examined: GNP, 11.VI.2008, ♂, YPT, B. Aslan; GNP, 12.VI.2008, ♀, YPT, M. Kaya (EMIT).

Katamenes Maede-Waldo, 1910

7. *Katamenes flavigularis* (Blüthgen, 1951)*

Material examined: GNP, 16.VI.2006, ♀, PT, G. Japoshvili (EMIT).

8. *K. sichelii* (deSaussure, 1852)

Material examined: GNP, 04.IX.2008, ♀, PT, B. Aslan; GNP, 09.X.2008, ♀, PT, B. Aslan; GNP, 12.VII.2009, 1♀, PT, G. Japoshvili (EMIT).

Odynerus Latreille, 1802

9. *Odynerus melanocephalus armeniacus* (Morawitz, 1885)*

Material examined: GNP, 28.V.2009, ♀, MT, H. Celik; GNP, 11.VI.2008, ♀, PT, G. Japoshvili; GNP, 03.VII.2009, ♀, H. Celik (EMIT).

Paragymnomerus Blüthgen, 1938

10. *Paragymnomerus amitinorum* Blüthgen, 1952*

Material examined: GNP, 03.VII.2009, ♂, PT, H. Celik

Stenodynerus de Saussure, 1863

11. *Stenodynerus bluethgeni* van der Vecht, 1971*

Material examined: GNP, 09.X.2008, ♀, PT, B. Aslan (EMIT).

12. *S. simulatus* Gusenleitner, 1981*

Material examined: GNP, 28.VIII.2008, ♀, PT, M. Kaya (EMIT).

POLISTINAE

Polistes Latreille, 1802

13. *Polistes dominulus* (Christ, 1791)*

Material examined: GNP, 24.IV.2008, ♀, YPT, B. Aslan; GNP, 22.V.2008, 2 ♀♀ YPT, B. Aslan; GNP, 12.VI.2008, ♀, YPT, G. Japoshvili; GNP, 03.VII.2008, 2 ♀♀, YPT, G. Japoshvili; GNP, 28.VIII.2008, 4 ♀♀, PT, G. Japoshvili; GNP, 04.IX.2008, ♀, PT, B. Aslan; GNP, 09.V.2009, 2 ♀♀, PT, G. Japoshvili; GNP, 16.V.2009, 4 ♀♀, PT, G. Japoshvili; GNP, 21.V.2009, 2 ♀♀, PT, G. Japoshvili; GNP, 28.V.2009, 5 ♀♀, MT, H. Celik; GNP, 06.VI.2009, 4 ♀♀, PT, G. Japoshvili; GNP, 16.VI.2009, ♀, PT, G. Japoshvili; GNP, 12.VII.2009, 3 ♀♀, PT, G. Japoshvili; GNP, 14.VIII.2009, 3 ♀♀, MT, G. Japoshvili; GNP, 20.VIII.2009, 2 ♀♀, G. Japoshvili; GNP, 03.IX.2009, ♀, MT, H. Celik (EMIT).

14. *P. gallicus* (Linnaeus, 1767)*

GNP, 03.VII.2008, ♀, YPT, B. Aslan; GNP, 12.VII.2009, ♀, PT, G. Japoshvili; GNP, 21.VII.2009, 5 ♀♀, PT, G. Japoshvili; 06.VIII.2009, 4 ♀♀, PT, G. Japoshvili; GNP, 15.X.2009, 3 ♀♀, PT, G. Japoshvili (EMIT).

15. *P. nimphus* (Christ, 1791)*

Material examined: GNP, 21.VII.2009, ♀, MT, H. Celik; GNP, 24.VIII.2009, 2 ♀♀, MT, H. Celik (EMIT).

VESPINAE

Vespula Thomson, 1869

16. *Vespula germanica* (Fabricius, 1793)

Material examined: GNP, 01.V.2008, ♀, YPT, G. Japoshvili; GNP, 24.VII.2008, ♀, PT, G. Japoshvili; GNP, 21.V.2009, ♀, MT, G. Japoshvili; GNP, 28.V.2009, 3 ♀♀, MT, H. Celik; GNP, 28.V.2009, 2 ♀♀, MT, G. Japoshvili; GNP, 06.VI.2009, ♀, MT, H. Celik; 2 ♀♀, GNP, 16.VI.2009, MT, H. Celik; GNP, 12.VII.2009, ♀, MT, H. Celik; GNP, 24.VII.2008, ♀, PT, G. Japoshvili; GNP, 14.VIII.2008, ♀, PT, G. Japoshvili; GNP, 22.VIII.2008, 5 ♀♀, PT, B. Aslan; GNP, 28.VIII.2008, 16 ♀♀, PT, G. Japoshvili; GNP, 04.IX.2008, 4 ♀♀, MT, G. Japoshvili; GNP, 11.IX.2008, 12 ♀♀, PT, M. Kaya; GNP, 18.IX.2008, 4 ♀♀, PT, G. Japoshvili; GNP, 25.IX.2008, 6 ♀♀, PT, G. Japoshvili; GNP,

09.X.2008, 7 ♀♀, PT, B. Aslan; GNP, 23.X.2008, 14 ♀♀, PT, B. Aslan; GNP, 06.XI.2008, ♀, PT, M. Kaya; GNP, 27.XI.2008, ♀, PT, G. Japoshvili; GNP, 12.VII.2009, ♀, MT, H. Celik; GNP, 21.VII.2009, ♀, MT, H. Celik; GNP, 03.IX.2009, 2 ♀♀, PT, G. Japoshvili; GNP, 14.IX.2009, ♀, MT, H. Celik; GNP, 24.IX.2009, 4 ♀♀MT, H. Celik; GNP, 24.IX.2009, ♀, MT, G. Japoshvili; GNP, 05.X.2009, 6 ♀♀, PT, G. Japoshvili; GNP, 15.X.2009, 11 ♀♀, PT, G. Japoshvili; GNP, 20.VIII.2009, ♀, PT, G. Japoshvili; (EMIT).

17. *V. rufa* (Linnaeus, 1758)*

Material examined: GNP, 28.V.2009, ♀, MT, H. Celik (EMIT).

18. *V. vulgaris* Linnaeus, 1758

Material examined: GNP, 24.IV.2008, ♀, YPT, M. Kaya; GNP, 28.V.2009, ♀, MT, G. Japoshvili; GNP, 28.V.2009, 2 ♀♀, MT, H. Celik; GNP, 16.VI.2009, 2 ♀♀, MT, H. Celik; GNP, 03.VII.2009, ♀, MT, H. Celik; GNP, 24.VII.2008, ♀, PT, G. Japoshvili; GNP, 22.VIII.2008, 8 ♀♀, PT, G. Japoshvili; GNP, 28.VIII.2008, 3 ♀♀, PT, B. Aslan; GNP, 04.IX.2008, 6 ♀♀, PT, B. Aslan; GNP, 11.IX.2008, 2 ♀♀, PT, G. Japoshvili; GNP, 25.IX.2008, ♀, PT, G. Japoshvili; GNP, 09.X.2008, 3 ♀♀, PT, B. Aslan; GNP, 14.VIII.2008, ♀, PT, G. Japoshvili; GNP, 15.X.2009, 2 ♀♀, MT, G. Japoshvili; GNP, 23.X.2009, ♀, PT, B. Aslan; GNP, 23.X.2009, ♀, PT, M. Kaya; (EMIT).

Vespa Linnaeus, 1758

19. *Vespa orientalis* Linnaeus, 1771*

Material examined: Isparta, 11.VI.2008, ♀ (worker), K. Yilmaz; Isparta, 2.VII.2007, ♀ (worker), Fatma K.; Isparta, 14.IX.2005, ♂, B. Cem; 5.X.2009, ♂, O. Bicgel; Cünür, 21.VI.2008, 2 ♀♀ (workers), K. Yilmaz; Davraz, 1250 m, 12.VI.2004, 3 ♀♀ (workers), D. Ferah; Eğirdir, 02.V.2007, ♂, 4 ♀♀ (workers), M. Simsek.

SCOLIIDAE

Colpa Dufour, 1841

20. *Colpa quinquecincta* (Fabricius 1793) (= *Campsoscolia quinquecincta*)

Material examined: Isparta, 19.VII.2004, ♀, D. Eski (EMIT).

Scolia Fabricius, 1775

21. *Scolia hirta* (Schrank, 1781)

Material examined: Isparta: Gelendost, 17.VI.2007, ♀, D. Ferah; 02.IX.2009, ♀, S. Mercan; 18.IX.2008, ♂, PT, B. Aslan (EMIT)

22. *S. schrencki* Eversmann, 1846

Material examined: 07.VIII.2008, ♀, PT, B. Aslan (EMIT)

23. *S. sexmaculata* (Müller, 1766) (= *Scolia quadripunctata* Fabricius, 1775)

Material examined: 28.VIII.2008, ♀, PT, M. Kaya; 04.IX.2008, ♀, PT, J. Japoshvili; 03.IX.2009, ♀, PT, G. Japoshvili (EMIT).

Megascolia Betrem, 1928

24. *Megascolia maculata* Drury, 1773

Material examined: Isparta: Yalvac, 17.VI.2005, ♂, D. Ferah; 11.VI.2007, ♂, I. Karaca; 21.VI.2007, ♀, T. Taskin; Egirdir, 27.VI.2007, ♀, Bengi T. (EMIT).

TIPHIIDAE

Ludita Nagy, 1967

25. *Ludita villosa* (Fabricius, 1793) (= *T. morio* Fabricius, 1787)[7,8]

1♀, GNP, 09.V.2009, PT, G. Japoshvili; 2♀, GNP, 16.V.2009, PT, G. Japoshvili; 1♀, GNP, 21.V.2009, PT, G. Japoshvili (EMIT).

Tiphia Fabricius, 1775

26. *Tiphia femorata* Fabricius, 1775

Material examined: GNP, 22.VIII.2008, 4 ♀♀, PT, B. Aslan; GNP, 04.IX.2008, 2 ♀♀, 4 ♂♂, PT, B. Aslan; GNP, 11.IX.2008, ♀, PT, G. Japoshvili; GNP, 20.VIII.2009, 2 ♀♀, G. Japoshvili; GNP, 24.VIII.2009, ♀, MT, H. Celik; GNP, 03.IX.2009, 2 ♀♀, MT, H. Celik; GNP, 15.X.2009, ♀, G. Japoshvili (EMIT).

Acknowledgment

We would like to thank to Prof. Dr Erol Yildirim, Ataturk University, Erzurum, for his help in identification of Vespoidea.

References

- [1] Yildirim E., Kojima J. 1999. Distributional checklist of the species of the family Vespidae (Insecta: Hymenoptera; Aculeata) of Turkey. Natural History Bulletin of Ibaraki University 3: 19-50.
- [2] Tezcan S., Karsavuran Y., Pehlivan E., Anlas S. 2004. Contribution to the knowledge of Scoliidae (Hymenoptera) fauna of Turkey. Turkish Journal of Entomology, 28(4): 247-252
- [3] Japoshvili G., Celik H., Aslan B., Karaca I. 2010. Hymenopteran diversity and abundance in Gölcük Natural Park in Isparta, Turkey. Turkish Journal of Entomology, 34(4): in press.
- [4] Gul A., Orucu, O., Karaca O. 2005. Determination of Potential Regions by Using Recreation Suitability Analysis (Reference Gölcük Reserve). Symposium of Protected Natural Areas. 8-10 September 2005, S.D.Ü., Isparta, Turkey. (In Turkish)
- [5] Osten T., Özbek H. 1999. Beitrag zur Kenntnis der Scoliiden-Fauna der Türkei (ohne Zypern) mit Anmerkungen zur Systematik und Taxonomie (Hymenoptera, Scoliidae). Entomofauna, 31: 429-444.
- [6] Yildirim E., Bartalucci M .B. 2009. Tiphiidae (Hymenoptera, Aculeata) of Turkey. Linzer Biol. Beitr., 41(2): 2051-2065.
- [7] Achteberg C.van. 1988. Case 2411. *Ludita* (Insecta, Hymenoptera): proposed designation of *Tiphia villosa* as type species. *Bulletin of zoological nomenclature*, 45 (1): 33.
- [8] Bogusch P. 2008. Book review. *European journal of entomology*, 105: 949-950.
- [9] Abrouw G.J. 1985. *Subfamily Tiphiinae (Hymenopterorum Catalogus, 17)*. Dr. W. Junk N.V. (Dordrecht), 6, 158 pp.

İsmail Karaca e-mail: ikaraca@sdu.edu.tr