Kütahya Dumlupınar University Institute of Graduate Studies



Journal of Scientific Reports-A E-ISSN: 2687-6167

Number 51, December 2022

RESEARCH ARTICLE

NEW DATA for SPHECIDAE (HYMENOPTERA: APOIDEA) FAUNA of TÜRKİYE

İlyas CAN^{1,*}

1*Tokat Gaziosmanpaşa University, Faculty of Arts and Sciences, Department of Biology, Tokat, <u>ilyascan41@gmail.com</u>, ORCID: 0000-0003-3013-6614

ABSTRACT

This study is based upon material from subfamilies Ammophilinae, Sceliphrinae, and Sphecinae of the family Sphecidae collected from different localities of Türkiye between 2000 and 2021. A total of 27 species belonging to nine genera of three subfamilies have been presented. New provincial and regional records for some species have been given.

Keywords: Sphecidae, fauna, locality records, solitary wasp, Türkiye

1. INTRODUCTION

The Sphecidae family, which is in the Apocrita suborder and the Aculeata group, generally includes medium to large sized solitary wasps. The family comprises about 810 species belonging to five subfamilies in all zoogeographical regions of the world [1]. Most of the species belonging to this family are important to ecosystems for two reasons. Firstly, they control insect and spider populations by hunting them in order to gather food for their larvae and secondly, they contribute to the pollination of flowering plants as they feed on nectar [2].

In Türkiye; over the last decade, a number of studies have been conducted on the biodiversity of this family, including new and important findings [2-10]. According to recent contributions, the family Sphecidae contains 79 species and subspecies in Türkiye [2, 11]. But Sphecidae fauna of Türkiye is still incomplete, because most probably, so many species remain unknown. It is expected that the species number of Sphecidae will increase with future studies due to geographical location of Türkiye, its habitat and climate diversity.

We aimed in this study to contribute to the distribution knowledge of Sphecidae fauna in Türkiye.

2. MATERIALS and METHODS

The samples of Sphecidae were collected from different localities of Türkiye between 2000 and 2021.



Totally 239 specimens for this study were collected using insect net from different localities (Fig. 1). The materials are deposited in the Entomological Research Laboratory, Faculty of Arts and Sciences, Gaziosmanpaşa University, Tokat, Türkiye. Provincial distributions were evaluated according to Can and Gülmez [2].

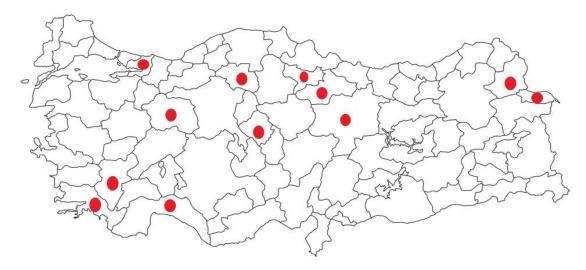


Figure 1. Türkiye map showing the provinces where the samples were collected.

3. RESULTS and DISCUSSION

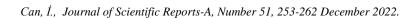
In this study 27 species of nine genera belong to three subfamilies of Sphecidaee were given (11 species of three genera in the subfamily Ammophilinae; 6 species of two genera in the subfamily Sceliphrinae; 10 species of four genera in the subfamily Sphecinae).

Family Sphecidae (Latreille, 1802)

Subfamily Ammophilinae André, 1886

Genus Ammophila W. Kirby, 1798

Ammophila heydeni Dahlbom, 1845





Geyras, 750 m, 06.VII.2013, ♂; Central district, Kömeç, 580 m, 06.V.2013, ♂; Niksar, Çamiçi, 1350 m, 21.VI.2013, ♂.

Distribution in Türkiye: It is widespread in all geographical regions.

Remark: New record for fauna of Denizli, Eskişehir and Kocaeli provinces.

Ammophila hungarica Mocsáry, 1883

Material examined (3 ♂♂**): TOKAT:** Almus, 940 m, 07.VII.2011, ♂; 08.V.2012, ♂; Central district, 660 m, 01.V.2012, ♂.

Distribution in Türkiye: It is widespread in all geographical regions [2].

Remark: New record for fauna of Tokat province.

Ammophila pubescens Curtis, 1836

Material examined (1 ♂): KIRŞEHIR: Çiçekdağı, 1050 m, 20.VII.2000, ♂.

Distribution in Türkiye: It spreads in Eastern and Central Anatolia regions [2].

Remark: New record for fauna of Kırşehir province.

Ammophila sabulosa (Linnaeus, 1758)

Material examined (11 ♀♀, 40 ♂♂): AMASYA: Central district, 554 m, 07.VII.2013, 7 ♂♂; Central district, Ziyaret, 1050 m, 07.VII.2013, ♂; ÇANKIRI: Central district, 800 m, 30.VII.2000, 2 ♂♂; Çerkeş, 1000 m, 26.VI.2001, ♂; Ilgaz, Yenice, 1160 m, 30.VII.2000, ♂; IĞDIR: Kağızman, Kötek, 1400 m, 04.IX.2009, ♂; KIRŞEHİR: Çiçekdağı, 1050 m, 20.VII.2000, ♀, 4 ♂♂; TOKAT: Almus, 940 m, 14.V.2013, 7 ♂♂; Central district, 900 m, 15.IX.2012, ♀; Central district, Pınarlı, 760 m, 24.VIII.2013, 5 ♀♀, 6 ♂♂; Erbaa, 250 m, 25.IX.2012, ♀; Niksar, Akıncı, 765 m, 13.V.2014, 4 ♂♂; Niksar, Canpolat, 1095 m, 24.VI.2013, ♀; Niksar, Çamiçi, 1350 m, 21.VI.2013, ♀, 5 ♂♂; Niksar, Gökdere, 800 m, 04.VII.2013, ♂; Pazar, Akdağ, 1560 m, 16.IX.2012, ♀.

Distribution in Türkiye: It is widespread in all geographical regions [2].

Remark: New record for fauna of Kırşehir province.

Ammophila terminata F. Smith, 1856

Material examined (1 \circlearrowleft): **SİVAS:** İmranlı, 1830 m, 20.VII.2020, \circlearrowleft .



Distribution in Türkiye: It is distributed in all geographical regions except for Southeastern Anatolia region [2].

Remark: New record for fauna of Sivas province.

Genus Hoplammophila de Beaumont 1960

Hoplammophila armata (Illiger, 1807)

Material examined (1 ♀, **3** ♂♂): **TOKAT:** Central district, Pınarlı, 760 m, 24.VIII.2013, ♀; 05.VIII.2015, 3 ♂♂.

Distribution in Türkiye: It is distributed in Eastern Anatolia, Central Anatolia and Black Sea regions [2].

Genus Podalonia Fernald, 1927

Podalonia affinis (Kirby, 1798)

Distribution in Türkiye: It is distributed in all geographical regions except for Aegean and Southeastern Anatolia regions [2].

Podalonia fera (Lepeletier de Saint Fargeau, 1845)

Material examined (3 ♀♀): KIRŞEHİR: Çiçekdağı, 1400 m, 20.VII.2000, ♀; TOKAT: Central district, 680 m, 28.VII.2014, ♀; Central district, University campus, 620 m, 05.X.2012, ♀.

Distribution in Türkiye: It is widespread in all geographical regions [2, 10].

Remark: New record for fauna of Kırşehir province.

Podalonia hirsuta (Scopoli, 1763)

Material examined (3 \circlearrowleft **?**, **2** \circlearrowleft **?): KARS:** Central district, 1850 m, 25.VI.2006, \circlearrowleft ; **TOKAT:** Erbaa, Karayaka, 250 m, 12.VII.2015, \circlearrowleft ; Niksar, Çamiçi, 900 m, 21.VI.2013, \circlearrowleft **?** \circlearrowleft \circlearrowleft \circlearrowleft

Distribution in Türkiye: It is widespread in all geographical regions [2]. *Podalonia luffii* (Saunders, 1903)



Material examined (7 ♂♂**): KARS:** Central district, 1850 m, 25.VI.2006, 3 ♂♂; 10.VIII.2006, ♂; 25.VIII.2007, ♂; 16.VII.2008, 2 ♂♂.

Distribution in Türkiye: It shows limited distribution in Central and Eastern Anatolia [2, 10].

Remark: New record for fauna of Kars province.

Podalonia tydei tydei (Le Guillou, 1841)

Material examined (3 \circlearrowleft **, 3** \circlearrowleft **): SİVAS:** Suşehri, 975 m, 18.VII.2017, \circlearrowleft ; **TOKAT:** Central district, 680 m, 30.IX.2012, 2 \circlearrowleft Central district, Kömeç, 580 m, 06.V.2013, 3 \circlearrowleft

Distribution in Türkiye: It is widespread in all geographical regions [2].

Subfamily Sceliphrinae Ashmead, 1899

Genus Chalybion Dahlbom, 1843

Chalybion flebile (Lepeletier de Saint Fargeau, 1845)

Material examined (1 \circlearrowleft , 3 \circlearrowleft \circlearrowleft): SİVAS: Koyulhisar, 1150 m, 13.VII.2017, 2 \circlearrowleft \circlearrowleft ; TOKAT: Central district, University campus, 680 m, 20.V.2016, \circlearrowleft ; Erbaa, Tepekışla, 230 m, 03.VI.2017, \circlearrowleft .

Distribution in Türkiye: It is widespread in all geographical regions [2]. *Chalybion omissum* (Kohl, 1889)

Material examined (4 \circlearrowleft \circlearrowleft **, 1** \circlearrowleft): **DENİZLİ:** Honaz, 800 m, 24.VI.2010, \circlearrowleft ; **TOKAT:** Central district, University campus, 660 m, 11.VII.2011 \circlearrowleft ; 12.VI.2012, 2 \circlearrowleft \circlearrowleft ; 19.VI.2014, \circlearrowleft .

Distribution in Türkiye: It is distributed in all geographical regions except for Black Sea region [2].

Remark: New record for fauna of Tokat province.

Genus Sceliphron Klug, 1801

Sceliphron curvatum (Smith, 1870)

Material examined (1 \updownarrow): **KOCAELİ:** Gölcük, İhsaniye, 100 m, 16.VI.2020, \updownarrow .

Distribution in Türkiye: It spreads in Black Sea, Eastern Anatolia and Marrmara regions [2].

Sceliphron destillatorium (Illiger, 1807)



Material examined (3 ♂♂): **ESKİŞEHİR:** Osmangazi University campus, 830 m, 25.VI.2014, 2 ♂♂; **KARS:** Central district, 2000 m, 16.VIII.2009, ♂.

Distribution in Türkiye: It is widespread in all geographical regions [2].

Sceliphron funestum Kohl, 1918

Material examined (3 \circlearrowleft \Leftrightarrow): **ANTALYA:** Kalkan, 450 m, 22.VII.2021, \circlearrowleft ; **MUĞLA:** Seydikemer, 775 m, 20.VII.2021, 2 \hookrightarrow \Leftrightarrow

Distribution in Türkiye: It spreads in Aegean, Mediterrenian, Central and Southeastern Anatolia regions. For provincial distribution, see Can and Gülmez [2].

Sceliphron spirifex (Linnaeus, 1758)

Material examined (2 \circlearrowleft **: ANTALYA:** Kalkan, 450 m, 20.VII.2021, \circlearrowleft : **KARS:** Central district, 1850 m, 10.VI.2007, \circlearrowleft .

Distribution in Türkiye: It is distributed in all geographical regions except for Eastern Anatolia region [2].

Remark: New record for fauna of Kars province.

Subfamily Sphecinae Latreille, 1802

Genus Isodontia Patton, 1880

Isodontia splendidula (Costa, 1858)

Material examined (1 \circlearrowleft , **4** \circlearrowleft \circlearrowleft): **TOKAT:** Central district, University campus, 10.VII.2013, 3 \circlearrowleft \circlearrowleft ; 19.VI.2014, \circlearrowleft ; Erbaa, Karayaka, 250 m, 12.VII.2014, \circlearrowleft .

Distribution in Türkiye: It is distributed in all geographical regions except for Southern Anatolia region [2].

Genus Palmodes Kohl, 1890

Palmodes occitanicus (Le Peletier & Serville, 1828)

Material examined (3 \circlearrowleft , 1 \circlearrowleft): **AMASYA:** Central district, Ziyaret, 1050 m, 07.VII.2013, \circlearrowleft ; **ESKİŞEHİR:** Osmangazi University campus, 830 m, 25.VI.2014, \circlearrowleft ; **TOKAT:** Central district, 680 m, 15.VII.2014, 2 \circlearrowleft .

Distribution in Türkiye: It is widespread in all geographical regions [2].



Can, İ., Journal of Scientific Reports-A, Number 51, 253-262 December 2022.

Remark: New record for fauna of Amasya and Eskişehir provinces.

Palmodes strigulosus (Costa, 1861)

Material examined (1 \bigcirc): **CANKIRI:** Central district, 700 m, 29.VII.2000, \bigcirc .

Distribution in Türkiye: It is widespread in all geographical regions [2].

Remark: New record for fauna of Çankırı province.

Genus Prionyx Vander Linden, 1827

Prionyx kirbii (Vander Linden, 1827)

Distribution in Türkiye: It is distributed in all geographical regions except for Southern Anatolia region [2].

Prionyx lividocinctus (Costa, 1861)

Material examined (2 ♂♂): **TOKAT:** Central district, 700 m, 15.VII.2015, 2 ♂♂.

Distribution in Türkiye: It is widespread in all geographical regions [2].

Remark: New record for fauna of Tokat province.

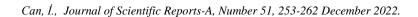
Prionyx nudatus (Kohl, 1885)

Material examined (3 \circlearrowleft \circlearrowleft , **5** \circlearrowleft \circlearrowleft): **AMASYA:** Taşova, Boraboy, 970 m, 05.IX.2015, \circlearrowleft ; **ÇANKIRI:** Çerkeş, 1000 m, 26.VI.2001, \circlearrowleft , \circlearrowleft ; **KARS:** Central district, 1850 m, 10.VI.2007, \circlearrowleft ; 15.VIII.2008, \circlearrowleft ; **TOKAT:** Central district, 700 m, 15.VII.2015, 2 \circlearrowleft ; Reşadiye, Zinav, 970 m, 17.VIII.2014, \circlearrowleft

Distribution in Türkiye: It is distributed in all geographical regions except for Aegean region [2].

Prionyx songaricus (Eversmann, 1849)

Material examined (1 ♂): **KARS:** Central district, 1850 m, 10.VI.2007, ♂.





Distribution in Türkiye: It is distributed in all geographical regions except for Black Sea and Marmara regions [2].

Remark: New record for fauna of Kars province.

Genus Sphex Linnaeus, 1758

Sphex flavipennis Fabricius, 1793

Material examined (8 \circlearrowleft \circlearrowleft , 36 \circlearrowleft): AMASYA: Central district, 555 m, 07.VII.2013, 3 \circlearrowleft Taşova, Gökpınar, 730 m, 04.VII.2015, 2 \circlearrowleft DENİZLİ: Honaz, 800 m, 24.VI.2010, \circlearrowleft , 4 \circlearrowleft SİVAS: Koyulhisar, 700 m, 27.VI.2015, \circlearrowleft ; TOKAT: Central district, 28.VI.2014, 680 m, \circlearrowleft ; Central district, Taşlıçiftlik, 700 m, 10.VII.2013, 14 \circlearrowleft Central district, Pınarlı, 750 m, 26.VIII.2013, 4 \circlearrowleft Erbaa, Karayaka, 350 m, 12.VII.2014, \circlearrowleft ; Erbaa, Tepekışla, 230 m, 18.VII.2015, 2 \circlearrowleft 2 \circlearrowleft Niksar, Efkerit Valley, 350 m, 21.VI.2013, 2 \circlearrowleft ; Niksar, Gökdere, 800 m, 04.VII.2013, \circlearrowleft ; Niksar, Köklüce, 400 m, 04.IV.2015, 2 \circlearrowleft 3 \circlearrowleft Reşadiye, Karlıyayla, 1200 m, 28.VII.2017, \circlearrowleft

Distribution in Türkiye: It is widespread in all geographical regions [2].

Sphex funerarius Gussakovskij, 1934

Distribution in Türkiye: It is distributed in all geographical regions except for Southern Anatolia region [2].

Remark: New record for fauna of Amasya province.

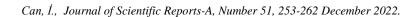
Sphex pruinosus Germar, 1817

Material examined (2 \circlearrowleft **4** \circlearrowleft **3: SİVAS:** Koyulhisar, 1150 m, 22.VI.2016, \circlearrowleft ; 13.VII.2017, \circlearrowleft ; **TOKAT:** Erbaa, Karayaka, 350 m, 12.VII.2014, \circlearrowleft ; Reşadiye, Karlıyayla, 1200 m, 28.VII.2017, \circlearrowleft , 2 \circlearrowleft \circlearrowleft .

Distribution in Türkiye: It is distributed in all geographical regions except for Southern Anatolia region [2].

1. CONCLUSIONS

According to Can & Gülmez [2, 11], the number of Sphecid species occurring in Türkiye is 79. A total of 27 species and material belonging to Sphecidae was presented in this study.





According to this study, Ammophila heydeni is recorded for the first time from three provinces: Denizli, Eskişehir and Kocaeli. Also, Palmodes occitanicus is newly reported from Amasya and Eskişehir provinces. Tokat province has the highest number of new records with 4 species (Ammophila hungarica, Ammophila pubescens, Chalybion omissum and Prionyx lividocinctus) followed by Kars province with 3 species (Podalonia luffi, Prionyx songaricus, and Sceliphron spirifex) and Kırşehir province with 2 species (Ammophila sabulosa and Podalonia fera). Sphex funerarius, Palmodes strigulosus and Ammophila terminata are new records for Amasya, Çankırı and Sivas provinces respectively.

Our knowledge of sphecid wasps in some parts of Türkiye is still limited. Further faunal investigations are necessary to draw a complete list of Sphecidae species of the country.

ACKNOWLEGMENTS

I would like to thank my colleagues who contributed to the collection of samples. I also thank the anonymous reviewers for all their valuable comments and suggestions which helped me to improve the quality of the manuscript.

REFERENCES

- [1] Pulawski, W. J., (2022), Catalog of Sphecidae sensu lato. California Academy of Sciences. (Web page: https://www.calacademy.org/scientists/projects/catalog-of-sphecidae) (Date accessed: June 2022).
- [2] Can, İ. and Gülmez, Y., (2021), A faunistic study on the family Sphecidae (Hymenoptera) in the Upper Kelkit Valley with two new records and a checklist for Turkey, Turkish Journal of Entomology, 45(3), 305-322.
- [3] Can, İ. and Gülmez, Y., (2019), A new record for the Turkish Sphecidae fauna: *Prionyx radoszkowskyi* (Hymenoptera: Sphecidae), Entomological News, 128(4), 346-350.
- [4] Dollfuss, H., (2013a), Revision of the wasps genus *Ammophila* Kirby, 1798 (Hymenoptera: Apoidea: Sphecidae) of the Palearctic region and India, Linzer Biologische Beiträge, 45(1), 383-564.
- [5] Dollfuss, H., (2013b), The Ammophilini wasps of the "Biologiezentrum Linz "-Collection in Linz, Austria (part 2) including the genera *Ammophila* Kirby and *Podalonia* Fernald (Hymenoptera, Apoidea, Sphecidae), and description of the hitherto unknown male of *Podalonia erythropus* (F. Smith, 1856), Linzer Biologische Beitrage, 45(1), 565-591.
- [6] Dollfuss, H., (2015), The Ammophilini wasps of the "Biologiezentrum Linz"- Collection in Linz, Austria (part 3) including the genera *Ammophila* Kirby, *Eremnophila* Menke, *Eremochares*



- Gribodo, *Hoplammophila* de Beaumont and *Podalonia* Fernald (Hymenoptera, Apoidea, Sphecidae), Linzer Biologische Beitrage, 47(1), 413-439.
- [7] Dollfuss, H., (2016), The Chloriontinae, Sceliphrinae and Sphecinae wasps of the "Biologiezentrum Linz"-Collection in Linz, Austria including the Genera *Chalybion* Dahlbom, *Chlorion* Latreille, *Dynatus* Lepeletier de Saint Fargeau, *Penepodium* Menke, *Podium* Fabricius, Sceliphron Klug, *Stangeella* Menke and *Trigonopsis* Perty (Hymenoptera, Apoidea, Sphecidae) and description of the new species *Chalybion ohli* from Madagascar, Linzer Biologische Beiträge, 48(2), 1149-1185.
- [8] Gülmez, Y. and Can, İ., (2015), First record of *Sceliphron (Hensenia) curvatum* (Hymenoptera: Sphecidae) from Turkey with notes on its morphology and biology, North-Western Journal of Zoology, 11(1), 174-177.
- [9] Yıldırım, E., Ljubomirov, T., Özbek, H. and Yüksel, M., (2016), New data on Spheciformes fauna (Hymenoptera: Ampulicidae, Sphecidae, Crabronidae) of Turkey, Journal of Insect Biodiversity, 4(3), 1-51.
- [10] Kaplan, E. and Yıldırım, E., (2022) The Current Knowledge of Turkey Sphecidae and Mutillidae (Hymenoptera: Aculeata) Fauna, Uluslararası Tarım ve Yaban Hayatı Bilimleri Dergisi 8(1), 53-64
- [11] Kaplan, E. and Yıldırım, E., (2022), The Checklist of Spheciformes (Hymenoptera: Apoidea) in Turkey, Munis Entomology & Zoology, 17 (Supplement), 1779-1791.