

Contribution to the knowledge of the sawflies (Hymenoptera: Symphyta) from Turkey

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KAPLAN, E. & HARIS, A: *Contribution to the knowledge of the sawflies (Hymenoptera: Symphyta) from Turkey.*

Abstract: This study is based on the *Symphyta (Hymenoptera)* material collected from Bingöl and Diyarbakır provinces of Turkey in 2019. The present paper is the second part of the series of papers investigating the sawfly fauna of the Anatolian biogeographic region. The so far recorded 38 species is extended to 58 species. *Arge auripennis* Konow, 1891, *Arge pallidinervis* Gussakovskij, 1935, *Dolerus hispanicus* Mocsáry, 1881 and *Athalia dimidiata* Konow, 1891 are new to the Turkish fauna. Sawfly biodiversity, flying activity and population densities are discussed. Moreover, dominant species, rare and interesting species are also listed. Collection localities, local names and geographical features of those localities, with threatening factors for the species are provided.

Keywords: *Hymenoptera, Symphyta*, new records, new species, Bingöl, Diyarbakır, Turkey

Introduction

The investigation of sawfly fauna of Turkey started relatively late. The earliest expedition to Anatolia which resulted in collection of sawflies was conducted by Imre Frivaldszky and János Frivaldszky, Hungarian zoologists and botanists, in 1846. The sawfly material was sent to Peter Friedrich Ludwig Tischbein, German entomologist and forester and he described from the Frivaldszky collection (housed in the Hungarian Natural History Museum) the first sawflies from Turkey, namely *Macrophya superba* Tischbein, 1852 and *Cephus orientalis* Tischbein, 1852 (valid name: *Syrista parreyssii* (Spinola, 1843)) (TISCHBEIN 1852). These specimens have very general locality information: “*Klein-Asien*”. The first sawflies from Turkey with detailed locality information were published by Sándor Mocsáry (Hungarian hymenopterologist, curator of the Hungarian National Museum and royal councilor) in 1881. He described *Tarpa orientalis* MOCSÁRY 1881. Mocsáry gave the place of collection this way: “*In Asia Minore ad Brussam a Joanne Pavel inventa*” Now it is Bursa. János Pável was an entomologist of the Hungarian National Museum, he made an expedition to Istanbul and Bursa in 1870. The other early species with well-defined locality is *Macrophya ottomana* Mocsáry, 1881: *In Asia Minore ad Amasiam a Josepho Mann, Lepidopterologiae cultore eximio, anno 1860 inventa et in Museo Caesario Vindobonensi custodita*. Now, it is Amasya in Turkey. Sándor Mocsáry continued the description of sawflies of Turkey and the

Ottoman Empire in 1883 (MOCSÁRY 1883) describing *Megalodontes (Tarpa) anatolicus* Mocsáry 1883 from “*Asia minore ad Brussam ab Eduardo Merkl anno praeterito detectus*”. (Ede Merkl was a Hungarian naturalist, *Coleoptera* specialist and poet from Resicabánya).

In the following years, we have only few species descriptions from Turkey (will be detailed in a separate paper) until the publication of the first monograph completed by Robert Benson, published posthumous by the trustees of the former British Museum Natural History (now The Natural History Museum London) (BENSON 1968). The investigations of Hungarian, German, Russian, English, and French specialists were continued by Turkish scientists, namely Önder Çalmaşur, Hikmet Özbek, Hasan Başbüyük, Çetin Mutlu and Sevdâ H. Örgen (ÇALMAŞUR & ÖZBEK 2004a, b, 2006, ÇALMAŞUR 2006, 2019, 2020, ÖRGEN & BASIBUYUK 2006, MUTLU 2019). For now, the number of Symphyta species recorded from Turkey is 370 (according to the estimation of ÇALMAŞUR 2019 and 2020). Generally we can say that the Turkish sawfly fauna is relatively rich compared to the fauna of the neighboring Mediterranean region and poor compared to the Northern territories of Europe. For comparison, the sawfly fauna of Somogy county (6065 km²) consists of 316 species, the Bakony Mountains with the adjoining Balaton Upland (circa 4 800 km²) consists of 359 Symphyta species, while all of Turkey with an area of 780 580 km² has only circa 370 species. This low number could be the result of its Southern location of the country on one hand and the late starting of intensive sawfly-faunistic research of this region on other hand. Finally, the investigation of the Anatolian sawflies (and other groups of plants and animals) is more than exciting, since this region is in the crossroad of East Mediterranean, Sumerian and Irano-Turanian provinces of Palearctic Region resulting the richness of the fauna and flora (YILDIRIM 2016).

Material and Methods

Material was collected by various methods, mostly by sweeping grass on meadows and pasture lands containing a variety of flowering plants. Provinces of the collected specimens are given in alphabetical order in the following list. The first author in 2019 spent 11 days in March, 16 days in April, 13 days in May, 6 days in June, 5 days in July, 4 days in August and 3 days in September in the field collecting (Fig. 1 and 2).

The material is deposited partly in the Rippl-Rónai Museum, Kaposvár and partly in the Atatürk University, Biodiversity Application and Research Center, Erzurum, Turkey and in the Bingöl University, Faculty of Agriculture, Department of Plant Protection, Bingöl, Turkey.

For the identification of the specimens we consulted the comprehensive works of ZHELOCHOVTSEV 1988 and BENSON 1968 completed with other papers as ENSLIN 1910a, b, TAAGER 1992 and GUSSAKOVSKIJ 1935.



Fig. 1: Landscape at Yukari: Elmali in Bingöl province (photo: Kaplan)



Fig. 2: Landscape at Bağır in Diyarbakir province (photo: Kaplan)

Results

List of species collected

Megalodontesidae

Megalodontes cephalotes (Fabricius, 1781): Bingöl: Genç: N 38° 45' 54.03", E 40° 32' 56.02", 988 m, 09. 05. 2019, 1 male; Ardiçdibi, N 38° 46' 32.40", E 40° 36' 40.02", 1054 m, 09. 05. 2019, 1 female; Diyarbakır: Dicle: Yeşilsirt, N 38° 20' 31.21", E 40° 01' 53.75", 724 m, 19. 04. 2019, 1 female. Frequent. Host plant: *Peucedanum cervaria*. West-palaearctic species.

Megalodontes phaenicius (Lepelletier, 1823): Bingöl: Sancak, N 39° 05' 37.56", E 40° 22' 38.07", 1585 m, 26. 05. 2019, 1 female. Frequent. Host plant unknown. East-Mediterranean-Anatolian species.

Cephididae

Cephus pulcher Tischbein, 1852: Bingöl: Kiğı: Duranlar, N 39° 16' 17.12", E 40° 20' 47.91", 1304 m, 12. 06. 2019, 1 female. Rare. East-European-Anatolian species.

Cephus pygmeus (Linné, 1767): Bingöl: Güvercinlik, N 37° 59' 06.08", E 40° 14' 29.81", 613 m, 29. 03. 2019, 1 female; Adaklı: Kamışgölü, N 39° 12' 00.38", E 40° 24' 40.32", 1586 m, 29. 05. 2019, 1 female; Diyarbakır: Dicle, N 37° 52' 06.13", E 40° 13' 45.41", 608 m, 10. 03. 2019, 1 female; Bismil: Köseli, N 37° 50' 51.99", E 40° 36' 49.34", 558 m, 30. 03. 2019, 1 female. Generally common. Pest of cereals and grasses. Holarctic.

Cephus spinipes (Panzer, 1800)

Diyarbakır: Çüngüş: Sağtepe, N 38° 13' 41.26", E 39° 22' 33.16", 1128 m, 19. 04. 2019, 1 female. Frequent. Host plant: *Phleum pratense*. Eurasian.

Syrista parreyssii (Spinola, 1843)

Diyarbakır: Çüngüş: N 38° 12' 32.95", E 39° 22' 09.37", 1007 m, 27. 03. 2019, 1 female. Frequent. Host plant: *Rosa* spp. North-Mediterranean-Anatolian-Caucasian-Persian

Argidae

Arge aurata (Zaddach, 1864): Bingöl: Küçükterkören, N 38° 51' 01.40", E 40° 30' 02.62", 1182 m, 19. 05. 2019, 1 female; Diyarbakır: Çüngüş: Oyuklu, N 38° 13' 24.88", E 39° 22' 12.56", 1076 m, 19. 04. 2019, 1 female; Lice: Çavundur, N 38° 19' 36.25", E 40° 40' 53.59", 1040 m, 19. 04. 2019, 1 female. Frequent. Middle-East – Anatolian.

Arge auripennis Konow, 1891: Diyarbakır: Lice: Türel, N 38° 25' 09.84", E 40° 53' 54.09", 738 m, 12. 04. 2019, 1 female. North-Mediterranean – Anatolian. Rare. New record for Turkey.

Arge beckeri Tournier, 1889: Diyarbakır: Karpuzlu, N 37° 50' 51.25", E 40° 14' 36.03", 579 m, 12. 03. 2019, 1 female. Frequent. Host plant: *Euphorbia* spp. North-Mediterranean – Anatolian.

Arge cyanocrocea (Förster, 1771): Bingöl: Çeltiksuyu, N 38° 51' 20.68", E 40° 34' 04.34", 1015 m, 04. 05. 2019, 1 male. Frequent. Host plant: *Rubus idaeus*. West-Palaearctic.

Arge melanochra (Gmelin, 1790): Bingöl: Elmalı, N 39° 01' 00.57", E 40° 43' 12.15", 1286 m, 05. 05. 2019, 1 female; Küçükterkören, N 38° 51' 18.63", E 40° 29' 10.84", 1477 m, 23. 05. 2019, 1 male; Diyarbakır: Lice: Çavundur, N 38° 19' 47.72", E 40° 39' 58.29", 1185 m, 06. 05. 2019, 1 male. Common species. Host plant: *Crataegus oxyacantha*. West-Palaearctic.

Arge pallidinervis Gussakovskij, 1935: Bingöl: Adaklı: Güngörsün, N 39° 15' 20.29", E 40° 28' 18.93", 1539 m, 12. 06. 2019, 1 male; Yayladere: Boğazköy, N 39° 15' 13.64", E 40° 03' 32.56", 1772 m, 14. 06. 2019, 1 male. Pontomediterranean, Caucasian and Anatolian. New record for Turkey.

Arge ochropus (Gmelin, 1790): Material examined: Bingöl: Bilaloğlu, N 38° 55' 34.87", E 40° 23' 14.72", 1288 m, 15. 05. 2019, 1 female. Pest of *Rosa* spp. Locally frequent.

Arge scita (Mocsáry, 1880): Bingöl: Solhan: N 38° 56' 23.25", E 41° 08' 18.56", 1727 m, 02. 06. 2019, 1 female; Diyarbakır: Çermik: Güzel, N 38° 01' 08.45", E 39° 11' 31.16", 840 m, 15. 04. 2019, 1 female; Lice: Kutlu, N 38° 21' 37.67", E 40° 46' 28.39", 825 m, 28. 04. 2019, 1 female. Frequent. Host plant: *Prunus amygdalus*. East-Mediterranean, Iranian, and Anatolian.

Arge yildirimi Haris and Kaplan, 2021: Diyarbakır: Lice: Yalaza, N 38° 20' 16.33", E 40° 40' 35.45", 921 m, 25. 04. 2018, 1 female; Eğil: Yatır, N 38° 08' 09.41", E 40° 08' 56.18", 836 m, 28. 03. 2019, 1 female. Kocaköy, Ambar, N 38° 16' 07.99", E 40° 28' 29.61", 733 m, 24. 04. 2018, 1 female; Lice, Beni, N 38° 20' 07.29", E 40° 38' 57.00", 1124 m, 25. 04. 2018, 1 female, Kutlu, N 38° 21' 37.62", E 40° 46' 28.39", 825 m, 28. 04. 2018, 1 female, Oyuklu, N 38° 19' 44.71", E 40° 45' 31.90", 939 m, 28. 04. 2018, 1 female. (Fig. 3).



Fig. 3: *Arge yildirimi* Haris & Kaplan, 2021 holotype in dorsal view (photo: Haris)

Tenthredinidae

Dolerinae

Dolerus (Dolerus) hispanicus Mocsáry, 1881: Bingöl: Genç: Döşekkaya, N 38° 38' 11.11", E 40° 23' 07.23", 1015 m, 16. 05. 2019, 1 male; Yayladere: Aydınlar, N 39° 10' 24.61", E 40° 03' 53.16", 1626 m, 14. 06. 2019, 1 female; Diyarbakır: Lice: Tepe, N 38° 23' 47.61", E 40° 44' 15.82", 799 m, 20. 04. 2019, 1 male. Frequent. North Mediterranean, Anatolian and Persian.

Dolerus (Poodolerus) puncticollis Thomson, 1871: Diyarbakır: Kocaköy: Gökçen, N 38° 18' 32.65", E 40° 32' 24.30", 901 m, 01. 04. 2019, 1 female. Frequent in Anatolia. The detected low density is surprising. Larva on Graminae including cereals. West-Palaeartic.

Allantinae

Allantus (Emphytus) didymus (Klug, 1818): Bingöl: Genç: Yağızca, N 38° 48' 41.26", E 40° 45' 15.59", 1152 m, 10. 05. 2019, 1 female. Sporadic. Host plant: *Sanguisorba minor*; old records from *Rubus* and *Rosa* spp. needs checking. West Palaeartic.

Athalia dimidiata Konow, 1891: Diyarbakır: Dicle: Biçer, N 38° 22' 22.24", E 40° 00' 55.39", 921 m, 20. 04. 2019, 1 female. Rare, Caucasian and Anatolian. Host plant: unknown. New record for Turkey.

Athalia circularis ssp. circularis (Klug, 1815): Diyarbakır: Esenbağ, N 38° 00' 35.71", E 40° 22' 21.78", 612 m, 21. 03. 2019, 1 female. Frequent. Host plants: *Arctium lappa*, *Ajuga reptans*, *Veronica beccabunga*, *V. longifolia*, *V. officinalis*, *Alliaria petiolata*, *Glechoma hederacea*, *Melampyrum*, *Capsella* and *Lycopus* spp. Palaeartic.

Athalia liberta (Klug, 1815): Diyarbakır: Silvan: Dolapdere, N 38° 18' 30.36", E 40° 53' 09.11", 910 m, 05. 04. 2019, 1 male. Frequent. Host plants: *Alliaria petiolata*, *Arabidopsis thaliana*, *Cardamine hirsuta* and *Sisymbrium officinale*. West Palaeartic.

Blennocampinae

Eutomostethus gagathinus (Klug, 1816): Diyarbakır: Lice: Ziyaret, N 38° 20' 15.95", E 40° 33' 31.60", 996 m, 01. 04. 2019, 1 female. Sporadic. Host plant: *Carex paniculata*. West Palaeartic.

Tenthredininae

Macrophya (Macrophya) annulata (Geoffroy, 1785): Bingöl: Çayağzı, N 38° 48' 42.61", E 40° 33' 25.15", 1018 m, 19. 05. 2019, 1 male; N 38° 48' 21.94", E 40° 33' 26.53", 992 m, 20. 05. 2019, 1 female; Genç: Kepçeli, N 38° 49' 27.91", E 40° 48' 57.90", 1570 m, 18. 05. 2019, 1 female; Sürekli, N 38° 46' 25.37", E 40° 36' 49.76", 1095 m, 18. 05. 2019, 1 female; Karlıova: Yeniköy, N 39° 11' 40.44", E 40° 55' 37.11", 1711 m, 31. 05. 2019, 1 female. Frequent. Host plants: *Potentilla reptans*, *Origanum vulgare*, *Euphorbia*, *Rosa*, *Rubus* and *Sambucus* spp. European, Persian and Anatolian.

Macrophya (Macrophya) blanda (Fabricius, 1775): Bingöl: Genç: Pınaraltı, N 38° 44' 55.35", E 40° 53' 49.59", 1569 m, 10. 05. 2019, 1 female. Frequent. Host plants: *Rubus* and *Fragaria* spp., *Potentilla reptans*. European and Anatolian.

Macrophya (Macrophya) consobrina Mocsáry, 1881: Diyarbakır: Hani: Kalaba, N 38° 25' 52.76", E 40° 25' 02.34", 1106 m, 27. 03. 2019, 1 female; Süslü, N 38° 23' 28.52", E 40° 19' 01.95", 1098 m, 29. 03. 2019, 1 male; Lice: Oyuklu, N 38° 19' 55.42", E 40° 45' 05.76", 925 m, 11. 04. 2019, 1 male. Sporadic, Middle-East and Anatolian.

Macrophya (Macrophya) diversipes (Schrank, 1782): Bingöl: Çeltiksuyu, N 38° 51' 51.72", E 40° 34' 23.38", 1022 m, 16. 05. 2019, 1 female; Erentepe, N 38° 48' 32.68", E

40° 28' 10.84", 1477 m, 23. 05. 2019, 1 female; Kurudere, N 38° 54' 25.44", E 40° 27' 40.39", 1188 m, 15. 03. 2019, 1 female; Büyükterkören, N 38° 50' 35.45", E 40° 34' 13.20", 1017 m, 20. 05. 2019, 1 male; Genç: Dedebağı, N 38° 40' 37.61", E 40° 19' 33.71", 1234 m, 16. 05. 2019, 1 male; Karlıova: Sudurağı, N 39° 06' 52.44", E 40° 51' 06.87", 1648 m, 31. 05. 2019, 1 female; Solhan: Düzağac, N 38° 53' 12.22", E 40° 56' 01.31", 1332 m, 18. 05. 2019, 1 female; Oymapınar, N 38° 51' 03.96", E 40° 58' 48.67", 1183 m, 26. 05. 2019, 1 female; Diyarbakır: Lice: Daralan, N 38° 27' 46.65", E 40° 32' 06.82", 1400 m, 18. 04. 2019, 1 female. Frequent. Host plant: unknown. European, Caucasian and Anatolian.

Macrophya (Macrophya) postica (Brullé, 1832): Bingöl: Çeltiksuyu, N 38° 51' 15.71", E 40° 33' 56.68", 1013 m, 04. 05. 2019, 1 female; Genç: Binekli, N 38° 45' 49.24", E 40° 52' 66.19", 1579 m, 10. 05. 2019, 1 female; Doğanca, N 38° 42' 26.73", E 40° 32' 93.88", 1179 m, 14. 05. 2019, 1 female; Koşirtı, N 38° 47' 07.12", E 40° 49' 06.97", 1277 m, 10. 05. 2019, 1 female; Meşedalı, N 38° 47' 07.96", E 40° 37' 31.11", 1002 m, 14. 05. 2019, 1 female; Soğukpınar, N 38° 42' 31.51", E 40° 25' 46.40", 1162 m, 15. 05. 2019, 1 female; Şehitköy, N 38° 42' 04.23", E 40° 30' 41.61", 1147 m, 14. 05. 2019, 1 female; Şeyhismail, N 38° 43' 53.35", E 40° 21' 19.62", 1177 m, 15. 05. 2019, 1 female; Karlıova: Ilıpmar, N 39° 22' 44.70", E 40° 56' 47.05", 1808 m, 06. 06. 2019, 1 male; Kiğı: Demirkanat, N 39° 13' 18.45", E 40° 20' 42.25", 1457 m, 05. 07. 2019, 1 female; N 39° 13' 16.52", E 40° 20' 37.14", 1454 m, 12. 06. 2019, 1 female; Duranlar, N 39° 16' 17.12", E 40° 20' 47.91", 1304 m, 12. 06. 2019, 1 female; Solhan: N 38° 57' 32.25", E 41° 00' 51.26", 1338 m, 24. 05. 2019, 1 female; Gündüz, N 38° 16' 29.97", E 40° 55' 10.39", 911 m, 29. 04. 2019, 1 male; Yedisu: Karapolat, N 39° 26' 55.53", E 40° 29' 30.47", 1440 m, 02. 06. 2019, 1 female; Diyarbakır: Bismil: Başaklı, N 37° 49' 42.46", E 40° 28' 49.43", 558 m, 30. 03. 2019, 1 female; Cermik: Bahçe, N 38° 66' 56.35", E 39° 23' 29.84", 826 m, 22. 04. 2019, 1 female; Gözerek, N 38° 21' 57.21", E 39° 46' 27.37", 1052 m, 15. 04. 2019, 1 female; Karakaya, N 38° 03' 24.42", E 39° 18' 54.30", 618 m, 13. 04. 2019, 1 female; Karataş, N 38° 04' 20.52", E 39° 24' 17.08", 677 m, 13. 04. 2019, 1 male; Korudağ, N 38° 05' 31.20", E 39° 17' 34.30", 897 m, 13. 04. 2019, 1 female; Çınar: Bozçalı, N 37° 45' 19.49", E 40° 21' 08.98", 669 m, 30. 03. 2019, 1 female; Çüngüş: Oyuklu, N 38° 13' 24.88", E 39° 22' 12.56", 1076 m, 19. 04. 2019, 1 female; Dicle: Kocaalan, N 38° 21' 39.51", E 39° 07' 09.51", 806 m, 20. 04. 2019, 1 female; Yeşilsirt, N 38° 20' 31.21", E 40° 01' 53.75", 724 m, 19. 04. 2019, 1 male; Yeşilyurt, N 38° 20' 06.24", E 40° 01' 53.98", 724 m, 19. 04. 2019, 1 male; Eğil: Ulubaş, N 38° 18' 57.92", E 40° 02' 15.77", 839 m, 19. 04. 2019, 1 female; N 38° 18' 57.60", E 40° 02' 14.45", 792 m, 14. 04. 2019, 1 female; Ergani: Çayköy, N 38° 11' 48.11", E 39° 48' 45.67", 979 m, 22. 04. 2019, 1 female; Çayırdere, N 38° 11' 40.80", E 39° 34' 19.42", 803 m, 21. 04. 2019, 1 male; Sağırlı, N 38° 15' 41.31", E 39° 41' 26.43", 899 m, 21. 04. 2019, 1 female; N 38° 15' 41.31", E 39° 41' 26.43", 899 m, 21. 04. 2019, 1 female; Salar, N 38° 15' 41.31", E 39° 41' 26.43", 899 m, 21. 04. 2019, 1 female; Yolköprü, N 38° 15' 03.79", E 39° 42' 03.03", 864 m, 21. 04. 2019, 1 male; Yolbulan, N 38° 13' 40.57", E 39° 37' 10.46", 983 m, 21. 04. 2019, 2 males; Hani: Bademli, N 38° 19' 41.62", E 39° 23' 29.84", 754 m, 21. 04. 2019, 1 female; Lice: Fisovaso, N 38° 21' 18.77", E 40° 34' 19.57", 899 m, 25. 04. 2019, 1 male; Kabakaya, N 38° 20' 21.67", E 40° 44' 26.39", 873 m, 28. 04. 2019, 1 male. Common. Hostplant unknown. East and Central European, Mediterranean, Caucasian and Anatolian.

Macrophya (Macrophya) rufipes (Linné, 1758): Bingöl: Genç: Tavus, N 38° 48' 08.61", E 40° 58' 08.43", 1893 m, 25. 05. 2019, 1 male. Frequent. Host plant: *Agrimonia eupatoria*. European, Anatolian and Persian.

Macrophya (Macrophya) superba Tischbein, 1852: Bingöl: Dikköy, N 38° 49' 21.02", E 40° 40' 33.96", 1010 m, 18. 05. 2019, 1 male. Frequent. North Mediterranean, Caucasian and Anatolian.

Macrophya (Macrophya) teutona (Panzer, 1799): Bingöl: Solhan: Dilektepe, N 38° 57' 04.70", E 40° 59' 77.74", 1288 m, 24. 05. 2019, 1 female. Sporadic. Host plant: *Euphorbia* spp. European and Anatolian.

Tenthredo (Elinora) asiatica (Enslin, 1910): Bingöl: Yeniköy, N 38° 50' 47.74", E 40° 37' 49.49", 1080 m, 25. 05. 2019, 1 male. Rare. Endemic to Turkey.

Tenthredo (Tenthredella) balteata Klug, 1817: Diyarbakır: Lice: Oyuklu, N 38° 19' 44.71", E 40° 45' 31.90", 939 m, 28. 04. 2019, 1 female. Rare in Turkey. Host plants: *Sorbus*, *Salix*, *Ribes*, *Spiraea*, *Rosa*, *Athyrium* and *Filipendula* spp. Also recorded from *Dasyphora fruticosa* and *Pteridium aquilinum*.

Tenthredo (Cephaleda) bifasciata ssp. *bifasciata* O.F. Müller, 1766: Bingöl: Büyükterkören, N 38° 50' 07.39", E 40° 33' 46.34", 1012 m, 20. 05. 2019, 1 male; Çeltiksuyu, N 38° 51' 06.77", E 40° 33' 56.61", 1013 m, 24. 05. 2019, 1 female; N 38° 52' 57.59", E 40° 35' 21.66", 1045 m, 20. 05. 2019, 1 female; Köklü, N 38° 55' 52.81", E 40° 38' 31.61", 1086 m, 17. 05. 2019, 1 female; Kiğı: Duranlar, N 39° 16' 17.12", E 40° 20' 47.91", 1304 m, 12. 06. 2019, 1 female; Solhan: Arakonak, N 38° 58' 40.46", E 41° 08' 31.48", 1775 m, 24. 05. 2019, 1 female; Yayladere: Günlük, N 39° 10' 09.98", E 40° 08' 20.42", 1156 m, 13. 06. 2019, 1 male; Diyarbakır: Lice: Dallica, N 38° 24' 14.68", E 40° 45' 51.13", 786 m, 12. 04. 2019, 1 male. Frequent. Host plant: unknown, probably *Aegopodium*.

Tenthredo (Maculedo) cinctipleuris (Enslin, 1910):

Material examined: Bingöl: Büyükterkören, N 38° 49' 49.46", E 40° 34' 28.59", 1009 m, 16. 05. 2019, 1 male. Rare Caucasian, Iranian and Anatolian.

Tenthredo (Cephaleda) costata Klug, 1817: Bingöl: Çeltiksuyu, N 38° 52' 16.89", E 40° 33' 45.63", 1017 m, 04. 05. 2019, 1 female; Sancak, N 39° 05' 37.56", E 40° 22' 38.07", 1585 m, 26. 05. 2019, 1 female; Genç: Gözütok, N 38° 46' 51.24", E 40° 41' 07.08", 1283 m, 18. 05. 2019, 1 female; Sırmalıoya, N 38° 38' 04.553", E 40° 11' 28.70", 1858 m, 17. 05. 2019, 1 male; Soğukpınar, N 38° 42' 59.41", E 40° 27' 11.55", 1162 m, 15. 05. 2019, 1032 m, 1 female; Solhan: N 38° 57' 06.75", E 41° 02' 04.00", 1321 m, 24. 05. 2019, 1 male; Yedisu: Dinarbey, N 39° 22' 03.92", E 40° 39' 21.11", 1831 m, 06. 05. 2019, 1 female; Güzgülü, N 39° 26' 17.68", E 40° 25' 05.83", 1424 m, 02. 06. 2019, 1 female; Kabaoluk, N 39° 25' 55.09", E 40° 29' 59.21", 1412 m, 06. 07. 2019, 1 female; Diyarbakır: Çermik: Karakaya, N 38° 02' 48.67", E 39° 19' 62.05", 618 m, 15. 04. 2019, 1 female; Kayagediği, N 38° 09' 16.86", E 39° 34' 28.52", 1085 m, 15. 04. 2019, 1 female; Dicle: Bozbaba, N 38° 20' 14.51", E 40° 06' 21.15", 829 m, 20. 04. 2019, 1 female; Hani: Döğer, N 38° 21' 59.83", E 40° 13' 08.19", 750 m, 21. 04. 2019, 1 male; Lice: Angül, N 38° 24' 18.81", E 40° 33' 55.14", 879 m, 18. 04. 2019, 1 female; Bağlan, N 38° 20' 03.91", E 40° 43' 41.69", 835 m, 28. 04. 2019, 1 male. Frequent. Host plants: *Chondrilla juncea* and *Ch. ramosissima*. North-Mediterranean and Anatolian. Central Europe is the northern border of its distribution where it appears occasionally.

Tenthredo (Elinora) dahlui Klug, 1817: Diyarbakır: Hani: Uzunlar, N 38° 24' 34.34", E 40° 27' 03.41", 923 m, 27. 03. 2019, 1 female. Frequent. Host plant: unknown. Central and East European, East-mediterranean and Anatolian species.

Tenthredo (Zonuledo) distinguenda ssp. *distinguenda* (Stein, 1885): Bingöl: Ağaçyolu, N 38° 56' 49.59", E 40° 31' 38.93", 1555 m, 22. 05. 2019, 1 female; İncesuyu, N 38° 51' 51.50", E 40° 38' 09.08", 1095 m, 25. 05. 2019, 1 female; Yedisu: Ayanoglu, N 39° 77' 29.75", E 40° 25' 49.65", 1402 m, 02. 06. 2019, 1 female; Diyarbakır: Hazro: Uzunargıt, N 38° 14' 07.05", E 40° 46' 58.96", 942 m, 04. 04. 2019, 1 female. Frequent. Host plant: *Hypericum perforatum*. European and Anatolian.

Tenthredo (Zonuledo) distinguenda ssp. *hyrcana* Benson, 1968: Bingöl: Balıklıçay, N 39° 02' 35.06", E 40° 22' 53.35", 1548 m, 12. 06. 2019, 1 female; Solhan: N 38° 57' 36.43", E 41° 00' 48.83", 1333 m, 24. 05. 2019, 1 male; Yayladere: Zeyneli, N 39° 11' 49.13", E 40° 11' 51.78", 1202 m, 13. 06. 2019, 1 female; Diyarbakır: Lice: Budak, N 38° 24' 14.68", E 40° 45' 51.13", 786 m, 11. 04. 2019, 1 female; Yalaza, N 38° 20' 24.89", E 40° 40' 19.71", 963 m, 01. 04. 2019, 1 female. Frequent. Caucasian, Iranian and Anatolian. Host plant unknown.

Tenthredo (Cephaledo) excellens (Konow, 1886): Bingöl: Çayağzı, N 38° 46' 58.60", E 40° 33' 26.53", 992 m, 20. 05. 2019, 1 female; Çeltiksuyu, N 38° 51' 15.71", E 40° 33' 28.63", 1013 m, 04. 05. 2019, 1 female; Çiçekdere, N 38° 57' 05.81", E 40° 27' 49.41", 1640 m, 22. 05. 2019, 1 female; Inalı, N 38° 52' 22.49", E 40° 32' 05.49", 1053 m, 19. 05. 2019, 1 female; Kartal, N 39° 01' 05.56", E 40° 23' 56.68", 1013 m, 04. 05. 2019, 1 female; Adaklı: N 39° 12' 59.81", E 40° 28' 09.21", 1360 m, 12. 06. 2019, 1 female; Kamışgölü, N 39° 12' 56.17", E 40° 25' 34.99", 1262 m, 11. 06. 2019, 1 female; Genç: Soğukpınar, N 38° 42' 23.51", E 40° 25' 46.40", 1162 m, 15. 05. 2019, 1 female; Kiğı: Darköprü, N 39° 11' 58.56", E 40° 18' 02.73", 1222 m, 05. 07. 2019, 1 female; Solhan: Arakonak, N 38° 57' 19.42", E 41° 07' 02.48", 1589 m, 24. 05. 2019, 1 female. Frequent. Host plant: *Lactuca serriola*. Mediterranean, Central European, Middle-Eastern, Caucasian and Anatolian.

Tenthredo (Zonuledo) flavipennis Brullé, 1832: Bingöl: Genç: Şehitköy, N 38° 42' 04.23", E 40° 30' 41.61", 1147 m, 14. 05. 2019, 1 female. Sporadic. Host plant: unknown. North Mediterranean, Anatolian and Central-European.

Tenthredo (Elinora) krausi Blank & Taeger, 2006: Bingöl: Adaklı: Hasbağlar, N 39° 11' 01.77", E 40° 22' 23.77", 1569 m, 12. 06. 2019, 1 male; Diyarbakır: Hani: Belen, N 38° 24' 55.61", E 40° 22' 14.45", 931 m, 27. 03. 2019, 1 male; Lice: Dallica, N 38° 23' 36.64", E 40° 47' 27.94", 790 m, 20. 04. 2019, 1 male. Frequent. Host plant: unknown. Middle Eastern-Anatolian, known from Syria and Turkey.

Tenthredo (Elinora) persica (André, 1882): Diyarbakır: Bismil: Ambar, N 37° 50' 41.20", E 40° 33' 30.69", 548 m, 20. 03. 2019, 1 male; Çermik: Başarı Bucağı, N 38° 09' 16.86", E 39° 34' 28.52", 699 m, 15. 04. 2019, 1 female. Sporadic. Iranian, Anatolian and Caucasian. Known from Turkey, Iran and Russia. Host plant unknown.

Tenthredo (Zonuledo) zonula Klug, 1817: Bingöl: Çayboyu, N 38° 53' 57.77", E 40° 30' 52.08", 1083 m, 05. 05. 2019, 1 female; Çeltiksuyu, N 38° 51' 06.77", E 40° 33' 56.61", 1013 m, 24. 05. 2019, 1 female; N 38° 51' 20.68", E 40° 34' 04.37", 1015 m, 04. 05. 2019, 1 male; N 38° 51' 06.77", E 40° 33' 56.61", 1013 m, 24. 05. 2019, 1 female; Çevrimpınar, N 38° 55' 49.40", E 40° 22' 12.63", 1318 m, 15. 05. 2019, 1 female; Düzyayya, N 38° 48' 05.38", E 40° 28' 57.28", 1373 m, 06. 05. 2019, 1 female; Elmalı, N 39° 01' 00.57", E 40° 43' 12.15", 1286 m, 05. 05. 2019, 1 male; Kardeşler, N 38° 54' 33.91", E 40° 37' 10.63", 1083 m, 19. 05. 2019, 1 female; Adaklı: Karaçubuk, N 39° 11' 48.76", E 40° 28' 28.42", 1418 m, 06. 07. 2019, 1 male; Karlıova: Kalencik, N 39° 09' 14.89", E 40° 54' 69.47", 1772 m, 31. 05. 2019, 1 female; Kiğı: Duranlar, N 39° 15' 46.46", E 40° 21' 01.32", 1207 m, 13. 06. 2019, 1 female; Solhan: Çermük, N 38° 59' 39.49", E 40° 50' 40.75", 1776 m, 26. 05. 2019, 1 female; Dilektepe, N 38° 57' 04.85", E 41° 00' 27.10", 1291 m, 24. 05. 2019, 1 male; N 38° 54' 04.70", E 40° 59' 47.74", 1288 m, 24. 05. 2019, 1 male; Yenibaşak Bucağı, N 38° 48' 06.69", E 41° 00' 45.85", 1481 m, 25. 05. 2019, 1 male; Yedisu: Şenköy, N 39° 25' 17.82", E 40° 31' 48.37", 1493 m, 06. 07. 2019, 1 male; Diyarbakır: Çermik: Bahçe, N 38° 06' 12.65", E 39° 23' 43.79", 833 m, 27. 03. 2019, 1 male; Ergani: Değirmendere, N 38° 20' 48.68", E 39° 42' 45.71", 866 m, 24. 03. 2019, 1 female; Hani: Kırım, N 38° 23' 44.75", E 40° 26' 24.13", 863 m, 25. 04. 2019, 1 male; Lice: Dolunay, N 38° 19' 48.68", E 40° 40' 41.33", 1018 m, 25. 04. 2019, 1 male. Common. Host plant: *Hypericum perforatum*. West Palaearctic.

Tenthredopsis albonotata (Brullé, 1832): Bingöl: Ağaçeli, N 38° 56' 38.01", E 40° 43' 08.09", 1315 m, 26. 05. 2019, 1 female; Karlıova: Hacılar, N 39° 05' 01.63", E 40° 49' 21.67", 1417 m, 31. 05. 2019, 1 female; Diyarbakır: Hantepe, N 38° 05' 59.83", E 40° 09' 29.20", 649 m, 23. 03. 2019, 1 male; Bismil: Tatlıçayır, N 37° 59' 33.41", E 40° 36' 24.42", 620 m, 19. 03. 2019, 1 female; Hazro: Kavaklı, N 38° 15' 57.72", E 40° 41' 31.16", 1335 m, 04. 04. 2019, 1 female; Hani: Topçular, N 38° 27' 51.53", E 40° 24' 31.26", 930 m, 27. 03. 2019, 1 female. Frequent. Host plant: unknown. East-Mediterranean and Anatolian.

Tenthredopsis annuligera (Eversmann, 1847): Bingöl: Beyaztoprak, N 38° 55' 32.50", E 40° 38' 24.50", 1089 m, 21. 05. 2019, 1 female; Kaleönü, N 38° 53' 28.91", E 40° 33' 25.74", 1025 m, 21. 05. 2019, 1 female; Genç: Sülünkaş, N 38° 49' 38.68", E 40° 56' 57.07", 1647 m, 25. 05. 2019, 1 female; Yedisu: Şenköy, N 39° 25' 20.03", E 40° 31' 59.60", 1483 m, 02. 06. 2019, 1 female; Diyarbakır: Çüngüş: Akbaşak, N 38° 15' 47.59", E 39° 18' 27.74", 1372 m, 24. 03. 2019, 1 male; Hazro: Ormankaya, N 38° 18' 13.20", E 40° 44' 29.38", 1099 m, 19. 04. 2019, 1 female; Silvan: Dolapdere, N 38° 18' 30.36", E 40° 53' 09.11", 910 m, 05. 04. 2019, 1 female. Frequent. Host plant: unknown. East-Mediterranean, Anatolian and East-European.

Results

181 specimens of 45 species were collected from Bingöl and Diyarbakır provinces of Turkey.

The earliest capture of sawflies was on 10th of March, the last was on 6th of July. From the 45 collected species, 40 species are flower visitors, which is an extremely high proportion and probably typical for the Anatolian biogeographic region. The measured population density is extremely low, one day from one sampling site only 1-2 specimens of one species were captured which seems to be specific for the Anatolian biogeographic region either.

Dominant species

The most frequently collected species are: *Macrophya postica* (Brullé, 1832) with 39 specimens, *Tenthredo zonula* Klug, 1817 with 20 and *Tenthredo costata* Klug, 1817 with 15. These 3 species comprise 41% of the total collected material.

Rare and interesting species

Cephus pulcher Tischbein, 1852: Kiğı: Duranlar, N 39° 16' 17.12", E 40° 20' 47.91", 1304 m, 12. 06. 2019, 1 female. From Turkey, we have only one other record: Aksaray: Güzelyurt, 38°16'N 34°25'E, 1785 m, 02. 06. 2002, 1 female (MUTLU 2019). It is distributed in Austria, Czech Republic, Hungary, Poland, Russia, Slovakia, Ukraine and Uzbekistan. This species is described from Hungary, based on 2 male specimens sent by Mr. Kovács, collection manager of the Hungarian National Museum, Natural History to Tischbein.

Arge auripennis Konow, 1891: New record for Turkey. Diyarbakır: Lice: Türel, N 38° 25' 09.84", E 40° 53' 54.09", 738 m, 12. 04. 2019, 1 female. Rare. So far, it is known from Croatia, Italy, Romania and Slovenia. We have data from the Carpathian Basin from Segesvár, Kolozs county and Nagyszeben (formerly Hungary: Transylvania, now Romania). The Croatian record is indefinite. The Italian specimen was collected next to Trieste at Santa Croce; Kirchenbauer published it as *Hylotoma graeffei* Kriechbaumer,

1892. From Slovenia, SCHEDL (2017) reported it from Istria: Čičarija, s.v. Vodice, Slavnik W Podgorje and Vodice. ÇALMAŞUR & ÖZBEK 2013 erroneously referred BENSON 1968 this way: "*Distribution: Europe, Syria, Turkey, Transcaucasia* (BENSON 1968)". BENSON (1968) never recorded it from Turkey, he listed this species only as potential species for Turkey: "*Arge auripennis* Konow S. E. Europe, Syria and Transkaukasia" see similar mistake in ÇALMAŞUR & ÖZBEK 2013 at *Arge pallidinervis* Gussakovskij below.

Arge pallidinervis Gussakovskij, 1935: Bingöl: Adaklı: Güngörsün, N 39° 15' 20.29", E 40° 28' 18.93", 1539 m, 12. 06. 2019, 1 male; Yayladere: Boğazköy, N 39° 15' 13.64", E 40° 03' 32.56", 1772 m, 14. 06. 2019, 1 male. Improper citation by ÇALMAŞUR & ÖZBEK 2013: „Distribution: Transcaucasia, Turkey (BENSON 1968, LISTON 1995).” The original citation by BENSON (1968) is only "Transcaucasia" without mentioning Turkey and LISTON (1995) reported it only from Ukraine. Benson, in his monograph, listed not only Turkish sawflies, but as he wrote in the introduction part: "*The present work on the sawflies, ..., has been broadened to include material from other countries bordering the Eastern Mediterranean*".

Arge yildirimi Haris & Kaplan, 2021: Recently described species, see HARIS & KAPLAN (2021). Specimens were captured in the montane region of Anatolia, Diyarbakır province, between 733 and 1124 meters above sea level from 28. 03. till 28. 04. Probably frequent species. This species easy to confuse with 3 other Turkish Argidae species, namely: *Kokujewia ectrapela* Konow, 1902, *Kokujewia clementi* Zirngiebl, 1949 and *Arge frivaldszkyi* (Tischbein, 1852). The 2 *Kokujewia* species differs from *Arge yildirimi* having 3 cubital cells and hind tibia smooth, while *Arge yildirimi* similar to other *Arge* species, has 4 cubital cells and hind tibia with long submedian spine. *A. yildirimi* is most similar to *Arge frivaldszkyi* (Tischbein, 1852). These two species differ as follows: the frontal basin of the *A. yildirimi* is triangularly elongated down to the level of the antennal sockets and clearly carinate; in *A. frivaldszkyi* this elongate and carinate frontal basin is missing. In the fore wing of *A. yildirimi*, veins basalis and cubitalis meet at one point on the subcosta, and the wings are weakly infumated, with subcostal area strongly and strikingly infumate, veins, including costa, subcosta and stigma black. In contrast, the wings of *A. frivaldszkyi* are uniformly infumated, and the subcostal area is not darker than the other parts of the wing, costa and subcosta yellow and basalis and cubitalis of anterior wing reach the subcosta having distance equal with subcostal cross-vein. The last abdominal segment in *A. yildirimi* is bluish black, while in *A. frivaldszkyi* it is orange, only the ovipositor is black. Finally, all dark colour in *A. yildirimi* is black with strong blue lustre, while in *A. frivaldszkyi* it is black without any metallic lustre.

Dolerus (Dolerus) hispanicus Mocsáry, 1881: Bingöl: Genç: Döşekkaya, N 38° 38' 11.11", E 40° 23' 07.23", 1015 m, 16. 05. 2019, 1 male; Yayladere: Aydınlar, N 39° 10' 24.61", E 40° 03' 53.16", 1626 m, 14. 06. 2019, 1 female; Diyarbakır: Lice: Tepe, N 38° 23' 47.61", E 40° 44' 15.82", 799 m, 20. 04. 2019, 1 male. It was described from Spain and also recorded from Iran and Morocco. New record for Turkey. Probably frequent in Anatolia.

Athalia dimidiata Konow, 1891: Rare. From Turkey, so far, we have only indefinite data: "Turkey: endemic" (BENSON 1968). Actually, it is not endemic, since the locus typicus is "Araxes-Thal bei Ordubad" (KONOW 1891). Ordubad is not in Turkey, it is in Azerbaijan (mistake in BENSON 1968). Therefore it is new record for Turkey.

Tenthredo (Elinora) asiatica (Enslin, 1910): Rare. Probably, it is endemic to Turkey. So far, we had only indefinite data: "Kleinasien" . Our record: Bingöl: Yeniköy, N 38° 50' 47.74", E 40° 37' 49.49", 1080 m, 25. 05. 2019, 1 male, is the first precise data for this species.

Endangering factors

Intensive beekeeping

Intensive beekeeping creates increased competition for other native flower visitors, including many sawflies, displacing them from their feeding habitats.

The intensive beekeeping is typical for the following areas: Diyarbakır: Karpuzlu, Dicle: Biçer, Bingöl: Güvercinlik, Solhan: Gündüz.

Invasive plants

In the extensively applied traditional farming, the high number of sheep and goats are able to control the invasive plants. In the examined areas, we observed the following invasive plants: *Euphorbia macroloda*, *Euryops pectinatus*, *Roman chamomile* and *Grammasciadium macrodan*.

Intensive grazing.

Normally, traditional farming is helpful to control the invasive plants and preserve pastures and meadows preventing the pioneer plant-associations to occupy these areas. Unfortunately, we observed large flocks of sheep and goats that may severely impact the native vegetation around the following villages: Diyarbakır: Karpuzlu, Solhan: Gündüz, Çermik: Korudağ, Çermik: Bahçe, Çermik: Karakaya, Çınar: Bozçalı, Dicle: Yeşilsu and Ergani: Yolköprü.

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