

The Symphyta Fauna of Ballica Cave Nature Park in Tokat Province, Türkiye with description of a new species (Hymenoptera: Symphyta)

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Abstract: The sawfly fauna of Ballica Cave Nature Park was investigated in 2024. *Caliroa cothurnata* (Serville, 1823) is a new species for the fauna of Türkiye. A new species, *Macrophya pontica* spec. nov., is described and compared to *Macrophya africana megatlantica* Lacourt, 1991, *Macrophya erythrocnema* Costa, 1859, and *Macrophya diversipes* (Schrank, 1782). The unknown male of *Tenthredopsis harveyi* Benson, 1968 is also described.

Keywords: sawflies, Türkiye, *Macrophya pontica* spec. nov.

Introduction

Ballica Cave Natural Park is located in the Pazar District of Tokat Province, within the Central Black Sea Geographical Region. This area lies at the intersection of two biogeographic regions: the Anatolian and the Black Sea Biogeographic Regions (EEA, 2025). The park stretches between latitudes 40°11'42" and 40°16'23" North, and longitudes 36°16'12" and 36°21'32" East, covering a total area of 32.98 km².

Nestled on the slopes of Akdağ, the park's elevation ranges from 681 to 1850 meters. It falls within the transition zone between the Central Black Sea and Central Anatolia regions, resulting in a blend of climatic characteristics. The northern parts exhibit the Central Black Sea climate, while the southern sections – especially beyond Akdağ – display features of the Central Anatolia climate.

Botanically, the research area hosts 647 taxa from 81 plant families. The most common families in the region include Compositae (Asteraceae), Leguminosae (Fabaceae), Labiatae (Lamiaceae), Gramineae (Poaceae), Cruciferae (Brassicaceae), Caryophyllaceae, Rosaceae, Boraginaceae, Umbelliferae (Apiaceae), and Rubiaceae (DOĞAN et al. 2016).

This study presents the initial findings on the Symphyta fauna in Ballica Cave Nature Park and its vicinity.

Material and methods

This research was conducted between May and September 2024 to document the sawfly fauna in Balıca Cave Nature Park and its surroundings, located in Tokat Province, Türkiye. Specimens were collected using Malaise traps set at three sites within the park. The collected specimens were immediately preserved in 75% ethanol, then dried, pinned, labeled, and stored in a reference collection.

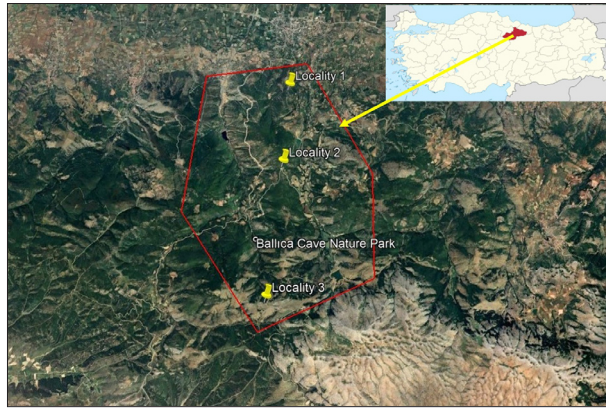


Fig. 1: Map of the investigated area

Localities:

Tokat: Pazar, Dereçaylı: 40°15'36" N, 36°17'34" E, altitude: 735 m. This site is characterized by predominantly coniferous vegetation (Fig. 2).

Tokat: Pazar, Ocaklı: 40°14'37" N, 36°18'13" E, altitude: 1170 m. This site features meadows and oak trees (Fig. 3).

Tokat: Pazar, Ovacık: 40°12'43" N, 36°18'58" E, altitude: 1450 m. This site is dominated by steppe vegetation (Fig. 4).

Species identification was conducted using the comprehensive works of ZHELOCHOVTSEV (1988), LACOURT (2020), MACEK et al. (2020), GUSSAKOVSKIJ (1935, 1947), and BENSON (1968). Additional papers by Lacourt were consulted to analyze newly identified species. Data on species distribution and host plant records were obtained from monographs and books by SUNDUKOV (2017), LACOURT (2020), MACEK (2020), BENSON (1968), as well as various other publications on the Turkish fauna. For the analysis of the new species, the monographs by ENSLIN (1910), LACOURT (2020), BENSON (1968), papers by LACOURT (1991, 2005), ERMOLENKO (1977), ZOMBORI (2016), and many others were studied.



Fig. 2: Coniferous forest at Dereçaylı



Fig. 3: Meadow with oak trees at Ocaklı



Fig. 4: Steppe at Ovacık

Results

List of species

Pamphiliidae

Neurotoma fausta (Klug, 1808): Ocaklı, 01. 06 - 15. 06. 2024, 1 female. Sporadic. Host plant unknown.

Megalodontesidae

Megalodontes phaenicius (Lepeletier, 1823): Ocaklı, 01. 06 - 15. 06. 2024, 1 female. Frequent East-Mediterranean species. Host plant unknown.

Argidae

Arge melanochra (Gmelin, 1790): Dereçaylı, 15. 06 - 02. 07. 2024, 1 male; Ovacık, 01. 06 - 15. 06. 2024, 1 male; Ovacık, 15. 06 - 02. 07. 2024, 1 male; Ovacık, 02. 07 - 16. 07. 2024, 1 male. Frequent. Host plant: *Crataegus oxyacantha*.

Arge nigripes (Retzius, 1783): Ovacık, 16. 07 - 31. 07. 2024, 1 male. Frequent. Host plants: *Rosa* spp.

Tenthredinidae

Allantinae

Allantus (Emphytus) cinctus (Linné, 1758): Dereçaylı, 09. 05 - 01. 06. 2024, 1 female, 1 male; Ocaklı, 09. 05 - 01. 06. 2024, 1 male; Ovacık, 01. 06 - 15. 06. 2024, 4 males; Ovacık, 16. 07 - 31. 07. 2024, 2 females. Common. Host plants: *Rosa* spp.

Allantus (Emphytus) cingulatus (Scopoli, 1763): Ovacık, 09. 05 - 01. 06. 2024, 2 females, 1 male; Ovacık, 01. 06 - 15. 06. 2024, 2 females, 2 males. Frequent. Larva on *Fragaria* and *Rosa* spp.

Allantus (Emphytus) didymus (Klug, 1818): Dereçaylı, 09. 05 - 01. 06. 2024, 2 females, 5 males; Dereçaylı, 01. 06 - 15. 06. 2024, 2 males; Ocaklı, 09. 05 - 01. 06. 2024, 5 males; Ocaklı, 01. 06 - 15. 06. 2024, 1 male; Ocaklı, 15. 06 - 02. 07. 2024, 1 male; Ocaklı, 31. 07 - 14. 08. 2024, 1 male; Ovacık, 01. 06 - 15. 06. 2024, 1 male; Ocaklı, 02. 07 - 16. 07. 2024, 1 male. Frequent. Larva on *Sanguisorba minor*; old records from *Rubus* and *Rosa* spp. need checking.

Allantus (Emphytus) laticinctus (Serville, 1823): Ovacık, 09. 05 - 01. 06. 2024, 1 female. Sporadic. Larva on *Rosa* spp.

Allantus (Allantus) viennensis (Schränk, 1781): Dereçaylı, 09. 05 - 01. 06. 2024, 1 female; Dereçaylı, 01. 06 - 15. 06. 2024, 2 females; Dereçaylı, 15. 06 - 02. 07. 2024, 1 male; Ocaklı, 01. 06 - 15. 06. 2024, 1 female; Ocaklı, 02. 07 - 16. 07. 2024, 1 female; Ovacık, 01. 06 - 15. 06. 2024, 1 female; Ovacık, 15. 06 - 02. 07. 2024, 1 female. Host plants: *Rosa* spp. Frequent.

Athalia cordata Serville, 1823: Dereçaylı, 09. 05 - 01. 06. 2024, 1 male; Ocaklı, 09. 05 - 01. 06. 2024, 1 male; Ovacık, 01. 06 - 15. 06. 2024, 1 male. Frequent. Larva on *Misopates orontinum*, *Antirrhinum majus*, *Ajuga reptans*, *Teucrium scorodonia* and *Plantago* spp.

Athalia liberta (Klug, 1815): Ovacık, 01. 06 - 15. 06. 2024, 1 female. Frequent. Feeding on *Alliaria petiolata*, *Arabidopsis thaliana*, *Cardamine hirsuta* and *Sisymbrium officinale*.

Athalia rufoscutellata Mocsáry, 1879: Ocaklı, 09. 05 - 01. 06. 2024, 1 female. Frequent. Host plant unknown.

Taxonus sticticus (Klug, 1817): Ocaklı, 09. 05 - 01. 06. 2024, 1 male; Ovacık, 09. 05 - 01. 06. 2024, 3 females, 2 males; Dereçaylı, 01. 06 - 15. 06. 2024, 1 female. Frequent. Host plant unknown.

Heterarthrinae

Caliroa cerasi (Linné, 1758): Ocaklı, 01. 06 - 15. 06. 2024, 1 female. Frequent. Larva on *Pyrus*, *Malus*, *Prunus*, *Crataegus*, *Sorbus*, *Rosa*, *Cydonia*, *Mespilus*, *Rubus*, *Amygdalus*, *Cerasus*, *Amelanchier*, *Pyracantha*, *Cotoneaster* rarely *Quercus* and *Salix* spp.

Caliroa cothurnata (Serville, 1823): Ovacık, 16. 07 - 31. 07. 2024, 1 female. New record for the fauna of Türkiye. Sporadic. Larvae on *Quercus* spp.

Blennocampinae

Halidamia affinis (Fallén, 1807): Dereçaylı, 09. 05 - 01. 06. 2024, 4 females; Dereçaylı, 15. 06 - 02. 07. 2024, 5 females; Dereçaylı, 15. 06 - 02. 07. 2024, 1 female; Ocaklı, 09. 05 - 01. 06. 2024, 1 female; Ocaklı, 01. 06 - 15. 06. 2024, 1 female; Ovacık, 01. 06 - 15. 06. 2024, 1 female. Frequent. Host plants: *Galium aparine* and *G. molugo*.

Tenthredininae

Aglaostigma (Astochus) fulvipes (Scopoli, 1763): Ovacık, 09. 05 - 01. 06. 2024, 1 male. Frequent. Larva on *Galium mollugo* and *G. verum*.

Macrophya (Macrophya) annulata (Geoffroy, 1785): Ovacık, 01. 06 - 15. 06. 2024, 1 male. Frequent. Larva on *Potentilla reptans*, *Origanum vulgare*, *Euphorbia*, *Rosa*, *Rubus* and *Sambucus* spp.

Macrophya (Macrophya) blanda (Fabricius, 1775): Dereçaylı, 09. 05 - 01. 06. 2024, 7 females; Ocaklı, 09. 05 - 01. 06. 2024, 2 females, 1 male; Ocaklı, 01. 06 - 15. 06. 2024, 5 females. Frequent. Larva on *Fragaria*, *Rubus* spp. and *Potentilla reptans*.

Macrophya pontica sp. n.: Ovacık, 01. 06 - 15. 06. 2024, 1 female.

Macrophya (Macrophya) diversipes (Schränk, 1782): Ocaklı, 09. 05 - 01. 06. 2024, 2 females; Ocaklı, 01. 06 - 15. 06. 2024, 1 female; Ovacık, 01. 06 - 15. 06. 2024, 1 female; Ovacık, 15. 06 - 02. 07. 2024, 1 female. Frequent. Host plant unknown.

Macrophya (Macrophya) duodecimpunctata (Linné, 1758): Ocaklı, 09. 05 - 01. 06. 2024, 2 females. Frequent. Host plants: *Graminae*, *Cyperaceae* and *Carex* spp.

Macrophya (Macrophya) montana (Scopoli, 1763): Ocaklı, 01. 06 - 15. 06. 2024, 1 male. Common. Host plant: *Rubus caesius*.

Macrophya (Pseudomacrophya) punctumalbum (Linné, 1767): Dereçaylı, 02. 07 - 16. 07. 2024, 1 female. Sporadic. Host plants: *Fraxinus* spp. and *Ligustrum* spp.

Tenthredo (Maculedo) maculata Geoffroy, 1785: Ocaklı, 09. 05 - 01. 06. 2024, 1 female. Sporadic. Host plants: *Brachypodium* spp. and *Dactylis* spp.

Tenthredo (Zonuledo) zonula Klug, 1817: Ovacık, 01. 06 - 15. 06. 2024, 1 male. Frequent. Host plant: *Hypericum perforatum*.

Tenthredopsis annuligera (Eversmann, 1847): Ovacık, 09. 05 - 01. 06. 2024, 1 female, 9 males; Ovacık, 01. 06 - 15. 06. 2024, 1 male. Frequent. Hostplant unknown.

Tenthredopsis harveyi Benson, 1968: Ovacık, 09. 05 - 01. 06. 2024, 1 male. Rare, probably local endemism. Hostplant unknown.

Tenthredopsis litterata (Geoffroy, 1785): Ocaklı, 09. 05 - 01. 06. 2024, 1 male, Ocaklı, 01. 06 - 15. 06. 2024, 1 female; Ovacık, 01. 06 - 15. 06. 2024, 3 females, 2 males. Frequent. Larva on *Agrostis*, *Dactylis* and *Calamagrostis* spp.

Nematinae

Cladius (Priophorus) compressicornis (Fabricius, 1804): Ovacık, 31. 07 - 14. 08. 2024, 1 female. Frequent. Host plants: *Betula*, *Cotoneaster*, *Rubus*, *Sorbus*, *Prunus*, *Crataegus*, *Corylus*, *Fragaria* and *Rosa* spp., also *Laurus nobilis* and *Aronia arbutifolia*.

Cladius (Cladius) pectinicornis (Geoffroy, 1785): Dereçaylı, 09. 05 - 01. 06. 2024, 2 males; Dereçaylı, 15. 06 - 02. 07. 2024, 1 female; Ovacık, 09. 05 - 01. 06. 2024, 1 male; Ovacık, 01. 06 - 15. 06. 2024, 1 female, 3 males; Ovacık, 15. 06 - 02. 07. 2024, 2 males; Ovacık, 02. 07 - 16. 07. 2024, 1 female, 5 males; Ovacık, 16. 07 - 31. 07. 2024, 1 female, 12 males; Ovacık, 31. 07 - 14. 08. 2024, 4 males; Ovacık, 14. 08 - 30. 08. 2024, 1 male; Ocaklı, 01. 06 - 15. 06. 2024, 4 males; Ocaklı, 02. 07 - 16. 07. 2024, 1 female, 1 male; Ocaklı, 16. 07 - 31. 07. 2024, 2 males; Ocaklı, 31. 07 - 14. 08. 2024, 2 females, 1 male; Ocaklı, 14. 08 - 30. 08. 2024, 1 male. Common. Host plant: *Rubus* spp.

Pteronidea myosotidis (Fabricius, 1804) [*Euura myosotidis* (Fabricius, 1804)]: Ovacık, 01. 06 - 15. 06. 2024, 1 female. Common. Larval hosts: *Onobrychis* and *Trifolium* spp.

Description of the new species

Macrophya pontica **spec. nov.**

(Figs. 5 and 6)

Holotype: female: Tokat, Pazar, Ovacık, 40°12'43"N 36°18'58"E, 01. 06 - 15. 06. 2024, Malaise trap, steppe. (Deposited at the Rippl-Rónai Museum, Kaposvár)

Head and antenna black. White: scape, labrum, wide anterior margin of clypeus, V-shaped spot on mandible, palpi. Thorax black. White: hind margin of pronotum, tegula, median spot on mesopleuron, scutellum (except black upper scutellar margin). Cenchri brownish white. Anterior and middle legs white. Black: coxae, basal 2/3 of dorsal surfaces of anterior and middle femora, apical 2 tarsal segments. Hind coxa black, trochanter white. Base of hind femur white, most of its surface black, apical 1/4–1/3 reddish orange. Hind tibia reddish orange with yellow basal third. Hind tarsus yellow; 4th tarsal segment white, 5th tarsal segment brown to black. Wings pale brown infumate; stigma and costa yellow, venation blackish brown. Head and thorax covered with dense, short white pubescence, about 1/3× as long as diameter of anterior ocellus. Abdomen black. White: hind margin of tergite 1 (propodeum), lateral spot on tergite 3, wide hind margins of tergites 3–6, narrow hind margin of tergite 7. These margins medially interrupted. Wide, continuous hind margin of tergite 8 and tergite 9 entirely. Ovipositor black. Eyes strongly convergent. Distance between top of eyes : distance between bottom of eyes = 53 : 32. OOL : POL : OCL = 20 : 10 : 9. Postoccipital carina clear and complete. Ratios of antennal segments: 11 : 6 : 32 : 17 : 15 : 11 : 10 : 9 : 9. Antenna very short and wide. Maximal width of head in dorsal view : length of antenna = 17 : 24. Clypeal emargination wide and rounded, about 1/3× as deep as median length of clypeus. Gena linear; width of gena about 0.2× as wide as diameter of anterior ocellus. Head, including temples and vertex, moderately deeply and densely punctured with moderately large punctures, shiny. Interspaces about half as large as diameter of a puncture. Temple with shiny interspaces about 2× as large as diameter of a puncture. Clypeus shiny with moderately large, deep, sporadic punctures. Mesonotal lobes hardly shiny, nearly matte, very densely and uniformly punctured with moderately small punctures. Mesoscutellum with large, shallow, sporadic punctures, shiny. Upper third of mesopleuron roughly punctured with moderately deep, large punctures. Lower 2/3 densely and uniformly punctured as mesonotal lobes. Metapleural epimera without lobe. Abdominal tergites shiny with fine microstriation. Length of ovipositor : length of hind tibia = 61 : 105. Claw bifid; subapical tooth nearly as long as apical but wider. Length: 10.0 mm.

The new species belongs to subgenus *Macrophya* Dahlbom, 1835 (LACOURT 2020, ZOMBORI 2016).

Etymology: The specific name *pontica* refers to the region where the holotype was captured: the Black Sea (Pontus Euxinus) region.

Both authors are credited as authors of the new species: *Macrophya pontica* Can & Haris, **spec. nov.**

In ENSLIN (1910), the new species does not fit the key, since at couplet 17 we must choose whether the four anterior tibiae are yellow, red, or black. However, the new species has entirely white anterior and middle tibiae.

Superficially, the new species resembles *Macrophya chrysura* (Klug, 1817) (colour variation *albimacula*). However, the rich white coloration of the abdomen seen in the new species is completely absent in *M. chrysura*. *M. chrysura* has no white median spot on the mesopleuron, and the scape is black. In contrast, the new species shows a white spot on the mesopleuron, and the scape is white.

In appearance, with its rich white pattern, the new species resembles some *Pseudomacrophya* species like *Macrophya africana megatlantica* Lacourt, 1991. These species have parallel inner margins of the eyes and a wide gena. However, the inner



Fig. 5. Holotype of *Macrophya pontica* spec. nov. in dorsal view



Fig. 6. Holotype of *Macrophya pontica* spec. nov. in lateral view

margins of the eyes of the new species are strongly convergent, and the gena is linear. Additionally, the black hind femora, white scape, and lateral median white spot clearly differentiate the new species from these.

Among all *Macrophya* species, the closest is *Macrophya erythrocnema* Costa, 1859. Differences include the rich white coloration of the abdomen, scape, and mesopleuron, which is completely absent in *M. erythrocnema*. The hind legs also differ: in the new species, the hind femur has three colours (white, black, and red), whereas in *M. erythrocnema* the hind femur is entirely black.

Macrophya diversipes (Schränk, 1782) is a highly variable species; however, the very short antennae, white anterior legs, white mesopleural spot, and white scape distinguish the new species from all known variations of *M. diversipes*.

***The unknown male of Tenthredopsis harveyi* Benson, 1968**

The male *T. harveyi* closely resembles the female as described by BENSON (1968), but there are some differences. These include a white supraclypeal triangular area, a central spot on the scutellum, white mesoscutellar appendages. The subcosta is blackish brown, except for its basal part, which is similar to the female. *Tenthredopsis harveyi* was described from only one female from Bolu (BENSON 1968). Since the time of that description a second female has been found in Erzurum (ÇALMAŞUR & ÖZBEK 2004). This is the third published specimen.

Zoogeographic analysis

Three species have limited distribution areas: *Megalodontes phaenicius* (Lepeletier, 1823) is found in the East Mediterranean region, while *Tenthredopsis harveyi* Benson, 1968 and *Macrophya pontica* **spec. nov.** are likely local endemics. The remaining 29 species have broad geographic distributions, including the Holarctic, Palearctic, West Palearctic, and Cosmopolitan regions.

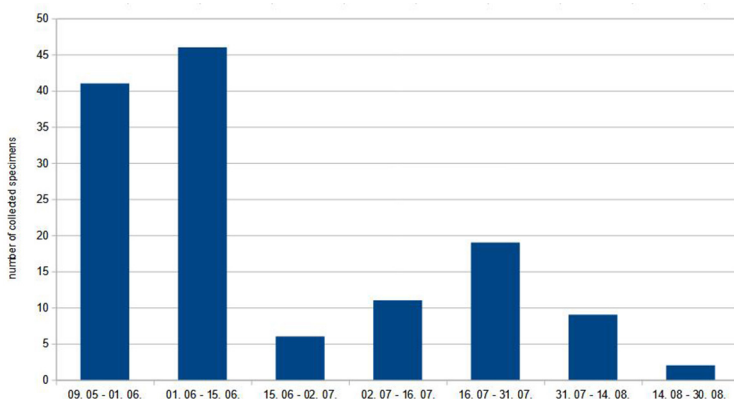


Fig. 7. Change in population numbers of sawflies in the investigated area

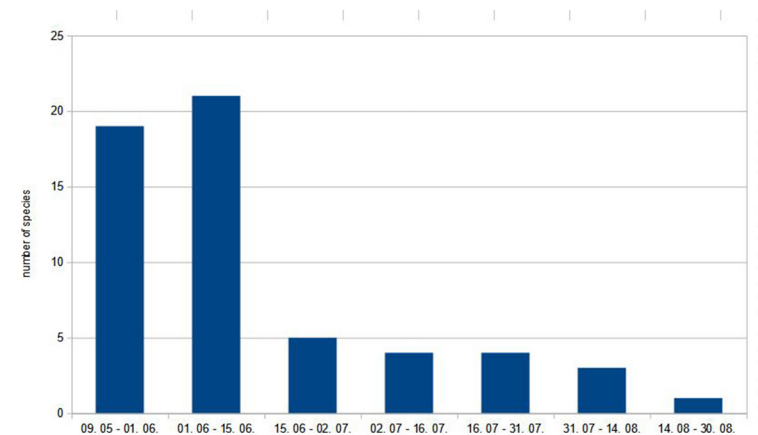


Fig. 8: Change in species richness of sawflies in the investigated area

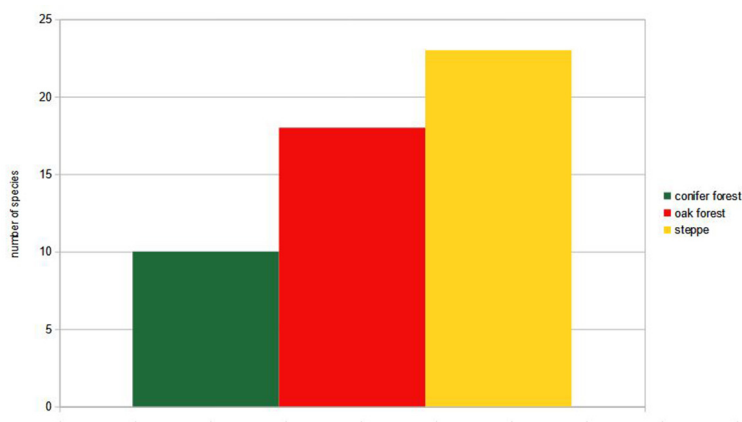


Fig. 9: Species richness of the three different habitats

Flight Period of Sawflies

Figures 7 and 8 show the temporal changes in population density and species richness. It can be seen that all values are low, similar to other landscape units in the Mediterranean region. Unfortunately, the traps were set out too late, so we missed the most exciting phase of the flight period of sawflies. Figure 9 compares the species richness of the three different habitats.

Endangering factors

Livestock farming is intensive in the region, alongside agricultural lands where tomatoes and beans are cultivated. The excessive use of agricultural chemicals, such as pesticides and herbicides, as well as overgrazing, can have harmful effects on the ecosystem. Additionally, Ballica Cave is a major tourist attraction in the area, drawing visitors for various recreational activities. Consequently, human-induced environmental pollution represents a significant threat to the region.

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