

Second contribution to the knowledge of sawflies of the Zselic Hills (Hymenoptera: Symphyta)

ATTILA HARIS

H-1076 BUDAPEST, Garay utca 19, HUNGARY attilaharis@yahoo.com

HARIS, A.: *Second contribution to the knowledge of sawflies of the Zselic Hills (Hymenoptera: Symphyta)*.

Abstract: 724 specimens of 119 species are recorded mainly from 2022 in the Zselic Hills. With this collecting, the known number of local sawfly fauna increased from 193 to 224 species. *Dolerus uliginosus* (Klug, 1818) is new record for the Hungarian fauna. Rare species are: *Pamphilius kontuniemii* Shinohara, 2003, *Pamphilius marginatus* (Serville, 1823), *Aprosthemata tardum* (Klug, 1814), *Dolerus coracinus* (Klug, 1818), *Dolerus megapterus* Cameron, 1881, *Dolerus subalatus* Kerensky, 1926, *Periclista lineolata* (Klug, 1816), *Parna tenella* (Klug, 1816), *Phyllocolpa oblita* (Serville, 1823), *Craesus latipes* (Villaret, 1832), *Pristiphora abbreviata* (Hartig, 1837), *Pristiphora nigriceps* (Hartig, 1840), *Pristiphora punctifrons* (Thomson, 1871) and *Pristiphora thalictri* (Kriechbaumer, 1884).

Keywords: *Hymenoptera*, *Symphyta*, Hungary, Zselic Hills, new records

Introduction

Zselic Hills (Figs. 6-9) with an area of about 1200 km² takes place in the Southern part of Transdanubia, on the border of Somogy and Baranya counties between Kaposvár and Szigetvár. From this 1 200 sq km, only 400 sq km, the Northern Zselic, was investigated. It is placed between 200–270 meters altitudes above sea level. The highest peak is the Raven's Nest (358 m). Its major natural values are the characteristic forest associations, with sub-Mediterranean flora and associated fauna. Typical forest associations are Alder carr woodland (*Alnion glutinosae-incanae*) in the lower territories; in the higher altitudes, oak-ash-elm mixed forests (*Fraxino pannonicae-Ulmetum*) cover the hills, the fragmented and very local, Illyrian beech forests (*Fagion illyricum*) are the special forest association of this region and finally the slowly expanding Turkey oak – silver lime mixed forests (*Tilio argenteae-Quercetum petraeae-cerris*) take place. Silver lime (*Tilia tomentosa*) gave name to the local nature park called Zselic Hills Silver Lime Nature Park (Zselici Ezüsthársas Natúrpark in Hungarian).

Its climate is cooler and wetter than its surroundings, with mild, sub-Mediterranean character. The shiny hours increase from west to east, from 1950 to 2000 in the west and from 2000 to 2050 in the east. The average annual temperature is between 9.8 and 10.7 °C. The annual temperature reaches its maximum in July, averaging 20–20.5 °C. The temperature distribution is balanced; the summer is evenly warm, as the average temperature in July nowhere rises above 21

°C. The winter is remarkably mild, with the number of frosty days ranging from 80 to 90 a year.

In cultural point of view, 10 neolithic settlements are known including some hill-forts in Szálacska and Visnye. At Lipótfá, Kisasszond and Simonfa, bronze age treasures were unearthed. Hedrehely was inhabited by Celts in the early iron age. From the Roman age, we have only sporadic archaeological findings, mainly from Kaposvár. In the middle age, the secular centres of the region were the Szigetvár castle in the South and the Ropolyútvár castle (predecessor of the present Kaposvár, seat of Somogy County) in the North. The religious centre was the Kaposszentjakab Abbey, after its decline, the Benedictine abbey at Kaposszentbenedek (part of Bárdudvarnok). In the Turkish era, the region nearly abandoned, depopulated and the present forests took place on the former cultivated lands.

Material and methods

We spent 32 days with collecting in 2022: 10 days in April, 8 days in May, 4 days in June, 4 days in July and 6 days in August. Voucher specimens are deposited in the entomological collection of Rippl-Rónai Museum, Kaposvár.

For identification, Zhelochovtsev's work on the sawflies of the European part of the former USSR (Zhelochovtsev, 1988), Lacourt's book on the European sawflies (Lacourt 2020) and the latest Czech and Slovak monograph (Macek et al. 2020) were consulted. We also used some recent revisions and works to make the identifications even more precise (Achterberg and Aartsen 1986, Blank & Ritzau 1998, Haris 2001, 2006, Haris and Gyurkovics 2014, Koch 1988, Prous, 2012, Taeger 1988, 2015 and Taeger et al. 2018). Whenever it was necessary (subfamily Nematinae and genus *Dolerus* and *Allantus*), male genitalia were dissected and studied. For the discussion of distribution of sawflies, we consulted the book of Roller and Haris titled *Sawflies of the Carpathian Basin, History and Current Research* (Roller & Haris 2008) augmented by other faunistic records from the Carpathian Basin (Ambrus 1978, Roller 1999, 2000, Roller et al. 2006, Haris 2001, 2009, 2010, 2011, 2012, 2018a, b, 2019, 2020 Haris and Gyurkovics 2012; Balázs and Haris 2019). For the host plants records, the latest book of Macek et al., 2020 was our source. The higher classification of sawflies applied in this work follows the *Hymenoptera* part of *Fauna Europaea* (Achterberg 2013).

For rare, frequent and sporadic species, we use the following categories:

- „rare species”: less or maximum 10 specimens were captured in Hungary in the last 160 years
- „sporadic species”: 11-30 specimens were captured in the last 160 years
- „frequent species”: more than 30 specimens were captured
- and finally „common species”: the 20 most frequent species, mostly insect pests. They are common everywhere.

We provide data for each species in the following order: place and date of capture, number of males or/and females. The first name of the locations are the name of the village. The second name is the so called toponym (inside the area of the village, where the given specimens were captured, mostly the name of the field, or forest, lake, spring, brook, etc., frequently historical names) to make the place of capture even more precise. We also provide coordinates in the „List of localities” part. Sometimes we provide three names like: Bárdudvarnok: Bányá: Szilosi-földek (Szilosi fields). In these cases, the first name of the present village (Bárdudvarnok), the second (Bányá) is part of the village, which was independent settlement before 1851 but its name is still in common use and the third name: Szilosi-földek (Szilosi fields), is the toponym (name of the meadow inside Bányá). Source of toponyms is the digitalized cadastral map of the Habsburg Empire from 1865 digitalized and published by Timár and Biszak 2010. Finally, since the last investigation, in 2009, outlying rural territories of several villages are changed (like Zselickisfalud: Ropoly Forest Reserve area (in 2009) now is part of Zselicszentpál).

List of collection sites:

Bányá: Lipótfai tározó, between 46°16'10.22"N, 17°40'10.32"E and 46°16'11.68"N, 17°40'2.91"E
 Bányá: Szilosi-földek, between 46°16'3.97"N, 17°39'57.69"E and 46°16'3.17"N, 17°39'49.17"E
 Böszénfa: Dugás-kút, between 46°14'7.27"N, 17°46'37.57"E and 46°14'18.81"N, 17°46'39.00"E
 Böszénfa: Ropolyi-tó, between 46°14'33.49"N, 17°46'28.95"E and 46°14'27.08"N, 17°46'33.18"E.
 Böszénfa: Ropoly: Lovarda, between 46°14'50.44"N, 17°46'35.89"E and 46°19'39.31"N, 17°42'3.17"E.
 Kaposgyarmat: Between 46° 16' 52.35" N, 17° 52' 35.97" E and 46° 17' 11.80" N, 17° 52' 31.89" E.
 Kaposszentbenedek: Petörke-tó (Petörke lake), between 46°19'22.05"N, 17°42'2.83"E and 46°19'39.31"N and
 Lipótfá: Cseberki-erdő: Around 46° 18' 00.33" N, 17° 39' 10.36" E.
 Sántos: Páprágypuszta, between 46° 21' 10.46" N, 17° 53' 16.57" E and 46° 21' 04.00" N, 17° 53' 40.92" E.
 Simonfa: Csurgófi-rét, between 46°16'7.95"N, 17°49'49.94"E and 46°16'8.67"N, 17°50'3.94"E This place is identical with Simonfa: Tótyai dűlő in Haris, 2009, however, this toponym is more precise.

Szena: Denna-rét, between 46°15'21.18"N, 17°41'14.88"E and 46°15'28.36"N, 17°41'6.00"E
 Visnyeszéplak: Vitorág, between 46°13'13.35"N, 17°43'28.69"E and 46°12'59.96"N, 17°43'34.73"E.
 Zselickisfalud: Enyezdi barakk, 46°12'12.18"N, 17°45'36.00"E and 46°12'21.93"N, 17°45'52.73"E.
 Zselickislak: Kender-földek, between 46°18'47.91"N, 17°47'45.00"E and 46°18'35.89"N, 17°47'46.01"E.
 Zselickislak: Markó-rét, between 46°18'50.30"N, 17°47'47.69"E and 46°18'51.06"N, 17°47'51.77"E.
 Zselicszentpál: Ropolyi-erdő Erdőrezervátum (Ropoly Forest Reserve), between 46°15'25.64"N, 17°48'37.82"E and 46°15'49.84"N, 17°48'43.46"E.
 This place is identical with Zselickisfalud: Ropoly in Haris, 2009. In the last years, the status of this area is changed, now it belongs to Zselicszentpál.
 Zselicszentpál. Vízműtelep, 46°18'20.81"N, 17°49'8.39"E and 46°18'12.80"N, 17°49'13.85"E.

Results

List of the species

Pamphiliidae

Neurotoma nemoralis (Linné, 1758): Simonfa: Csurgófi-rét, 26. 04. 2022, 1 male. Frequent. Larva on *Prunus mahaleb*, *P. armeniaca*, *P. spinosa* and *P. cerasus*.

Pamphilius kontunemii Shinohara, 2003: Szena: Denna-rét, 14. 05. 2022, 1 female. Host plant: *Alnus incana*. Rare.

Pamphilius marginatus (Serville, 1823): Szena: Denna-rét, 20. 04. 2022, 1 female; 30. 04. 2022, 1 female, 02. 05. 2022, 1 female. Larva on *Corylus avellana* and on *Carpinus betulus*. Rare.

Pamphilius sylvaticus (Linné, 1758): Kaposgyarmat, 24. 04. 2022, 1 female; Visnyeszéplak, 28. 04. 2022, 1 female. One of the most frequent sawfly species. Host plants: *Sorbus aucupariae*, *Malus* spp., *Prunus* spp. and *Crataegus* spp.

Argidae

Aprosthemella melanurum (Klug, 1814): Zselickislak: Kender-földek, 01. 05. 2022, 1 male. Sporadic. Host plants: *Lathyrus pratensis* and *Vicia cracca*.

Aprosthemella tardum (Klug, 1814): Zselickislak: Kender-földek, 26. 04. 2022, 1 male. Rare. Larva on *Lathyrus latifolius*.

Arge cyanocrocea (Förster, 1771): Zselickisfalud: Enyezdi barakk, 30. 04. 2022, 1 male; Simonfa: Csurgófi-rét, 01. 05. 2022, 1 male, 03. 05. 2022, 2 females, 15. 05. 2022, 2 females; Zselickislak: Kender-földek, 01. 05. 2022, 1 male, 22. 05. 2022, 1 male, 04. 06. 2022, 2 males, 06. 06. 2022, 1 male, 09. 07. 2022, 2 females, 17. 07. 2022, 1 female; Szena: Denna-rét, 14. 05. 2022, 1 female, 05. 06. 2022, 1 female; Kaposszentbenedek: Petörke-tó, 16. 07. 2022, 2 males. Common species. Known host plants: *Rubus idaeus* and *Sanguisorba officinalis*.

Arge enodis (Linné, 1767): Kaposszentbenedek: Petörke-tó, 16. 07. 2022, 1 male; Bárdudvarnok: Bányá: Szilosi-földek, 10. 07. 2022, 1 female, 31. 07. 2022, 3 females, 07. 08. 2022, 3 females, 1 male; Bárdudvarnok: Bányá: Lipótfai tározó, 31. 07. 2022, 1 female, 10. 07. 2022, 1 female, 07. 08. 2022, 1 female; Zselickislak: Kender-földek, 08. 08. 2022, 2 females; Zselickislak: Markó-rét, 17. 07. 2022, 1 male. Frequent. Host plants: *Salix* spp.

Arge melanochra (Gmelin, 1790): Zselickislak: Kender-földek, 04. 06. 2022, 2 females, 2 males, 06. 06. 2022, 3 females, 2 males, 19. 06. 2022, 1 male; Bárdudvarnok: Bányá: Szilosi-földek, 05. 06. 2022, 2 females; Zselickislak: Dugás-Kút: 04. 06. 2022, 4 males; Szenna: Denna-rét, 05. 06. 2022, 1 male; Sántos: Páprágypuszta: 06. 06. 2022, 1 male; Zselickislak: Markó-rét, 09. 07. 2022, 3 females. The most common *Argid* sawfly. Host plant: *Crataegus oxycantha*.

Arge nigripes (Retzius, 1783): Visnyeszéplak, 28. 04. 2022, 1 female. Frequent. Host plants: *Rosa* spp.

Arge ustulata (Linné, 1758): Szenna: Denna-rét, 04. 05. 2022, 1 male. Frequent. Larva on *Betula*, *Salix* and *Crataegus*.

Sterictiphora angelicae (Panzer, 1799): Kaposszentbenedek: Petörke-tó, 31. 07. 2022, 1 female. Frequent species. Larva on *Prunus*.

Diprionidae

Diprion pini (Linné, 1758): Bárdudvarnok: Bányá: Lipótfai tározó, 25. 04. 2022, 1 female. Frequent. Insect pest of *Pinus* spp.

Macrodipteron nemoralis (Enslin, 1917): Visnyeszéplak, 23. 06. 1985, 1 female. Rare. Larva on *Pinus sylvestris*.

Tenthredinidae

Dolerinae

Dolerus (Dolerus) bimaculatus (Geoffroy, 1785): Bárdudvarnok: Bányá: Lipótfai tározó, 30. 04. 2022, 1 male. Sporadic. Larva on *Equisetum* spp.

Dolerus (Poodolerus) brevicornis Zaddach, 1859: Kaposszentbenedek: Petörke-tó, 21. 04. 2022, 1 female. Sporadic. Larva on *Graminae*.

Dolerus (Poodolerus) coracinus (Klug, 1818): Bárdudvarnok: Bányá: Lipótfai tározó, 02. 05. 2022, 1 female. Rare. Host plant is unknown.

Dolerus (Dolerus) etruscus (Klug, 1818): Zselickislak: Kender-földek, 01. 05. 2022, 1 male, 17. 07. 2022, 1 male, 21. 08. 2022, 1 female; Zselickislak: Markó-rét, 09. 07. 2022, 1 female, 17. 07. 2022, 2 females; Bárdudvarnok: Bányá: Lipótfai tározó, 02. 05. 2022, 1 female. Frequent, species with taxonomically uncertain position. According to Lacourt, 2020 it is only pure color variation of *D. germanicus*, according to Taeger et al. 2018, it is distinct species.

Dolerus (Oncodolerus) eversmanni W.F. Kirby, 1882: Zselickislak: Kender-földek, 15. 05. 2022, 1 female. Frequent. Larva on *Equisetum arvense* and *E. palustre*.

Dolerus (Dolerus) germanicus ssp. germanicus (Fabricius, 1775): Bárdudvarnok: Bányá: Lipótfai tározó, 28. 04. 2022, 1 female, 1 male. Common. Larva on *Equisetum arvense* and *E. palustre*.

Dolerus (Poodolerus) gonager (Fabricius, 1781): Zselickislak: Kender-földek, 24. 04. 2022, 1 female, 29. 04. 2022, 1 female; Zselickisfalud: Enyezdi barakk, 30. 04. 2022, 1 female; Szenna: Denna-rét, 25. 04. 2022, 1 female, 30. 04. 2022, 1 female; Simonfa: Csurgófüi-rét, 03. 05. 2022, 3 females. Common. Larva on *Graminae*.

Dolerus (Poodolerus) nigratus (O.F. Müller, 1776): Zselickisfalud: Enyezdi barakk, 20. 04. 2022, 3 females, 3 males; Böszénfa: Ropolyi-tó, 21. 04. 2022, 1 male; Zselickisfalud: Enyezdi barakk, 30. 04. 2022, 2 females; Simonfa: Csurgófüi-rét, 29. 04. 2022, 1 female, 1 male; Visnyeszéplak, 28. 04. 2022, 1 male; Bárdudvarnok: Bányá: Lipótfai tározó, 25. 04. 2022, 1 female; Zselickislak: Kender-földek, 29. 04. 2022, 6 females; Szenna: Denna-rét, 28. 04. 2022, 1 female, 02. 05. 2022, 1 female, 1 male, 04. 05. 2022, 3 females, 3 males; Zselickislak: Kender-földek, 24. 04. 2022, 1 male, 01. 05. 2022, 1 female, Common. Larva on *Gramineae* including cereals.

Dolerus (Poodolerus) nitens Zaddach, 1859: Zselickislak: Kender-földek, 24. 04. 2022, 1 male. Sporadic. Larva on *Cyperaceae* and *Graminae*.

Dolerus (Poodolerus) picipes (Klug, 1818): Simonfa: Csurgófüi-rét, 01. 05. 2022, 1 female. Frequent. Larva on *Graminae*.

Dolerus (Poodolerus) puncticollis C. G. Thomson, 1871: Kaposszentbenedek: Petörke-tó, 18. 04. 2022, 1 female; Bárdudvarnok: Bányá: Szilosi-földek, 21. 04. 2022, 1 female; Simonfa: Csurgófüi-rét, 26. 04. 2022, 2 females; Böszénfa: Ropolyi-tó, 29. 04. 2022, 1 female; Zselickislak: Kender-földek, 01. 05. 2022, 1 male; Szenna: Denna-rét, 04. 05. 2022, 1 female. Common. Larva on *Graminae* including cereals.

Dolerus (Poodolerus) sanguinicollis (Klug, 1818): Szenna: Denna-rét, 28. 04. 2022, 1 female, 21. 05. 2022, 1 female; Bárdudvarnok: Bányá: Lipótfai tározó, 14. 05. 2022, 1 female. Sporadic. Host plant unknown, probably *Poaceae*.

Dolerus (Poodolerus) subalatus Kerensky, 1926: Zselicszentpál: Ropoly Forest Reserve, 26. 04. 2022, 1 male. Rare. Hostplant unknown.

Dolerus (Poodolerus) stygius Förster, 1860: Szenna: Denna-rét, 04. 05. 2022, 2 males. Rare. Larva on different *Carex* spp. like *C. acuta*, *C. cespitosa* or *C. nigra*.

Dolerus (Achaetoprion) triplicatus (Klug, 1818): Visnyeszéplak, 28. 04. 2022, 1 female. Sporadic. Larva on *Juncus filiformis* and *J. effusus*.

Dolerus (Achaetoprion) uliginosus (Klug, 1818): Visnyeszéplak: Vitorág, 30. 04. 2022, 1 female. New record for Hungary. Rare. Larva on *Juncus* spp.

Dolerus (Dicrodolerus) vestigialis (Klug, 1818): Bárdudvarnok: Bányá: Lipótfai tározó, 25. 04. 2022, 1 male, 02. 05. 2022, 1 female; Zselicszentpál: Vízműtelep, 03. 05. 2022, 1 female; Zselickisfalud:

Enyezdi barakk, 20. 04. 2022, 1 female, 1 male, 30. 04. 2022, 1 female, 2 males; Zselickislak: Kender-földek, 29. 04. 2022, 1 male, 03. 05. 2022, 1 female. Common. Host plants: *Equisetum palustre*, *E. sylvaticum*, *E. arvense* and *E. pratense*.

Allantinae

Allantus (*Emphytus*) **calceatus** (Klug, 1818): Szenna: Denna-rét, 04. 05. 2022, 1 female. Sporadic. Host plants: *Rubus*, *Sanguisorba*, *Rosa*, *Filipendula*, *Fragaria* and *Alchemilla* spp.

Allantus (*Emphytus*) **cingulatus** (Scopoli, 1763): Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 male. Frequent. Host plants: *Rosa* and *Fragaria* spp.

Allantus (*Emphytus*) **melanarius** (Klug, 1818): Szenna: Denna-rét, 21. 05. 2022, 1 female. Frequent. Host plant: *Cornus sanguinea*.

Athalia bicolor Serville, 1823: Szenna: Denna-rét, 14. 05. 2022, 1 males, 21. 05. 2022, 2 males; Bárdudvarnok: Bánya: Lipótfai tározó, 14. 05. 2022, 1 male. Frequent. Host plant: *Ranunculus* spp.

Athalia circularis (Klug, 1815): Böszénfa: Ropoly: Lovarda, 21. 08. 2022, 1 female. Frequent. Larva on *Glechoma hederacea*, *Plantago*, *Melampyrum* and *Veronica* spp.

Athalia cordata Serville, 1823: Simonfa: Csurgófüi-rét, 03. 05. 2022, 1 female, 15. 05. 2022, 1 female, 1 male; Szenna: Denna-rét, 20. 04. 2022, 1 male, 21. 04. 2022, 1 male, 25. 04. 2022, 1 female, 2 males, 28. 04. 2022, 2 males, 30. 04. 2022, 1 male, 04. 05. 2022, 2 females, 2 males, 30. 04. 2022, 1 female, 1 male, 21. 05. 2022, 1 male, 20. 08. 2022, 1 male; Bárdudvarnok: Bánya: Lipótfai tározó, 14. 05. 2022, 1 male; Zselickislak: Kender-földek, 29. 04. 2022, 1 female, 2 males, 01. 05. 2022, 1 male. Common. Larva on *Misopates orontinum*, *Antirrhinum majus*, *Ajuga reptans*, *Teucrium scorodonia* and *Plantago* spp.

Athalia liberta (Klug, 1815): Szenna: Denna-rét, 14. 05. 2022, 1 female. Frequent. Feeding on *Alliaria petiolata*, *Arabidopsis thaliana*, *Cardamine hirsuta* and *Sisymbrium officinale*.

Athalia rosae (Linné, 1758): Kaposszentbenedek: Petörke-tó, 14. 05. 2022, 1 female, 06. 07. 2022, 1 female, 06. 07. 2022, 2 females, 2 males, 20. 08. 2022, 1 male; Szenna: Denna-rét, 14. 05. 2022, 1 female, 21. 05. 2022, 1 male; Zselickislak: Kender-földek, 06. 06. 2022, 2 females, 2 males, 07. 07. 2022, 1 female, 08. 08. 2022, 2 females, 1 male, 21. 08. 2022, 2 females; Zselickislak: Markó-rét, 09. 07. 2022, 1 male; Bárdudvarnok: Bánya: Lipótfai tározó, 31. 07. 2022, 1 female, 2 males, 07. 08. 2022, 1 female, 20. 08. 2022, 1 female; Bárdudvarnok: Bánya: Szilosi-földek, 31. 07. 2022, 2 females, 2 males, 07. 08. 2022, 3 males; Böszénfa: Ropoly: Lovarda, 21. 08. 2022, 2 females; Simonfa: Csurgófüi-rét, 27. 08. 2022, 1 female. Common pest. Host plants: *Raphanus sativus*, *R. raphanistrum*, *Sinapis arvensis*, *Sisymbrium officinale*, *Armoracia rusticana*, *Barbarea* sp., *Brassica napus*, *B. juncea*, *B. rapa*, *B. oleracea*, *Tropaeolum majus*, *Sinapis arvensis*, *Alliaria petiolata* and *Cardamine* spp.

Empria liturata (Gmelin, 1790): Zselickisfalud: Enyezdi barakk, 20. 04. 2022, 1 male; Lipótfá: Cseberki-erdő, 25. 04. 2022, 1 female; Bárdudvarnok: Bánya: Lipótfai tározó, 28. 04. 2022, 1 female; Visnyeszéplak, 28. 04. 2022, 1 female; Zselicszentpál: Vízműtelep, 24. 04. 2022, 1 male, 01. 05. 2022, 1 female; Szenna: Denna-rét, 28. 04. 2022, 1 female, 25. 04. 2022, 2 females, 30. 04. 2022, 1 female, 28. 04. 2022, 1 female; Zselicszentpál: Ropoly Forest Reserve, 26. 04. 2022, 1 female, 1 male; Böszénfa: Dugás-kút, 21. 04. 2022, 1 male; Zselickislak: Kender-földek, 03. 05. 2022, 2 females, 01. 05. 2022, 1 female, 26. 04. 2022, 1 female; Simonfa: Csurgófüi-rét, 29. 04. 2022, 1 male, 26. 04. 2022, 3 females, 1 male. Frequent. Host plants: *Fragaria* and *Geum* spp.

Empria sexpunctata (Serville, 1823) (= *Empria klugi* Steph.): Simonfa: Csurgófüi-rét, 29. 04. 2022, 1 male; Zselicszentpál: Ropoly Forest Reserve, 29. 04. 2022, 1 male; Zselickisfalud: Enyezdi barakk, 30. 04. 2022, 1 male. Frequent. Larva on *Geum* spp.

Empria tridens (Konow, 1896): Szenna: Denna-rét, 30. 04. 2022, 2 females; Zselicszentpál: Ropoly Forest Reserve, 29. 04. 2022, 1 female. Frequent. Host plants: *Geum* spp. and *Rubus idaeus*.

Eriocampa ovata (Linné, 1760): Kaposszentbenedek: Petörke-tó, 05. 06. 2022, 4 females. Frequent. Larva on *Alnus*.

Eriocampa umbratica (Klug, 1816): Böszénfa: Ropolyi-tó, 29. 04. 2022, 1 male. Frequent. Larva on *Alnus* spp.

Taxonus agrorum (Fallén, 1808): Zselickislak: Kender-földek, 03. 05. 2022, 1 female. Frequent. Host plants: *Rubus idaeus* and *R. caesius*.

Blennocampinae

Claremontia alternipes (Klug, 1816): Zselicszentpál: Vízműtelep, 24. 04. 2022, 1 male, 01. 05. 2022, 1 male; Zselickislak: Kender-földek, 24. 04. 2022, 1 female; Visnyeszéplak: Vitorág, 30. 04. 2022, 1 female; Zselickisfalud: Enyezdi barakk, 30. 04. 2022, 1 female; Zselicszentpál: Ropoly Forest Reserve, 01. 05. 2022, 1 female; Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 female, 01. 05. 2022, 1 female, 29. 04. 2022, 1 female; Szenna: Denna-rét, 30. 04. 2022, 1 female. Sporadic. Host plant: *Rubus idaeus*.

Claremontia brevicornis (Brischke, 1883): Szenna: Denna-rét, 28. 04. 2022, 1 female. Frequent. Host plants: *Fragaria* spp., *Sanguisorba* spp. and *Potentilla reptans*.

Claremontia waldheimii (Gimmerthal, 1847): Zselicszentpál: Ropoly Forest Reserve, 01. 05. 2022, 1 female; Szenna: Denna-rét, 02. 05. 2022, 1 female. Frequent. Host plant: *Geum urbanum*.

Eutomostethus ephippium (Panzer, 1798): Böszénfa: Ropolyi-tó, 29. 04. 2022, 2 males; Szenna: Denna-rét, 30. 04. 2022, 1 female, 02. 05. 2022, 5 males, 1 female, 04. 05. 2022, 2 females, 4 males, 14. 05. 2022, 1 female, 3 males, 21. 05. 2022, 1 male; Visnyeszéplak, 14. 05. 2022, 1 female; Zselicszentpál: Ropoly Forest Reserve, 01. 05. 2022, 1 male; Zselick-

islak: Kender-földek, 03. 05. 2022, 1 female, 1 male, 04. 06. 2022, 1 male; Kaposszentbenedek: Petörke-tó, 14. 05. 2022, 1 male. Common, larva on *Poaceae*.

Eutomostethus gagathinus (Klug, 1816): Zselickislak: Kender-földek, 24. 04. 2022, 1 male. Sporadic. Host plant: *Carex paniculata*.

Halidamia affinis (Fallén, 1807): Bárdudvarnok: Bánya: Szilosi-földek, 21. 04. 2022, 1 female; Zselickislak: Kender-földek, 01. 05. 2022, 1 female; Zselicszentpál: Ropoly Forest Reserve, 03. 05. 2022, 1 female; Simonfa: Csurgófüi-rét, 03. 05. 2022, 1 female, 15. 05. 2022, 1 female; Szenna: Denna-rét, 30. 04. 2022, 1 female, 14. 05. 2022, 1 female. Frequent. Host plants: *Galium aparine* and *G. mollugo*.

Monophadnoides ruficruris (Brullé, 1832): Kaposszentbenedek: Petörke-tó, 21. 04. 2022, 1 male; Bószénfa: Ropolyi-tó, 21. 04. 2022, 1 male; Bárdudvarnok: Bánya: Lipótfai tározó, 14. 05. 2022, 1 female. Frequent. Host plant: *Rubus fruticosus*.

Monophadnus monticola (Hartig, 1837): Zselicszentpál: Ropoly Forest Reserve, 03. 05. 2022, 1 female; Zselickislak: Kender-földek, 26. 04. 2022, 1 female, 03. 05. 2022, 1 female; Szenna: Denna-rét, 25. 04. 2022, 1 female, 30. 04. 2022 4 females, 04. 05. 2022, 1 female. All other *M. monticola* published by Zombori, 1979 are proved to be *M. pallescens*. Sporadic. Larva on *Helleborus* spp.

Monophadnus pallescens (Gmelin, 1790): Szenna: Denna-rét, 28. 04. 2022, 1 female, 30. 04. 2022, 2 females, 02. 05. 2022, 2 females, 04. 05. 2022, 1 female; Zselickisfalud: Enyezdí barakk, 02. 05. 2022, 1 female; Common. Host plants: *Ranunculus acris*, *R. repens*, *R. lanuginosus* and *Anemone nemorosa*.

Pareophora pruni (Linné, 1758): Szenna: Denna-rét, 20. 04. 2022, 1 male, 28. 04. 2022, 1 female; Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 male; Zselicszentpál: Vízműtelep, 03. 05. 2022, 1 female. Frequent. Larva on *Prunus spinosa*.

Periclista (Periclista) lineolata (Klug, 1816): Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 female; Szenna: Denna-rét, 02. 05. 2022, 1 female. Rare. Larva on *Quercus* spp. like *Quercus rubra*.

Phymatocera aterrima (Klug, 1816): Szenna: Denna-rét, 04. 05. 2022, 1 male. Host plants: *Polygonatum* spp. frequent.

Tomostethus nigrinus (Fabricius, 1804): Zselicszentpál: Vízműtelep, 01. 05. 2022, 1 male. Sporadic. Host plant: *Fraxinus excelsior*.

Heterarthrinae

Fenusa (Fenusa) pumila Leach, 1817: Kaposszentbenedek: Petörke-tó, 05. 06. 2022, 4 mines on 3 *Betula* leaves. Sporadic. Larvae live in mines of leaves of *Betula* spp. and *Alnus alnobetula*.

Metalilus pumilus (Klug, 1816): Bószénfa: Dugás-kút. 21. 04. 2022, 1 male. Frequent. Larva make mines inside the leaves of *Rubus* spp.

Parna tenella (Klug, 1816): Visnyeszéplak, 28. 04. 2022, 1 male. Rare, larvae make mines inside leaves of *Tilia* spp.

Tenthredininae

Aglaostigma (Astochus) aucupariae (Klug, 1817): Zselickisfalud: Enyezdí barakk, 20. 04. 2022, 1 female; Zselicszentpál: Vízműtelep, 24. 04. 2022, 1 female; Szenna: Denna-rét, 20. 04. 2022, 3 males; 21. 04. 2022, 1 male, 25. 04. 2022, 1 female, 28. 04. 2022, 1 female, 30. 04. 2022, 2 males, 02. 05. 2022, 1 female; Zselickislak: Kender-földek, 24. 04. 2022, 3 females, 5 males, 26. 04. 2022, 1 male, 29. 04. 2022, 1 male, 01. 05. 2022, 2 males, 03. 05. 2022, 3 males. Common. Larva on *Galium mollugo* and *G. boreale*.

Aglaostigma (Astochus) fulvipes (Scopoli, 1763): Zselickisfalud: Enyezdí barakk, 20. 04. 2022, 1 male, 30. 04. 2022, 1 male; Zselicszentpál: Vízműtelep, 24. 04. 2022, 1 male; Kaposszentbenedek: Petörke-tó, 25. 04. 2022, 1 female; Lipótfai: Cseberki-erdő, 25. 04. 2022, 1 female, 2 males; Bárdudvarnok: Bánya: Szilosi-földek, 21. 04. 2022, 1 male; Bárdudvarnok: Bánya: Lipótfai tározó, 28. 04. 2022, 1 male, 30. 04. 2022, 3 females, 02. 05. 2022, 1 female; Simonfa: Csurgófüi-rét, 29. 04. 2022, 1 female; Zselicszentpál: Ropoly Forest Reserve, 01. 05. 2022, 1 male, 26. 04. 2022, 1 male; Szenna: Denna-rét, 21. 04. 2022, 1 male, 25. 04. 2022, 3 females, 5 males, 28. 04. 2022, 7 females, 7 males, 30. 04. 2022, 3 females, 9 males, 02. 05. 2022, 2 females, 2 males, 04. 05. 2022, 5 females, 1 male, 14. 05. 2022, 2 females, 1 male; Zselickislak: Kender-földek, 26. 04. 2022, 1 female, 1 male, 29. 04. 2022, 1 male, 01. 05. 2022, 4 females, 03. 05. 2022, 1 female, 1 male. Common. Larva on *Galium mollugo* and *G. verum*.

Macrophya (Macrophya) albicincta (Schrank, 1776): Simonfa: Csurgófüi-rét, 15. 05. 2022, 1 female; Szenna: Denna-rét, 30. 04. 2022, 1 female; Bárdudvarnok: Bánya: Lipótfai tározó, 02. 05. 2022, 1 male. Common. Host plants: *Sambucus ebulus*, *S. nigra*, *S. racemosa*, *Valeriana officinalis* and *Viburnum opalus*.

Macrophya (Macrophya) alboannulata Costa, 1859: Lipótfai: Cseberki-erdő, 25. 04. 2022, 1 female; Zselickisfalud: Enyezdí barakk, 30. 04. 2022, 2 females; Szenna: Denna-rét, 30. 04. 2022, 1 male, 02. 05. 2022, 1 female, 04. 05. 2022, 2 females, 14. 05. 2022, 1 female, 21. 05. 2022, 1 female, 05. 06. 2022, 1 female; Zselickislak: Kender-földek, 24. 04. 2022, 1 male, 29. 04. 2022, 2 males, 15. 05. 2022, 1 female; Zselicszentpál: Vízműtelep, 03. 05. 2022, 1 female, 1 male. Common. Hostplants: *Sambucus nigra*, *S. racemosa* and *S. ebulus*.

Macrophya (Macrophya) annulata (Geoffroy, 1785): Zselicszentpál: Vízműtelep, 15. 05. 2022, 1 male, 22. 05. 2022, 1 male, 04. 06. 2022, 1 male; Zselickislak: Kender-földek, 15. 05. 2022, 1 male, 06. 06. 2022, 1 male. Frequent. Larva on *Potentilla reptans*, *Origanum vulgare*, *Euphorbia*, *Rosa*, *Rubus* and *Sambucus* spp.

Macrophya (Macrophya) blanda (Fabricius, 1775): Szenna: Denna-rét, 21. 05. 2022, 1 female. Frequent. Host plant unknown.

Macrophya (Macrophya) duodecimpunctata (Linné, 1758): Zselickislak: Kender-földek, 15. 05.

2022, 1 male; Szenna: Denna-rét, 21. 05. 2022, 1 female. Common. Host plants: *Graminae*, *Cyperaceae* and *Carex* spp.

Macrophya (Macrophya) montana* ssp. *montana (Scopoli, 1763): Zselickislak: Kender-földek, 04. 06. 2022, 10 females, 12 males, 06. 06. 2022, 7 females, 10 males, 22. 05. 2022, 2 females, 10 males. 19. 06. 2022, 1 female, 5 males; Zselickislak: Dugás-Kút: 04. 06. 2022, 2 females, 2 males; Simonfa: Csurgófüi-rét, 15. 05. 2022, 2 females, 3 males; Sántos: Páprágypuszta: 06. 06. 2022, 4 females, 2 males; Zselicszentpál: Vízműtelep, 22. 05. 2022, 1 female, 3 males; Szenna: Denna-rét, 21. 05. 2022, 1 male, 05. 06. 2022, 1 male. Common. Host plant: *Rubus caesius*.

Macrophya (Macrophya) postica Brullé, 1832: Zselickislak: Kender-földek, 06. 06. 2022, 2 females, 2 males. 19. 06. 2022, 1 male. Frequent. Host plant unknown.

Pachyprotasis rapae (Linné, 1767): Zselickislak: Enyezdí barakk, 30. 04. 2022, 1 male; Bárdudvarnok: Bánya: Lipótfai tározó, 02. 05. 2022, 1 male; Szenna: Denna-rét, 04. 05. 2022, 1 female, 1 male. Frequent. Host plants: *Solanum tuberosum*, *Pedicularis palustris*, *Angelica sylvestris*, *Veronica beccabunga*, *Betonica officinalis*, *Corylus avellana*, *Salix caprea*, *Fraxinus excelsior*, *Tussilago farfara*, *Symphoricarpos albus*, *Scrophularia*, *Solidago*, *Verbascum*, *Origanum*, *Atropa*, *Sarothamnus*, *Senecio*, *Polygonum*, *Aspidium*, *Epilobium*, *Hypericum*, *Galeopsis*, *Mentha*, *Polystichum*, *Plantago*, *Quercus* and *Stachys* spp.

Perineura rubi (Panzer, 1803): Szenna: Denna-rét, 04. 05. 2022, 1 female. Sporadic. Host plant unknown. Adults associated with *Rubus* spp.

Rhogogaster (Rhogogaster) chlorosoma (Benson, 1943): Zselickislak: Kender-földek, 04. 06. 2022, 1 female. Frequent. Host plants: *Pteridium aquilinum*, *Alnus glutinosa*, *Circaea* spp., *Prunus* spp., *Ranunculus* spp., *Rosa* spp., *Salix alba*, *S. purpurea*, *Stellaria* spp., *Filipendula ulmaria*, *Populus tremula*, *Padus* spp., *Betula* spp., *Corylus avellana* and *Sorbus* spp.

Rhogogaster (Rhogogaster) scalaris (Klug, 1817): Zselickislak: Kender-földek, 04. 06. 2022, 1 female, 06. 06. 2022, 1 female. Frequent. *Chamaerion angustifolium*, *Salix* spp., *Populus* spp., *Alnus* spp., *Quercus* spp., *Filipendula* spp., *Stellaria* spp. and *Circaea* spp.

Sciapteryx consobrina (Klug, 1816): Bárdudvarnok: Bánya: Szilosi-földek, 21. 04. 2022, 1 female; Szenna: Denna-rét, 25. 04. 2022, 1 female, 2 males, 28. 04. 2022, 1 female, 30. 04. 2022, 2 females, 2 males, 04. 05. 2022, 2 females. Frequent. Larval hosts: *Adoxa* spp., *Anemone* spp., *Ranunculus acris* and *Ranunculus ficaria*.

Tenthredo (Tenthredella) atra Linné, 1758: Szenna: Denna-rét, 02. 05. 2022, 2 females; Simonfa: Csurgófüi-rét, 15. 05. 2022, 1 female; Zselickislak: Kender-földek, 15. 05. 2022, 1 female. Frequent. Larval hosts: *Lamium*, *Mentha*, *Plantago*, *Vicia*, *Ranunculus*, *Scabiosa*, *Brassica* and *Solanum* spp.

Tenthredo (Cephalredo) bifasciata* ssp. *rossii (Panzer, 1803): Zselickislak: Kender-földek, 19. 06.

2022, 1 female, 3 males. Frequent. Host plants: *Scrophularia* and *Verbascum* spp.

Tenthredo (Cephalredo) bifasciata* ssp. *violacea (Andre, 1881): Zselickislak: Kender-földek, 04. 06. 2022, 3 females, 1 male, 19. 06. 2022, 2 females, 2 males; Sántos: Páprágypuszta: 06. 06. 2022, 1 female. Frequent. Host plant unknown.

Tenthredo (Endotethryx) campestris Linné, 1758: Szenna: Denna-rét, 14. 05. 2022, 1 male; Zselickislak: Kender-földek, 04. 06. 2022, 2 females, 22. 03. 2022, 1 male. Frequent. Host plant: *Aegopodium podagraria*.

Tenthredo (Tenthredo) notha Klug, 1817: Zselickislak: Kender-földek, 21. 08. 2022. Frequent. Host plants: different *Fabaceae*, mainly *Trifolium repens*, *T. pratense*, *Vicia craca* and *Lathyrus pratensis*.

Tenthredo (Tenthredo) scrophulariae Linné, 1758: Bárdudvarnok: Bánya: Lipótfai tározó, 20. 08. 2022. Frequent. Larva on *Scrophularia nodosa*, *S. umbrosa* and *Verbascum nigrum*.

Tenthredo (Temuledo) temula Scopoli, 1763: Szenna: Denna-rét, 02. 05. 2022, 1 female, 21. 05. 2022, 1 female; Zselickislak: Kender-földek, 04. 06. 2022, 4 females, 06. 06. 2022, 1 female. Frequent, locally common. Larva on *Ligustrum* and *Origanum* spp.

Tenthredo (Tenthredo) thompsoni (Curtis, 1839): Bárdudvarnok: Bánya: Szilosi-földek, 07. 08. 2022, 2 females, 20. 08. 2022, 1 female, 28. 08. 2022, 1 female; Bárdudvarnok: Bánya: Lipótfai tározó, 20. 08. 2022, 1 female; Szenna: Denna-rét, 20. 08. 2022, 1 female, 28. 08. 2022, 1 female, 3 males; Bószénfa: Ropoly: Lovarda, 21. 08. 2022, 5 females, 27. 08. 2022, 4 males. Frequent. Host plants: *Mentha longifolia*, *M. aquatica* and *Lycopus europaeus*.

Tenthredo (Tenthredo) vespa Retzius, 1783: Bárdudvarnok: Bánya: Szilosi-földek, 20. 08. 2022, 1 female; Bószénfa: Ropoly: Lovarda, 21. 08. 2022, 1 female, 1 male. Frequent, polyphagous species, known hostplants: *Viburnum*, *Ligustrum*, *Spiraea*, *Lonicera*, *Fraxinus*, *Acer* spp., also known from *Syringa vulgaris*, *Hippophaë rhamnoides* and *Symphoricarpos albus*.

Tenthredo (Tenthredo) zona Klug, 1817: Simonfa: Csurgófüi-rét, 03. 05. 2022, 1 female. Sporadic. Host plant: *Hypericum perforatum*.

Tenthredo (Zonuledo) zonula Klug, 1817: Bárdudvarnok: Bánya: Szilosi-földek, 05. 06. 2022, 1 female. Common. Host plant: *Hypericum perforatum*.

Tenthredopsis litterata (Geoffroy, 1785): Simonfa: Csurgófüi-rét, 22. 05. 2022, 1 male. Frequent. Larva on *Agrostis*, *Dactylis* and *Calamagrostis* spp.

Tenthredopsis sordida (Klug, 1817): Bánya: Szilosi-földek, 21. 04. 2022, 1 male; Bánya: Lipótfai tározó, 14. 05. 2022, 1 male; Simonfa: Csurgófüi-rét, 29. 04. 2022, 2 males, 01. 05. 2022, 1 male, 03. 05. 2022, 1 male, 15. 05. 2022, 3 females, 22. 05. 2022, 2 females; Zselickislak: Kender-földek, 03. 05. 2022, 1 male, 22. 05. 2022, 3 females; Szenna: Denna-rét, 14. 05. 2022, 1 female, 1 male. Frequent. Larva on *Arrhenatherum elatius*, *Lolium perenne*, *Carex* spp., *Calamagrostis* spp. and *Dactylis glomerata*.

Nematinae

Cladius (*Cladius*) **pectinicornis** (Geoffroy, 1785): Zselickislak: Kender-földek, 29. 04. 2022, 1 female; Simonfa: Csurgófüi-rét, 27. 08. 2022, 1 female. Common. Host plant: *Rubus* spp.

Cræsus latipes (Villaret, 1832): Szenna: Denna-rét, 28. 08. 2022, 1 female. Rare. Larva on *Betula* spp. and *Alnus alnobetula*.

Euura myosotidis (Fabricius, 1804) (= *Nematus myosotidis* F.): Zselickislak: Kender-földek, 24. 04. 2022, 1 male, 26. 04. 2022, 1 male, 29. 04. 2022, 2 females, 1 male, 01. 05. 2022, 1 male, 03. 05. 2022, 3 males, 15. 05. 2022, 2 males; Szenna: Denna-rét, 30. 04. 2022, 1 female, 2 males, 04. 05. 2022, 3 females, 2 males, 02. 05. 2022, 3 females, 1 male; Bárdudvarnok: Bánya: Lipótfai-tározó, 31. 07. 2022, 1 male. Common. Larval hosts: *Onobrychis* and *Trifolium* spp.

Euura leucaspis (Tischbein, 1846) (= *Phyllocolpa leucaspis* Tischb.): Szenna: Denna-rét, 30. 04. 2022, 1 male. Frequent. Larval hosts: *Salix phylicifolia*, *S. aurita*, *S. caprea* and *S. cinerea*.

Euura leucosticta (Hartig, 1837) (= *Phyllocolpa leucosticta* Htg.): Szenna: Denna-rét, 30. 04. 2022, 1 male, 04. 05. 2022, 1 female, 14. 05. 2022, 1 female. Frequent. *Salix aurita*, *S. caprea*, *S. atrocinerea* and *S. cinerea*.

Euura proxima (Serville, 1823) (= *Pontania proxima* Serv.): Zselickislak: Kender-földek, 04. 06. 2022, 3 galls, 06. 06. 2022, 3 galls, 09. 06. 2022, 5 galls; Sántos: Páprágypuszta: 06. 06. 2022, 1 gall. Frequent, larva on *Salix fragilis* and *S. alba*.

Hoplocampa crataegi (Klug, 1816): Szenna: Denna-rét, 14. 05. 2022, 1 male. Frequent. Larva on *Crataegus* spp.

Hoplocampa minuta (Christ, 1791 Zselickislak: Kender-földek, 26. 04. 2022, 1 male. Frequent. Larva on *Prunus domestica*, *P. armeniaca*, *P. instita*, *P. avium* and *P. spinosa*.

Nematinus steini Blank, 1998: Szenna: Denna-rét, 30. 04. 2022, 1 female, 02. 05. 2022, 2 males. Frequent. Larva on *Alnus* spp.

Nematus lucidus (Panzer, 1801): Szenna: Denna-rét, 30. 04. 2022, 1 female; Simonfa: Csurgófüi-rét, 01. 05. 2022, 1 female, 1 male; Zselickislak: Kender-földek, 26. 04. 2022, 1 male, 01. 05. 2022, 1 male. Frequent. Larva on *Crataegus* and *Prunus spinosa*.

Nematus vicinus Serville, 1823: Zselickislak: Kender-földek, 15. 05. 2022, 1 male. Sporadic. Host-plant: *Rumex obtusifolius*, *Salix*, *Detula* and *Populus* spp. are also mentioned in literature.

Pachynematus fallax (Serville, 1823): Bánya: Lipótfai tározó, 25. 04. 2022, 1 male. Frequent. Larva on *Poaceae* and *Carex* spp.

Pachynematus (*Pikonema*) **scutellatus** (Hartig, 1837): Zselickislak: Kender-földek, 01. 05. 2022, 2 males. Sporadic, larva on *Picea* spp.: *P. abies* and *P. pungens*.

Phyllocolpa oblita (Serville, 1823): Zselickislak: Kender-földek, 15. 05. 2022, 1 female. Rare. Larvae live inside the leaves of *Salix alba* and *S. fragilis*.

Pristiphora abbreviata (Hartig, 1837): Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 female. Rare. Hostplant: *Pyrus communis*.

Pristiphora abietina (Christ, 1791): Zselickislak: Kender-földek, 26. 04. 2022, 1 female, 1 male, 29. 04. 2022, 1 female, 01. 05. 2022, 2 females, 2 males. Sporadic, larva on *Picea* spp.: *P. abies* and *P. pungens*.

Pristiphora armata (C. G. Thomson, 1863): Szenna: Denna-rét, 21. 04. 2022, 1 male. Frequent. Larva on *Crataegus* spp.

Pristiphora insularis Rohwer, 1910: Zselickislak: Kender-földek, 26. 04. 2022, 1 female, 29. 04. 2022, 1 female, 01. 05. 2022, 1 female; Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 female. Sporadic. Larva on *Amelanchier asiatica*, *Chaenomeles japonica*, *Rosa* spp., *Rosa majalis*, *Rosa pimpinellifolia* and *Rosa obolei*.

Pristiphora monogyniae (Hartig, 1840): Bőszénfa: Dugás-kút. 21. 04. 2022, 1 female. Frequent. Larva on *Prunus spinosa*, occasionally on *P. domestica*.

Pristiphora nigriceps (Hartig, 1840): Zselickislak: Kender-földek, 29. 04. 2022, 1 male. Rare. Larva on *P. abies*.

Pristiphora pallidiventris (Fallén, 1808): Szenna: Denna-rét, 30. 04. 2022, 1 female. Frequent. Larva on *Geum*, *Potentilla*, *Rubus* and *Filipendula* spp. *Filipendula ulmaria*, *Geum urbanum*, *G. rivale*, *Rubus chamaemorus*, *R. idaeus*, *R. fruticosus* and *R. ulmi-folius*.

Pristiphora punctifrons (Thomson, 1871): Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 female. Rare. Larva on *Rosa canina* and *Rosa majalis*.

Pristiphora subbifida (C. G. Thomson, 1871): Szenna: Denna-rét, 04. 05. 2022, 1 female. Sporadic. Host plants: *Acer campestre*, sometimes *A. pseudo-platanus* and *A. orientale*.

Pristiphora thalictri (Kriechbaumer, 1884): Gálosfa: Aranyalma-vadászház, 02. 04. 2011, 1 male. Rare. Larva on *Thalictrum aquilegifolium*.

Cephoidea

Calameuta (*Calameuta*) **haemorrhoidalis** (Fabricius, 1781): Bánya: Lipótfai tározó, 02. 05. 2022, 1 female; Szenna: Denna-rét, 04. 05. 2022, 4 females, 02. 05. 2022, 1 male; Kaposzentbenedek: Petörke-tó, 14. 05. 2022, 1 female; Zselickislak: Kender-földek, 22. 05. 2022, 1 female. Frequent. Host plant unknown.

Calameuta (*Calameuta*) **pallipes** (Klug, 1803): Zselickisfalud: Enyezdő barakk, 30. 04. 2022, 1 female; Simonfa: Csurgófüi-rét, 26. 04. 2022, 1 male, 03. 05. 2022, 1 male; Szenna: Denna-rét, 21. 05. 2022, 1 male. Frequent on diverse *Poaceae*.

Calameuta (*Calameuta*) **punctata** (Klug, 1803): Zselickislak: Kender-földek, 03. 05. 2022, 2 males. Sporadic. Hostplant unknown.

Cephus brachycercus C. G. Thomson, 1871: Zselickislak: Kender-földek, 03. 05. 2022, 1 female. Widely distributed, sporadic species. Host plant unknown.

Cephus nigrinus C. G. Thomson, 1871: Zselicszentpál. Vízműtelep, 15. 05. 2022, 1 female; Szenna: Denna-rét, 20. 04. 2022, 2 males, 02. 05. 2022, 1 male; Bánya: Lipótfai tározó, 30. 04. 2022, 1 male; Zselickislak: Kender-földek, 01. 05. 2022, 1 male; Simonfa: Csurgófi-rét, 26. 04. 2022, 1 male. Frequent species. Host plants: *Milium effusum* and *Poa pratensis*.

Cephus pygmaeus (Linné, 1767): Bánya: Lipótfai tározó, 14. 05. 2022, 1 female. Common. Insect pest of cereals and *Gramineae*.

Cephus spinipes (Panzer, 1800): Visnyeszéplak, 14. 05. 2022, 1 male; Zselicszentpál. Vízműtelep, 15. 05. 2022, 1 male; Szenna: Denna-rét, 21. 05. 2022, 1 female, 1 male; Zselickislak: Kender-földek, 22. 05. 2022, 1 male. Frequent. Host plant: *Phleum pratense*.

Evaluation of the sawfly fauna

The 224 recorded species (Haris, 2009 and the present work) makes the Zselic Hills (Zselicség) one of the richest middle sized landscape area of the Carpathian Basin. In Hungary, the most divers region is the Bükk National Park (Bükk Nemzeti Park) with 231 species published by Zombori (Zombori, 1996).

Dominant species

Macrophya montana (Scopoli, 1763) with 78 collected specimens is the most frequent species (in 2009, 31 exemplars were collected). Other frequent species are *Aglaostigma fulvipes* (Scopoli, 1763) with 73 exemplars (32 in 2009), *Dolerus nigratus* (O. F. Müller, 1776) with 30 specimens (27 in 2009), *Athalia rosae* (Linné, 1758) with 35 specimens (24 in 2009). Only 16 specimens of *Macrophya alboannulata* Costa, 1859 were captured, although in 2009, we collected 50 specimens. (In that time, the 2 closely related species, namely *M. alboannulata* and *M. albicincta* were not separated).

Rare species

Pamphilius kontuniemii Shinohara, 2003: Sporadic in the Carpathian Basin, but rare in Hungary. As *Pamphilius kontuniemii* Shinohara is new record for Hungary, however, its taxonomic position is uncertain. Macek et al. 2020 synonymised it with *Pamphilius vafer* (Linnaeus, 1767) since, there are many intermediate forms occur. In the Czech Republic, only intermediate forms were detected. According to Macek et al. 2020, these forms indicate synonymy rather than species hybrids. As *Pamphilius vafer* (Linnaeus, 1767), it was recorded from Budapest, Bakony: Cuha völgy, Vértes: Kumli vgy., Láz hegy, Szögliget, Látrány and Babócsa.

Pamphilius marginatus (Serville, 1823): Only few specimen are known from the Carpathian Basin, most of them collected in Hungary: we have specimens from Budapest, Aggtelek, Perkupa, Szin, Mecsek hgs.: Takanyó völgy and Szentá: Felső-Gyóta erdő (Felső-Gyóta forest), There are further records from the Carpathian Basin from Devínska Kobyla (Pozsony: Dévény), Resinár (Rasinari) and Rúzdka.

Aprosthemata tardum (Klug, 1814): Besides the specimen collected at Zselickislak: Kender-földek, from Hungary, it is known from Mecsek Mountains and Kóspallag: Nagy Vaskapu-hegy. From the Carpathian Basin, it is recorded from Kolozs (Cluj), Nagyvárad (Oradea), Szováta (Sovata) and we have an indefinite record from Zakarpatskaya obl.

Macrodiprion nemoralis (Enslin, 1917): Extremely rare species. From Hungary, only historical data exists: one male collected in Budapest: Gugger hegy in the 19th century (?). The other records from the Carpathian Basin: Michalovce, Holíč and Hodonín. We also have one indefinite records from Zakarpatskaya oblast. This specimen was erroneously published by Haris 2009, as *Gilpinia laricis* (Jurine 1807) (Fig. 10).

Dolerus (Poodolerus) *coracinus* (Klug, 1818): We have only 2 records from Hungary, the present record from Bánya: Lipótfai tározó and from Nagykovácsi. From the Carpathian Basin, we have record only from Ries (Graz) Pöltinis (Paltinis) and Zakarpatskaya obl.

Dolerus (Poodolerus) *megapterus* Cameron, 1881: Lacourt reestablished the well known name of this species, instead of *Dolerus stygius* Förster, 1860 which were frequently confused with *D. gibbosus* Hartig, 1837. This rare species is known from Rábatamási Dinnyés, Simontornya, Fót, Veresegyháza, Kis Balaton: Zala part, Szigetbecse and Balatonszentgyörgy. Out of Hungary, it is known from Nickelsdorf, Košice (Kassa) and Peér.

Dolerus (Poodolerus) *subalatus* Kerensky, 1926: The Zselickisfalud specimen is the second from the Carpathian Basin. The other specimen is known from Pilisszántó: Hosszúhegy.

Dolerus (Achaetopriion) *uliginosus* (Klug, 1818): The Visnyeszéplak: Vitorág female specimen is new record for the present territory of Hungary. It is also known from Remet'ské Hámre (Remetevasgyár), Betlen (Beclean) and Kelč.

Periclista (Periclista) *lineolata* (Klug, 1816): These two specimens from Simonfa: Csurgófi-rét, and Szenna: Denna-rét is good number, compared to those 4 specimens which were recorded previously from Simontornya, Zirc, Cekeháza and Balk. Other records from the Carpathian Basin are: Čifáre (Csiffár), Ihelník. Ivano-Frankivska obl., Ukrainian Carpaths, Podcetrtek and Bílé Karpaty PLA: NNR Čeretoryje and NR Hutě.

Parna tenella (Klug, 1816): Sporadic in the Carpathian Basin. From Hungary, so far, only 2 specimens has been recorded, from Bátorligeti láp and Kaposmérő.

Phyllocolpa oblita (Serville, 1823): The female from Zselickislak: Kender-földek, is the first imago from Hungary. So far, only its mines has been recorded from Gyebediás and Bakony Mts. Out of Hungary it is known from Belušská Slatina-Rohatín Mt., Púchov-Váh env., Porúbka-Turský potok, Soblahov-Trenčín (Trencsén), Čičov (Csicsó), Demänovská slatina (Deménvölgy). Trojačka, Val. Meziříčí, Csetate Boli and we have indefinite record from the Ukrainian Carpaths.

Craesus latipes (Villaret, 1832): From Hungary, it is recorded from Püspökszentlászló, Debrecen, Buda, Felsőegerszeg and Surd. From the other parts of the Carpathian Basin we have records from Szászrégen, Mraconia, Mehedinc (Mehedinti), Maros (Mures), Szilágy (Salaj), Fenes, Sambor region, Polonina Rovna, Rivna, Peretschinskie raion, Zakarpatska obl., Hisne Sinovidne, Stieskovo raion, Lvivskoi obl., Bienkowice, Jičina, Bardejov (Bártfa), Sekule (Székelyfalva), Mošovce (Mosóc), Zilah (Zalau), Brennberg and Réty (Reci). Additionally, it is recorded from NE Croatia (Fig. 11).

Pristiphora abbreviata (Hartig, 1837): From Hungary, it is known only from 3 localities: Újszentmargita, Nagykovács and Kaszó. From the Carpathian Basin we know this species only from Brebenyeszskul.

Pristiphora nigriceps (Hartig, 1840): rare throughout of the Carpathian Basin, out of the recent Zselickislak record, from Hungary it is known from Nagyvisnyó and Nagyoroszi. Other records from the Carpathian Basin: Kozí chrbát - Poľana Mts (Kecskehát), Mošovce (Mosóc), Bystrá (Szentiván)-sedlo, Javorie (Jávori hágó), Lúčky, Jičina Beskydy: Noříč Mt., Stolárka and Szörényordas (Garana).

Pristiphora punctifrons (Thomson, 1871): Sporadic in the Carpathian Basin, but from Hungary it is known from Bélapátfalva, Nagykovács and Mogyorós.

Pristiphora thalictri (Kriechbaumer, 1884): We have records from Simontornya and also from Várpalota: Várvölgy. Our recent record: Gálosfa: Aranyalmavádaszház, is the third specimen from Hungary. It is also known from Hainburg, Javorina (Balázsvágás), Munkács (Mukachevo), Klastromalja (Podmonastyr) and we have an indefinite record from Subcarpathia either.

From the total 117 species, collected in 2022, 14 species are rare. It is 12% of the total number of species (two rare species was collected in 2011 and 1985). In 2009, it was 6%.

Changes in the sawfly fauna of Zselic Hills (Zselicség)

Some significant changes were detected compared to our previous results 13 years ago.

The most important, the subfamily Tenthredininae is strongly reduced. It is true for the collected number of specimen and species richness either. The decrease of *Tenthredo* spp. seems countrywide problem (Haris, 2021, 2020, 2019, 2018a, b). Its reason is still unknown, however we experience it year by year. In the Zselic Hills, *Tenthredo temula* Scopoli, 1763 was the most frequent *Tenthredo* L. species with 28 collected specimen. This year we collected only 7 exemplars. The strong reduction of biodiversity of subgenus Tenthredininae is compensated by the higher species richness of Nematinae and Dolerinae.

The distribution of families and subfamilies of Symphyta, see in Table 1.

Table 1. Distribution of families and subfamilies of Symphyta in the Zselic Hills in 2009 and 2022.

	2009	2022
Pamphiliidae	3	4
Megalodontesidae	1	0
Argidae	8	8
Diprionidae	1	1
Cepidae	7	7
Dolerinae	10	17
Selandrinae	2	0
Allantinae	18	14
Blennocampinae	11	13
Heterarthrinae	3	2
Tenthredininae	41	27
Nematinae	18	24
Total	123	117

Seasonal dynamics of flight activity and species richness of sawflies (Figs. 12 and 13)

The extreme cold weather during the main flying period of sawflies in 2022 (similarly to that in 2021, see Haris 2021) provided good possibility, to compare the flight activity and dynamics of species richness of sawflies in extreme weather conditions comparing to our previous data from 2009.

Significant shift of the initial part of the curves were detected (Fig. 12): while the flight period started around 4th of April in 2009, the first sawfly was captured on in 18th of April in 2022. Opposite of the late emerge of the flight period, the population peaks were in the same time in 2009 and 2022. The spring eruption has mean value 31.4 and its median value is 33.0 and the maximum is 65. It is similar to the data of 2009 year: mean: 24.7, median: 21.5 and max. 64.0. Summer flight period in 2022: average: 7.7, median: 6.0, maximum: 16.0; in 2009: mean: 11.8, median: 9.0, maximum: 25.0. Due to the previously mentioned cold spring, the flight peak of the dominant species: *Macrophya montana* Scop. formed an extra peak between the spring and summer eruption of sawflies culminated around 4th of June. We consider this only as a special variation of the 2 curves flight dynamics pattern, which is typical for the Pannonian Biogeographic region, as it figured in Haris, 2021. Between the spring and summer peak, there was approximately one month minimal activity of sawflies between the 2nd decade of June and 2nd decade of July in both years of investigation.

Similarly to the flight activity curves, the biodiversity curves (Fig. 13) have also 2 peaks, a larger spring peak and a smaller summer peak. Here, the intermediary curve (mentioned above) is missing, since it was caused only one species. In this year, the summer peak was detected in the 2nd decade of July and in the 3rd decade of August in 2009. The first curve has average value 15.8 and median is 16.0 in 2022 and 13.6 and 13.0 was in 2009. The number of species collected in the summer period (July and August) was 15 (8 was collected exclusively in summer), while in the first wave of activity, 110 species were collected, 7.3x more than in summer.

Endangering factors for the sawfly communities of Zselic Hills

Generally, the 2 most important endangering factors are the improper forest cultivation: clear-cuttings (Fig. 14) and the invasive species. From the invasive species, the most dangerous are the Goldenrod species (*Solidago* spp.) (Fig. 15). *Solidago* shall be controlled by regular cutting of grasses (or grazing). However, if the *Solidago* has already replaced the original vegetation, it is impossible to restore the natural habitats. Probably, the forestation of these fields could be a solution. Goldenrod is dangerous for wet or fresh meadows, without human control, it completely destroy natural habitats. Other significant invasive species: annual fleabane (*Stenactis annua*) (everywhere frequent), common milkweed (*Asclepias syriaca*) (sporadic in spots), common ragweed (*Ambrosia elatior*) (at Lake Petörke in Kaposzentbenedek) and locust tree (*Robinia pseudoacacia*) (forest edges and alongside the roads).

Szenna: Denna meadows (Fig. 1)

It holds the highest diversity, 56 species collected from the total 117 species collected in this year, valuable collecting spot. Regularly cutted meadows, therefore it is in relative good condition. At the sides and along the brook, where the vegetation hasn't been cut, sporadically locust tree groups and *Solidago* covers the abandoned edges of the meadow. In late summer, *Ambrosia elatior* is also frequent.

Zselickislak: Kender-földek („Hemp fields”) (Figs. 2 and 7)

In this spot, the second highest diversity was detected, 53 species were collected. Kender-földek means: hemp-fields (textile hemp, not *Cannabis*). In the 19th century, probably hemp was grown by the local farmers here. This toponym was displayed in the 1865 cadastral map.

Visnyeszéplak: Vitorág (Fig. 5)

Dolerus uliginosus Kl. and *Parna tenella* Kl. was captured here. Oak forest with silver lime. Along the road wet spot occurs covered with *Juncus*. The other side of the sampling place with mesophylous pasture

with *Crataegus* and *Rosa* bushes. On the roadside, there are locust tree spots. Sporadically, *Solidago* occurs. It holds relatively low sawfly biodiversity, 10 species were captured.

Bánya: Lipótfai-tározó (Lipótfá water reservoir) (Fig. 4)

It takes place at Lipótfá water reservoir. Regularly cut, on the uncut sides *Solidago* is frequent and seriously endanger this habitat. Some parts has already completely covered by *Solidago*. From June, annual fleabane moderately covers the drier parts of the collection site. It is the habitat of *Dolerus coracinus* Kl. 25 species were collected here.

Bánya: Szilosi-földek (Szilosi fields) (Fig. 4)

Low population density and low biodiversity, but the best site to capture the 2nd generation of sawfly flies in June-August. The brook-sides are completely covered by *Solidago*, see Fig. 15. *Asclepias* occurs in small spots in dry parts, also locust trees on the sides of the meadow.

Simonfa: Csurgófi-rét (Csurgófi meadow) (Fig. 3)

It holds moderately high biodiversity: 29 species were collected here. However, it is collecting site of several rare species like: *Pristiphora punctifrons* (Thomson, 1871), *Pristiphora abbreviata* (Hartig, 1837) and *Periclista lineolata* (Klug, 1816). Roadside and the edges of this meadow is infected by locust trees. Since it is relatively dry, there is no *Solidago* infection. *Asclepias* occurs sporadically.

Zselicszentpál: Ropolyi Erdőrezervátum (Ropoly Forest Reserve)

Dolerus subalatus Kerensky was captured here. Good condition. On roadside locust trees frequent. Otherwise, low biodiversity and population density of sawflies was detected. The most valuable part of Zselic in nature conservation point of view.

Acknowledgement

Author expresses his grateful thanks to Levente Ábrahám, director of Rippl-Rónai Museum at Kaposvár for his support of this research.



Fig. 1: Map of Szenna: Denna-rét (Szenna: Denna meadow) collection site



Fig. 2: Map of Zselickislak: Kenderföldek (Zselickislak: „Hemp fields”) collection site



Fig. 3: Map of Simonfa: Csurgófi-rét (Csurgófi meadow) collection site



Fig. 4: Map of Bárdudvarnok: Bánya collection sites: Lipótfai tározó (Lipótfai water reservoir) and Szilosi-földek (Szilosi fields)

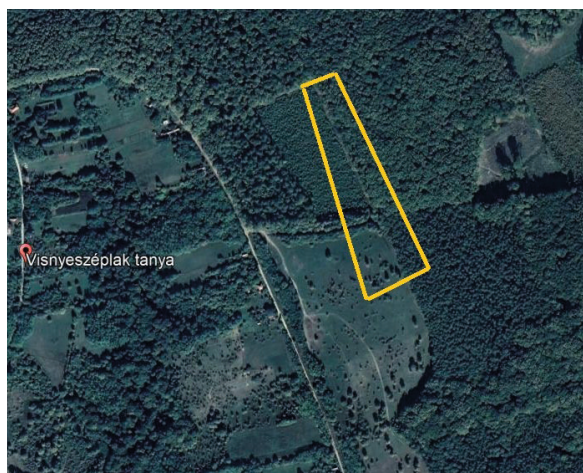


Fig. 5: Map of Visnyeszéplak: Vitorág collection site



Fig. 6: Zselic landscape from „Csillagpark” observation tower



Fig. 7: Zselickislak: Kenderföldek (Zselickislak: „Hemp fields”) collection site



Fig. 8: Kaposzentbenedek: Petörke-tó (Petörke lake)



Fig. 9: Zselic landscape from Kishárságy



Fig. 10: *Macrodipteron nemoralis* (Enslin, 1917) female (photo: Bálint Csernák)



Fig. 11: *Craesus latipes* (Villaret, 1832) female (photo: Bálint Csernák)

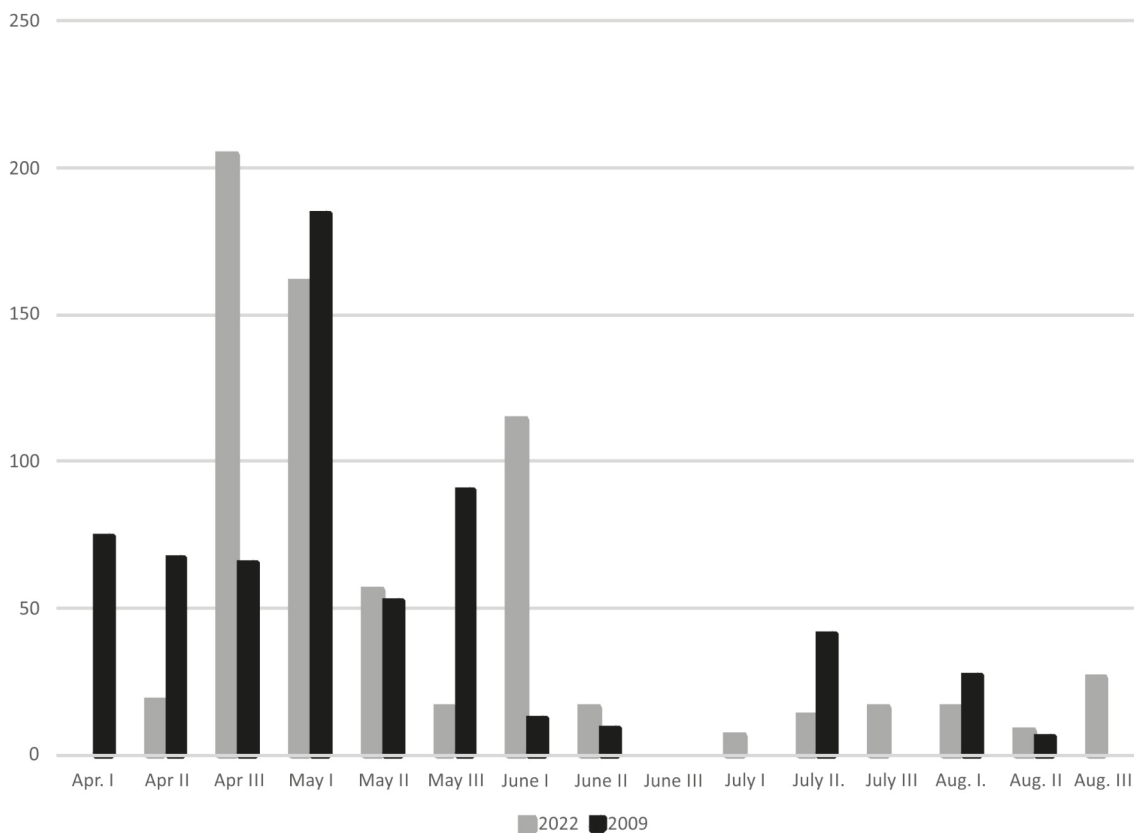


Fig. 12: Dynamics of flight activity of sawflies in 2009 and 2022

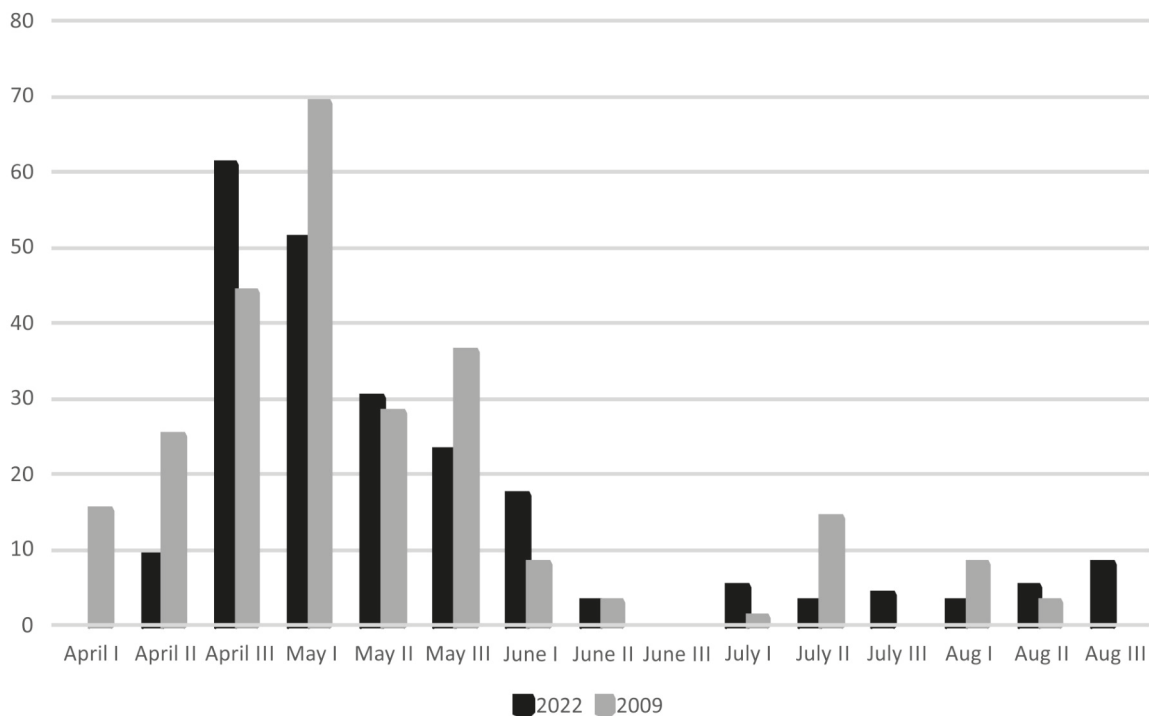


Fig. 13: Dynamics of species richness of sawflies in 2009 and 2022



Fig. 14: Clearcut logging in the Zselicség



*Fig. 15: Invasive species: Goldenrod (*Solidago* sp.)*

References

- ACHTERBERG, C. 2013: Hymenoptera in Fauna Europaea version 2.6.2. – <http://www.faunaeur.org>. last accessed 19th September 2022.
- ACHTERBERG, C. VAN & B. VAN AARTSEN 1986: The European Pamphiliidae (Hymenoptera: Symphyta), with special reference to The Netherlands. – *Zoologische Verhandelingen Leiden* 234: 1-98.
- AMBRUS, B. 1978: Fitocecidiumok a Bakonyból. – *A Veszprém Megyei Múzeumok Közleményei* 13: 25-31.
- BALÁZS, A. AND HARIS, A. 2019: Sawflies (Hymenoptera: Symphyta) of Cerová vrchovina Upland (South Slovakia) – *Natura Somogyiensis* 33: 61-74. <https://doi.org/10.24394/NatSom.2019.33.61>
- BLANK, S. M. AND RITZAU, C. 1998: Die Tenthredopsini Deutschlands (Hymenoptera: Tenthredinidae) p. 227-246. – In: Taeger, A., Blank, S.M. (ed): *Pflanzenwespen Deutschlands (Hymenoptera, Symphyta)*. Kommentierte Bestandsaufnahme. Deutsches Entomologisches Institut, Verlag Goecke & Evers, Keltern.
- HARIS, A. 1998: A Somogy Megyei Múzeum levéldarázs-gyűjteménye (Hymenoptera, Symphyta). – *Somogyi Múzeumok Közleményei* 13: 275-285.
- HARIS, A. 2001: Revisional list of the Hungarian Nematinae with the description of three new species (Hymenoptera: Tenthredinidae). – *Folia Entomologica Hungarica* 62: 95-114.
- HARIS, A. 2006: Study on the Palaearctic *Pristiphora* species (Hymenoptera: Tenthredinidae) – *Natura Somogyiensis* 9: 201-277. <https://doi.org/10.24394/NatSom.2006.9.201>
- HARIS, A. 2009: Sawflies of the Zselic Hills, SW Hungary (Hymenoptera: Symphyta). – *Natura Somogyiensis* 15: 127-158.
- HARIS, A. 2010: Sawflies of the Vértes Mountains (Hymenoptera: Symphyta). – *Natura Somogyiensis* 17: 221-250.
- HARIS, A. 2011: Sawflies of the Börzsöny Mountains (North Hungary) (Hymenoptera: Symphyta). – *Natura Somogyiensis* 19: 149-176.
- HARIS, A. 2012: Sawflies of Belső-Somogy (Hymenoptera: Symphyta). – *Natura Somogyiensis* 22: 141-162.
- HARIS, A. 2018a: Second contribution to the sawflies of Belső Somogy (Hymenoptera: Symphyta). – *Natura Somogyiensis* 31: 45-62. DOI:10.24394/NatSom.2018.31.45
- HARIS, A. 2018b: Sawflies from Külső-Somogy, South-West Hungary (Hymenoptera: Symphyta). – *Natura Somogyiensis* 32: 147-164. <https://doi.org/10.24394/NatSom.2018.32.147>
- HARIS, A. 2019: Sawflies of the Keszthely Hills and its surroundings. – *Natura Somogyiensis* 33:107-128. <https://doi.org/10.24394/NatSom.2019.33.107>
- HARIS, A. 2020: Sawflies of Southern part of Somogy county (Hymenoptera: Symphyta). – *Natura Somogyiensis* 35: 51-70. <https://doi.org/10.24394/NatSom.2020.35.51>
- HARIS, A. and GYURKOVICS, H. 2012: Sawflies (Hymenoptera: Symphyta) from Szeged and its surroundings (SE Hungary). – *Natura Somogyiensis* 22: 163-182.
- HARIS, A. and GYURKOVICS, H. 2014: The genus *Tenthredopsis* Costa, 1859 in Hungary (Hymenoptera: Symphyta). – *Natura Somogyiensis* 24: 99-124.
- KOCH, F. 1988b: Die Gattung *Sterictiphora* Billberg (Insecta, Hymenoptera, Symphyta: Argidae). – *Entomologische Abhandlungen. Staatliches Museum für Tierkunde in Dresden, Leipzig* 52(2): 29-61.
- LACOURT, J. 2020: Sawflies of Europe: Hymenoptera of Europe 2 N. A. P. Editions. Verrières-le-Buisson 876 pp.
- MACEK, J., ROLLER, L., BENEŠ, K., HOLÝ, K. and HOLUŠA, J. 2020: Blanokřídli České a Slovenské republiky II. Širopasí. – *Academia Praha*. 669 pp.
- PROUS, M., KRAMP, K., VIKBERG, V. and LISTON, L. 2017: North-Western Palaearctic species of *Pristiphora* (Hymenoptera, Tenthredinidae). – *Journal of Hymenoptera Research* 59: 1-190.
- ROLLER, L. 1999: Check list of the sawflies (Hymenoptera: Symphyta) of Slovakia. – *Entomological Problems* 30(2): 37-48.
- ROLLER, L. 2000 First records of Blasticotomidae, Tenthredinidae, Pamphiliidae (Hymenoptera) from Slovakia. – *Biologia, Bratislava* 55(5): 561-562.
- ROLLER, L. and HARIS, A. 2008: Sawflies of the Carpathian Basin, History and Current Research. – *Natura Somogyiensis* 11. Kaposvár. 261 pp. <https://doi.org/10.24394/NatSom.2008.11.2>
- ROLLER L., BENEŠ K., BLANK S. M., HOLUŠA J., JANSEN E., JÄNICKE M., KALUZA S., KEHL A., KEHR I., KRAUS M., LISTON A. D., NYMAN T., NIE H., SAVINA H., TAEGER A. and WEI M., 2006: Contribution to the knowledge of sawfly fauna (Hymenoptera, Symphyta) of the Low Tatras National Park in Central Slovakia. – *Naturae Tutela* 10: 57-72.
- TAEGER, A. 1988: Dritter Beitrag zur Kenntnis der Blattwespengattung *Tenthredo* L. (Hymenoptera: Symphyta: Tenthredinidae) – *Beiträge zur Entomologie*, Berlin 38(2): 337-359.
- TAEGER, A. 2015: European *Rhogogaster* s. str., with notes on several Asian species (Hymenoptera: Tenthredinidae) – *Zootaxa* 4013(3): 369-398.
- TAEGER, A., LISTON, A. D., PROUS, M., GROLL, E.K., GEHROLDT, T. and BLANK S. M. 2018: ECatSym – Electronic World Catalog of Symphyta (Insecta, Hymenoptera). Program version 5.0 (19 Dec 2018), data version 40 (23 Sep 2018). – Senckenberg Deutsches Entomologisches Institut (SDEI), Münchenberg. <https://sdei.de/ecatsym/> Access: 10 Aug 2022
- TIMÁR, G., BISZAK, S. 2010: Digitizing and georeferencing of the historical cadastral maps (1856-65) of Hungary. – In: Livieratos, E., Gartner, G. (eds.): *Proceedings of the 5th International Workshop on Digital Approaches in Cartographic Heritage*, 559-564. <http://dx.doi.org/10.13140/2.1.3888.8967>
- ZHELOCHOVTSEV, A. N. 1988: Otryad Hymenoptera – Pereponchatokrylye, Podotryad Symphyta – Sidyachebryukhie, 7-234. – In: Medvedev, K.H. (ed.) *Opredelitel nasekomykh evropeiskoi chasti SSSR, Vol. 3 Hymenoptera, Part 6, Nauka, Leningrad*
- ZOMBORI, L. 1996: Symphyta from the Bükk national park (Hymenoptera). 435-452. – In: Mahunka, S. (ed.): *The fauna of the Bükk national park, II. Hungarian Natural History Museum, Budapest*

