Natura Somogyiensis 44: 27-40. Kaposvár, 2024 https://doi.org/10.24394/NatSom.2024.44.27
Submitted: 30.09, 2024; Accepted: 04.10, 2024; Published: 09.10, 2024 www.smmi.hu/termtud/ns/ns.htm

Sawflies of Vashlovani National Park (Georgia - Sakartvelo) (Hymenoptera: Symphyta)

George Japoshvili[1,2] & Attila Haris[3]

[1]Institute of Entomology, Agricultural University of Georgia, David Aghmashenebeli Alley, #240, Tbilisi, Georgia e-mail: g.japoshvili@agruni.edu.ge
[2]Invertebrate Research Center, Tetritsklebi, Telavi Municipality – 2200, Telavi, Georgia
[3]H-1076 Budapest, Garay u. 19. Hungary e.mail: attilaharis@yahoo.com

Japoshvili, G. & Haris, A. 2024: *Sawflies of Vashlovani National Park (Georgia - Sakartvelo) (Hymenoptera: Symphyta) Natura Somogyiensis 44: 27-40.*
Abstract: Thirty-five species were collected from Vashlovani National Park in Sakartvelo (Georgia). *Megalodontes eversmanni* (Freymuth, 1870), *Aprosthema freyi* (Forsius, 1921), *Sterictiphora furcata* (Villers, 1789), *Tenthredo aulica* Enslin, 1912, *Tenthredo dissidua* (Konow, 1899) and *Tenthredo longipes* (Konow, 1886) are new records for the country. Male genitalia of *Pristiphora araratensis* Haris, 2006 is figured and separated from its relatives.

Keywords: Caucasus, Hymenoptera, Symphyta, faunistics, ecology

Introduction

The present paper is the 10th publication of our series studying the sawfly communities of Sakartvelo (Georgia) after Japoshvili and Haris (2022a, b, c, d, e 2023a, b, c) Supatashvili, Japoshvili and Haris (2022). Our final goal is to gain a broader understanding of the sawfly fauna of Sakartvelo (Georgia) and to better understand the environmental factors that influence them. In this paper, we study 2 very different regions of South-West Georgia. Two sampling sites are located at lower altitudes in the region, between 95 and 98 m, namely Mijniskure: Alazani bank and Mijniskure meadow, and the other two sampling sites are at 450-495 m, namely Datvish Khevi and Vashlovani meadow. At the two different altitudes, we observed different faunas, different species richness, and different population densities and population dynamics, which are discussed below. Beyond these 4 major sites, some other sporadically collected species were also listed from various regions of Sakartvelo, collected by using various methods in the last year.

Material and methods

Vashlovani National Park is located in the eastern part of Georgia (Sakartvelo). Georgia's Kakheti Region near the Azerbaijani border, boasts diverse natural features. The park encompasses several distinct zones, including steppe, forest-steppe, semi-

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

desert, and deciduous forests. Vashlovani experiences a dry climate, with elevations ranging from 150 to 450 meters above sea level. Summers are hot and dry. Winters are cooler, with temperatures rearly dropping to around 0°C.

The Alazani River (particularly Mijniskure) and its tributaries provide essential water sources for the region. The region features a mix of forests, grasslands, and wetlands. Natural Vegetation of Mijniskure Alazani is characterized by diverse vegetation types dominated by *Quercus, Pistacio, Carpinus, Populus, Granatum, Rosa, Scirpus* and *Rubus*. Typical endemic species of this region is Iris iberica – Georgian Iris (Gagnidze, 2005). Climate in Mijniskure Alazani, varies based on elevation and proximity to the Caspian Sea. The region experiences moderate precipitation throughout the year. Rainfall is more abundant in the spring and autumn months. These mountains are geologically diverse, with sedimentary rocks, volcanic formations, and metamorphic rocks. The Alazani River has shaped the landscape over millennia, carving deep valleys and depositing fertile alluvial soils.

Datvish Khevi, is located in the western part of Vashlovani protected areas. The area is characterized semi desert (arid) canyon, with *Pyrus, Carpinus, Pistacio, Tamarix, Rosa* and *Tuja* trees and bushes. It's a dry river valley, with xerophytic vegetation: *Paliurus, Tamarix, Pistacea, Tuija* and *Rosae*. To the south, the valley gradually expands and reveals an extensive panorama of "Alesilebi". The river valley during most of the year is dry and water appears only dring rains, which is very rear, as the annual precipitation is around 400 mm. Summers are very host and dry.

For identification Zhelochovtsev's work on the sawflies of the European part of the former USSR (ZHELOCHOVTSEV 1988), the handbook of Lacourt on the identification of the European sawflies (LACOURT 2020), the monograph of Robert Benson on the Turkish fauna (BENSON 1968), Gussakovskij's and monographs on the sawflies of the former USSR (GUSSAKOVSKIJ 1935, 1947) were used. We also consulted recent revisions (GYURKOVICS and HARIS 2014, HARIS 2006) to confirm the identifications of particular taxa. The general distribution of species are reported based on ROLLER and HARIS (2008), SUNDUKOV (2017) and TAEGER et al. (2006). Host plant records are given according to MACEK et al. (2020).

Major collecting sites (Figs. 1-4)

1. Mijniskure: Alazani bank, 41.111663°N, 46.649028°E, 94m asl, This is floowplane forest on the Alazani river (one of the biggest river in Georgia) side, with *Quercus, Pistacio, Carpinus, Populus, Granatum, Rosae, Scirpus, Rubus*. (Fig. 2).

2. Datvish Khevi, 41.240505°N, 46.383119°E, 450 m asl., It's a dry river valley, with *Paliurus, Tamarix, Pistacea, Tuija, Rosae* (Fig. 1)

3. Mijniskure meadow, 41.112362°N, 46.646654°E, 98m asl., meadow with different grass species.

4. Vashlovani meadow, 41.205162°N, 46.423541°E, 495 m asl., *Stipa* meadow surrounded with *Pistacio* light forest (Fig. 3).

Additional sites or collecting methods:

Kakheti, Vashlovani, near central bungaloes, 41.159782°N,, 46.567286°E, 275m alt, *Thuya* and *Pistacio* trees, arid-light forest, subdesert, color traps.

Kakheti, Vashlovani, Mijniskure, 41.111663°N, 46.649028°E, 94m alt, Floodplane forest, color traps.

Kakheti, Vashlovani, Mijniskure, 41.111663°N,, 46.649028°E, 94m alt, Floodplane forest, Sweeping net.

Kakheti, Vashlovani, Mijniskure, 41.111663°N, 46.649028°E, 94m alt, Floodplane forest, color traps.

Fig. 1: Datvish Khevi landscape

Fig. 2: Mijniskure: Alazani landscape

Fig. 3: Vashlovani meadow

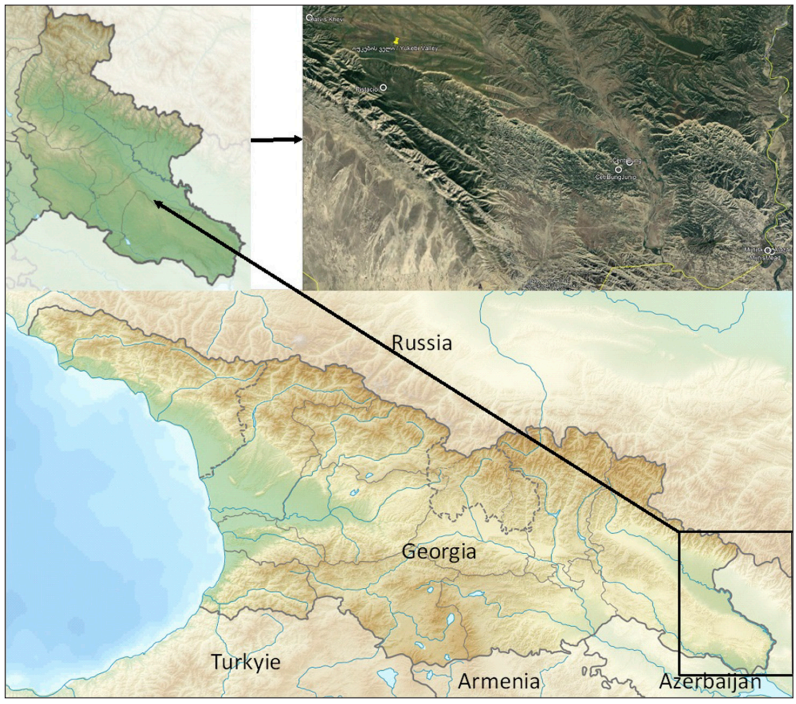

Fig. 4: Map of the investigated area

List of species:

Megalodontes eversmanni (Freymuth, 1870): Datvish Khevi, 22. 05. - 08. 06. 2023, 2 females. Pontocaspian and North Mediterranean. Sporadic. Hostplant unknown. New record for Georgia.

Aprosthema ballioni (Konow, 1892): Mijniskure: Alazani, bank of River Alazani, 05-16. 05. 2023, 1 female, 16-27. 05. 2023, 2 females. Pontocaspian species, known only from Georgia. Sporadic. Hostpalnt unknown.

Aprosthema freyi (Forsius, 1921): Mijniskure: Alazani, bank of River Alazani, 27. 05. - 09. 06. 2023, 1 female, Sporadic. New record for Georgia. Pontocaspian species. Hostplant unknown.

Sterictiphora furcata (Villers, 1789): Datvish Khevi, 16 - 27. 05. 2023, 1 male; Vashlovani meadow, 24. 04. - 04. 05. 2023, 1 female, 16 - 26. 05. 2023, 1 female. Sporadic. Hostplant: *Rubus idaeus*. New record for Georgia. West Palaearctic.

Arge melanochra (Gmelin, 1790): Mijniskure: Alazani, bank of River Alazani, 15-25. 04. 2023, 1 female. Frequent. Larva on *Crataegus oxycantha*. West Palaearctic.

Halidamia affinis (Fallén, 1807): Mijniskure: Alazani, bank of River Alazani, 05-15. 04. 2023, 3 females; Mijniskure meadow, 05-15. 04. 2023, 2 females; Vashlovani meadow, 04 – 14. 04. 2023, 1 female. Frequent. Host plants: *Galium aparine* and *G. molugo*. West Palaearctic species, introduced to North America.

Allantus (*Emphytus*) *cinctus* (Linné, 1758): Mijniskure: Alazani, bank of River Alazani, 27. 05. - 09. 06. 2023, 1 female, 23. 09. - 12. 10. 2023, 1 female; Mijniskure meadow, 23. 09. - 13. 10. 2023, 1 female; Datvish Khevi, 04 - 14. 04. 2023, 1 male. Frequent. Host plants: *Fragaria* and *Rosa* spp. Palaearctic.

Allantus (*Emphytus*) *didymus* (Klug, 1818): Mijniskure: Alazani, bank of River Alazani, 24. 07. - 04. 08. 2023, 1 male; Datvish Khevi, 24. 04. - 04. 05. 2023, 5 females, 4 males, 05-16. 05. 2023, 1 female, 1 male, 16 - 27. 05. 2023, 1 male, 22. 05. - 08. 06. 2023, 3 females, 3 males; Vashlovani meadow, 24. 04. - 04. 05. 2023, 1 female, 16 - 26. 05. 2023, 1 female, 27. 05. - 08. 06. 2023, 1 female. Frequent. Larva on *Sanguisorba minor*; old records from *Rubus* and *Rosa* spp. need checking. West Palaearctic.

Allantus (*Emphytus*) *laticinctus* (Serville, 1823): Vashlovani meadow, 27. 05. - 08. 06. 2023, 1 female. Sporadic, West Palaearctic species. Hostplant: *Rosa* spp.

Allantus (*Allantus*) *viennensis* (Schrank, 1781): Mijniskure: Alazani, bank of River Alazani, 25. 04. - 05. 06. 2023, 1 female, 16-27. 05. 2023, 1 female; Datvish Khevi,05-16. 05. 2023, 1 female, 22. 05. - 08. 06. 2023, 2 females. Sporadic, West Palaearctic species, introduced to North America. Larva on *Rosa* spp.

Athalia ancilla Serville, 1823: Mijniskure: Alazani, bank of River Alazani, 22. 06. - 03. 07. 2023, 1 male; Mijniskure meadow, 27. 05.-08. 06. 2023, 2 females, 16-26. 05. 2023, 2 females, 05-15. 09. 2023, 1 female, 08-19. 06. 2023, 11 females, 23. 09. - 13. 10. 2023, 1 female, 05-15. 09. 2023, 1 female, 14-23. 09. 2023, 2 females; Datvish Khevi, 23. 09.

- 13. 10. 2023, 3 females, 2 males, 22. 05. - 08. 06. 2023, 1 female; Vashlovani meadow, 23. 09. - 13. 10. 2023, 1 female. West Palaearctic species. Frequent in Georgia, otherwise sporadic. Larva on *Brassica* spp., *Cardamine* spp., *Raphanus* spp., *Sinapis* spp., *Sisymbrium* spp. and *Alliaria petiolata*.

Athalia bicolor Serville, 1823: Datvish Khevi, 04 - 14. 04. 2023, 3 females; Vashlovani meadow, 04 – 14. 04. 2023, 1 female; Kakheti, Vashlovani, 24 – 25. 07. 2023, 1 female; Kakheti, Vashlovani, Mijniskure, 05 – 06. 04. 2023, 1 male. Frequent. Host plant: *Ranunculus* spp. Palaearctic.

Athalia cordata Serville, 1823: Mijniskure: Alazani, bank of River Alazani, 15-25. 04. 2023, 1 female, 1 male, 14-23. 09, 2023, 1 female, 23. 09. - 12. 10. 2023, 7 females, 6 males; Mijniskure meadow, 05-15. 04. 2023, 1 female, 23. 09. - 13. 10. 2023, 2 females, 05-15. 09. 2023, 1 female; Datvish Khevi, 04 - 14. 04. 2023, 3 females, 4 males, 14 - 24. 04. 2023, 2 females, 7 males, 24. 04. - 04. 05. 2023, 1 male, 13 – 23. 09. 2023, 2 females, 1 male, 23. 09. - 13. 10. 2023, 11 females, 32 males; Vashlovani meadow, 04 – 14. 04. 2023, 1 male, 23. 09. - 13. 10. 2023, 2 females, Kakheti, Vashlovani, 03-05. 2023, 1 female, 1 male. Common. Larva on *Misopates orontinum, Antirrhinum majus, Ajuga reptans, Teucrium scorodonia* and *Plantago* spp. West Palaearctic.

Athalia liberta (Klug, 1815): Mijniskure: Alazani, bank of River Alazani, 22. 06. - 03. 07. 2023, 1 female, Mijniskure meadow, 05-15. 09. 2023, 1 female; Datvish Khevi, 16 - 27. 05. 2023, 1 female; Kakheti, Vashlovani, Mijniskure, 24 – 25. 07. 2023, 1 female. Frequent. Larva on *Brassicaceae, Alliaria petiolata, Cardamine* spp.. *Sisymbrium* spp., *Lunaria rediviva* and *Dentaria bulbifera*. Palaearctic.

Athalia rosae (Linné, 1758): Datvish Khevi, 23. 09. - 13. 10. 2023, 1 male; Mijniskure: meadow, 21. 06. - 03. 07. 2023, 1 female. Common. 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, Alliara petiolata* and *Cardamine* spp. Palaearctic.

Athalia rufoscutellata Mocsáry, 1879: Datvish Khevi, 04 - 14. 04. 2023, 1 female, 14 - 24. 04. 2023, 1 male, 24. 04. - 04. 05. 2023, 2 females, 16 - 27. 05. 2023, 2 females. Frequent. Palaearctic. Hostplant unknown.

Monostegia abdominalis (Fabricius, 1798): Datvish Khevi, 04 - 14. 04. 2023, 3 females, 24. 04. - 04. 05. 2023, 2 females. Palaearctic species, introduced to USA and Canada.

Taxonus sticticus (Klug, 1817): Mijniskure: Alazani, bank of River Alazani, 05-15. 04. 2023, 1 male, 15-25. 04. 2023, 1 male, 25. 04. - 05. 06. 2023, 1 female; Datvish Khevi, 16 - 27. 05. 2023, 1 male. West Palaearctic.

Macrophya (*Macrophya*) *diversipes* (Schrank, 1782): Datvish Khevi, 05-16. 05. 2023, 1 female, 16 - 27. 05. 2023, 1 female. Palaearctic.

Tenthredo (*Elinora) aulica* Enslin, 1912: Mijniskure meadow, 05-15. 04. 2023, 1 female; Kakheti, Vashlovani, 03-05. 2023, 1 female. Pontocaspian. Sporadic. New record for Georgia. Hostplant unknown.

Tenthredo (*Cephaledo*) *bifasciata* ssp. *bifasciata* O.F. Müller, 1766: Datvish Khevi, 24. 04. - 04. 05. 2023, 4 females, 1 male, 05-16. 05. 2023, 1 female, 16 - 27. 05. 2023, 2 females, 1 male. North Mediterranean and Pontocaspian.

Tenthredo (*Maculedo*) *vestita* André, 1881: Mijniskure meadow, 05-15. 04. 2023, 2 females. Pontocaspian-Anatolian-Persian. Sporadic. Hostplant unknown.

Tenthredo (*Elinora*) *dissidua* (Konow, 1899): Kakheti, Vashlovani, 03-05. 2023, 1 female. New record for Georgia. Sporadic, Pontocaspian species.

Tenthredo (*Zonuledo*) *distinguenda* (Stein, 1885): Mijniskure: Alazani, bank of River Alazani, 25. 04. - 05. 05. 2023, 1 female, Frequent. Larva on *Hypericum perforatum*. West Palaearctic.

Tenthredo (*Zonuledo*) *distinguenda* ssp. *hyrcana* Benson, 1968: Datvish Khevi, 24. 04. - 04. 05. 2023, 3 males. Frequent. Hotplant unknown. East-Mediterranean.

Tenthredo (Elinora) longipes (Konow, 1886): Kakheti, Vashlovani, Mijniskure, 05 – 06. 04. 2023, 1 female. Pontocaspian. Sporadic. New record for Georgia.

Tenthredopsis annuligera (Eversmann, 1847) (sculptura Tenthredopsis albopunctata (Tischbein, 1852): Mijniskure meadow, 15-25. 04. 2023, 1 male. Sporadic, West-Palaearctic species. Host plant unknown.

Tenthredopsis festiva Konow, 1890: Mijniskure meadow, 05-15. 04. 2023, 1 female. Sporadic, Ponto-Caspian species. Host plant unknown.

Cladius (*Cladius*) *pectinicornis* (Geoffroy, 1785): Datvish Khevi, 22. 05. - 08. 06. 2023, 1 male; Vashlovani meadow, 23. 09. - 13. 10. 2023, 1 female. Holarctic. Common. Host plants: *Alchemilla, Filipendula, Fragaria, Potentilla, Sanguisorba, Rosa* and *Rubus* spp.

Pristiphora araratensis Haris, 2006: Mijniskure: Alazani, bank of River Alazani, 23. 09. - 12. 10. 2023, 1 male, 09-20. 06.. 2023, 1 female; Vashlovani meadow, 04 – 14. 04. 2023, 1 male, 24. 04. - 04. 05. 2023, 1 male; 27. 05. - 08. 06. 2023, 1 female. Frequent. Hostplant unknwon. Anatolian-Pontocaspian.

Orussus abietinus (Scopoli, 1763): Kakheti, Vashlovani, Mijniskure, 26. 04. 2023, 1 female. Ectoparasitoid Symphyta, the hosts are buprestid and longhorn beetles from the genera *Buprestis, Eurythyrea, Chrysobothris, Agrilus, Acmaeodera, Dicerca, Asemum, Arhopalus* etc., as well as woodwasps (genera *Sirex, Urocerus, Tremex* and probably *Xiphydria*). Frequent. Palaearctic.

Cephus pygmeus (Linné, 1767): Datvish Khevi, 24. 04. - 04. 05. 2023, 9 females, 6 males, 05-16. 05. 2023, 33 females, 1 male, 16 - 27. 05. 2023, 9 females, 1 male, 22. 05. - 08. 06. 2023, 2 females. Common. Insect pest of cereals and *Gramineae*. Palaearctic, introduced to North America.

Janus luteipes (Lepeletier, 1823): Mijniskure: Alazani, bank of River Alazani, 16-27. 05. 2023, 1 female. Sporadic. Host plants: *Salix* spp., *Populus tremula* and *Viburnum lantana*. Palaearctic.

Syrista parreyssii (Spinola, 1843): Datvish Khevi, 05-16. 05. 2023, 1 female, 22. 05. - 08. 06. 2023, 1 female, Frequent. Host plant: *Rosa* spp. like *Rosa alba, R. canina x damascena, R. rubiginosa.* Holomediterranean.

Trachelus tabidus (Fabricius, 1775): Datvish Khevi, 05-16. 05. 2023, 46 females, 3 males, 16 - 27. 05. 2023, 1 female, 22. 05. - 08. 06. 2023, 1 female, 1 male; Vashlovani meadow, 05 – 16. 05. 2023, 2 females, 16 - 26. 05. 2023, 4 females, 27. 05. - 08. 06. 2023, 1 female. Host plant: various *Poaceae* including cereals. Frequent. Holomediterranean-Central European. Introduced to the USA.

Male of *Pristiphora araratensis* Haris, 2006 (Figs. 5-7)

Although this species is frequent in the Ponto-Caspian and Anatolian region (Calmasur, 2020), the separation of males from the related species is not resolved. This time, we captured several male specimens for genitalia dissection to help in the separation of this species from the other members of *Pristiphora rufipes* group. Females can be separated from the related species by their extremely dark wings. The other descibed character, the entirely yellow hind femora, may darken in the basal quarter. Males can be separated by their extremely dark wing (Fig. 5) and penial valve (Figs. 6 and 7).

Fig. 5: Male of *Pristiphora araratensis* Haris, 2006

Fig. 6: Male genitalia of *Pristiphora araratensis*

Fig. 7: Apex of penis valve of *Pristiphora araratensis*

Species richness and zoogeographic distribution

At 450-495 m asl., We detected 23 species, and in 94-98 m asl., 19 species. 10 species occurred in all 4 sampling sites. Generally, we may say, the sawfly fauna of this region is poor, however, it contains some characteristic and local species for this region.

Table 1. The zoogeographic origin of the collected sawflies was evaluated

Zoogeographical area	Number of species	%
Ponto-Caspian-Anatolian-Persian	1	2.8%
Ponto-Caspian	5	14.4%
North Mediterranean-Ponto-Caspian	2	5.8%
East Mediterranean	1	2.8%
Pontocaspian-Anatolian	2	5.8%
Holomediterranean-Central-European	1	2.8%
Holomediterranean	1	2.8%
West Palaearctic	11	31.4%
Palaearctic	10	28.6%
Holarctic	1	2.8%

The zoogeographic origin of the collected sawflies was evaluated (Table 1). Most of the species have wide geographic distribution, i.e. Holarctic, Palaearctic and West Palaearctic, Their proportion is 62.1%. The so called characteristic components are the species with limited distribution areas: Ponto-Caspian-Anatolian-Persian, Ponto-Caspian, East Mediterranean and Pontocaspian-Anatolian. These species are: *Aprosthema ballioni* (Konow, 1892), *Aprosthema freyi* (Forsius, 1921), *Tenthredo aulica* Enslin, 1912, *Tenthredo vestita* André, 1881, *Tenthredo dissidua* (Konow, 1899), *Tenthredo distinguenda* ssp. *hyrcana* Benson, 1968, *Tenthredo longipes* (Konow, 1886), *Tenthredopsis festiva* Konow, 1890.

Their proportion is 24.4%. Significantly larger than that we were experienced during our investigations in the different regions of Caucasus (12-13%) (JAPOSHVILI and HARIS 2022b, c and d).

Population dynamics and species richness of sawflies of the 2 different altitudes. Population dynamics are presented in Fig. 8 and temporal changes of species richness in Fig. 9. Due to the different climatic conditions, the population densities culminate in the last decade of April in the 95 m elevation and one month later in the higher elevation, which seems normal. Flight activity of sawflies starts when the daily average temperature close to soil (approximately 1.5 meter) reaches 10 degrees Celsius most of the daytime (*Dolerus* spp.). We estimate, the flight period must start in the lover altitude in the first decade of March and in the higher 450 m) elevation in the first decade of April. Unfortunately, the fauna of the early period was not monitored. In the high elevation, the maximum measured population size is nearly 8x higher than in 95 m. asl. In the temporal changes of species richness, the situation is also similar. Species richness culminates 5 weeks later in the higher altitudes.

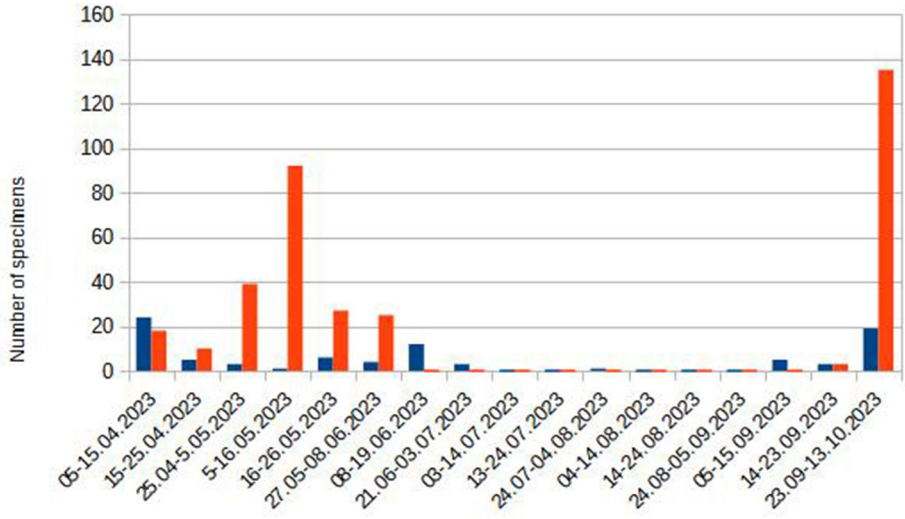

Fig. 8: Temporal changes of number of collected sawflies (blue: 94-98 meters, orange: 450-495 meters asl.)

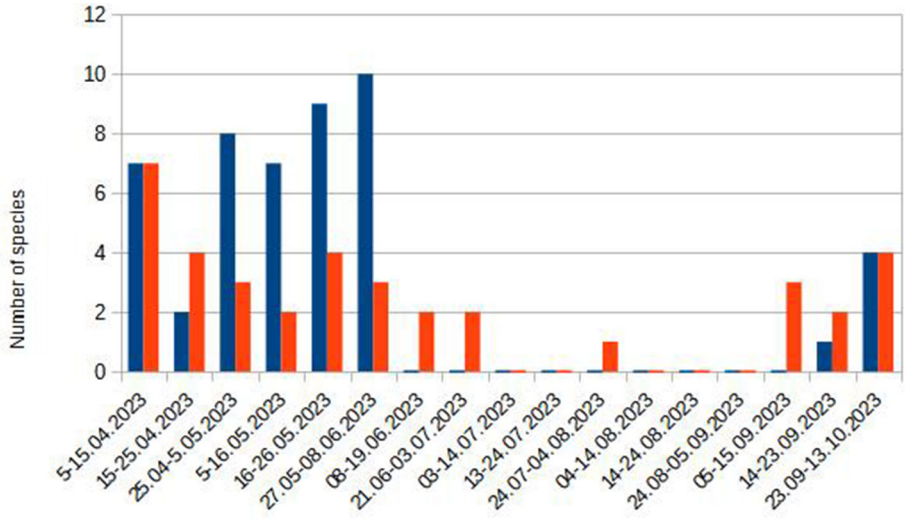

Fig. 9: Temporal changes of species richness of sawflies (orange: 94-98 meters, blue: 450-495 meters asl.)

Acknowledgments

This work was supported by Shota Rustaveli National Science Foundation of Geoegia (SRNSFG), project ref. NFR-22-1235, Hymenoptera Biodiversity in the Vashlovani National Park. We also thank the BMBF-funded project Caucasus Barcode of Life (CaBOL), ref. number: 01DK20014A for the financial support. We express of our grateful thanks to Dr. Katalin Hári (Hungarian University of Agriculture and Life Sciences) for the high quality photos and to Dr. Levente Ábrahám (Rippl-Rónai Museum, Kaposvár) for editing our paper.

References:

BENSON, R. B. 1968: Hymenoptera from Turkey, Symphyta. – Bulletin of the British Museum (Natural History). Entomology series, London 22(4): 111-207. https://doi.org/10.5962/bhl.part.9952

GUSSAKOVSKIJ, V. 1935: Insectes Hyménoptéres, Chalastogastra 1. – Fauna SSSR, Moskva, Leningrad, Academie des Sciences de l'URSS, Moscou, Leningrad 2(1): 1-453.

GUSSAKOVSKIJ, V. 1947: Insectes Hyménoptéres, Chalastogastra 2. – Fauna SSSR, Moskva, Leningrad, Academie des Sciences de l'URSS, Moscou, Leningrad 2(2): 1-235.

GYURKOVICS, H., HARIS A. 2014: The genus Tenthredopsis Costa, 1859 in Hungary (Hymenoptera: Symphyta). – Natura Somogyiensis24: 99-124. https://doi.org/10.24394/NatSom.2014.24.99

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

CALMASUR, Ö. 2020: New records and some new distribution data for the Turkish Nematinae (Hymenoptera: Symphyta: Tenthredinidae) fauna. Türkiye Entomoloji Dergisi 44 (3): 413-422. http://dx.doi.org/10.16970/entoted.715181

JAPOSHVILI, G. and HARIS, A. 2022a: New Monoctenus Dahlbom, 1835 (Hymenoptera: Symphyta) species from Georgia. – Natura Somogyiensis 38: 23-28. https://doi.org/10.24394/NatSom.2022.38.23

JAPOSHVILI, G. and HARIS, A. 2022b: Sawflies (Hymenoptera: Symphyta) of Kintrishi National Park, south-west Georgia (Sakartvelo). – Annals of Agrarian Science 20: 12-27.

JAPOSHVILI, G. and HARIS, A. 2022c: Sawflies (Hymenoptera: Symphyta) from North-Western Georgia (Sakartvelo). – Caucasiana 1:41-49. https://doi.org/10.3897/caucasiana.1.e83640

JAPOSHVILI, G. and HARIS, A. 2022d: Sawflies (Hymenoptera: Symphyta) from North-Western Georgia (Sakartvelo) (Part II) – Natura Somogyiensis 39: 35-46. https://doi.org/10.24394/NatSom.2022.39.35

JAPOSHVILI, G. and HARIS, A. 2022e: Sawflies (Hymenoptera: Symphyta) from the high altitudes of Caucasus in Kintrishi Nature Reserve, Georgia (Sakartvelo) – Annals of Agrarian Science 20: 172-179.

JAPOSHVILI, G. and HARIS, A. 2023a: Third contribution to the sawflies (Hymenoptera: Symphyta) of Kintrishi Nature Reserve (Georgia, Sakartvelo) – Annals of Agrarian Science 20(4):199-208.

JAPOSHVILI, G. and HARIS, A. 2023b: Sawflies (Hymenoptera: Symphyta) from Racha and Kakheti regions of Georgia (Sakartvelo). – Natura Somogyiensis 40: 119-128. https://doi.org/10.24394/NatSom.2023.40.119

JAPOSHVILI, G. and HARIS, A. 2023c: Sawflies (Hymenoptera: Symphyta) from Babaneuri state reserve and Tbilisi, Georgia (Sakartvelo) – Natura Somogyiensis 41: 31-38. https://doi.org/10.24394/NatSom.2023.41.31

LACOURT. J. 2020: Sawflies of Europe: Hymenoptera of Europe 2 N. A. P. Editions. Verriéres-le-Buisson 876 pp.

MACEK, J., ROLLER, L., BENEŠ, K., HOLÝ, K., HOLUŠA, J. 2020: Blanokřídlí České a Slovenské republiky II. Širopasí. – Academia Praha. 669 pp.

Roller L, 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

Sundukov, Y. 2017: Suborder Symphyta – Sawflies and wood wasps. In: Lelej A.S. (Ed.). Annotated catalogue of the Hymenoptera of Russia. Volume I. Symphyta and Aculeata. Proceedings of the Zoological Institute RAS. Supplement 6: 20–117.
https://doi.org/10.31610/trudyzin/2017.supl.6.5

Supatashvili, A., Japoshvili, G. and Haris, A. 2022: Some important records on sawflies (Hymenoptera: Symphyta) from the Entomological Collection of Agricultural University of Georgia (Sakartvelo) identified by Dr. Ermolenko. – Natura Somogyiensis 39: 47-58. 22
https://doi.org/10.24394/NatSom.2022.39.47

Taeger, A., Blank, S., Liston, A. 2006: European Sawflies (Hymenoptera: Symphyta) - A Species Checklist for the Countries. 399-504.– In Blank, S. M., Schmift, S. & Taeger, A. (eds) Recent Sawfly Research: Synthesis and Prospects, Goecke & Evers, Kelter. 701 pp.

Zhelochovtsev, A. 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.
https://doi.org/10.5962/bhl.title.463347