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Sawflies (Hymenoptera: Symphyta) of Kintrishi National Park, south-west Georgia (Sakartvelo)

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A B S T R A C T

Sixty-five sawfly species have beenwere identified from a total of 1,703 specimens collected in Kintrishi National Park at three different altitudes using Malaise traps. Sixteen genera and 42 species were recorded for the first time in Georgia (Sakartvelo). The seasonal dynamics and diversity of sawfly community and vertical zoogeographical distribution of sawflies are also analysed and discussed.

***Key words*:** Hymenoptera, Symphyta, Kintrishi National Park, Sakartvelo, ecology, nature conservation

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Introduction

Kintrishi National Park (KNP) is located in Achara, in the southwestern part of Sakartvelo (Georgia), Kobuleti district, 55 km from Batumi and 360 kilometers km from Tbilisi, in Kobuleti municipality, around the valley of the Kintrishi River, between the villages Tskhemvana and Khino, at an altitude between 300 and 2 500 m above sea level (Fig.1). The protected area is 13,514 hectares. Since 1959, the territory of Kintrishi had the status of a nature reserve, and in 2019, it was declared a national park [1].

The Kintrishi NP is located between the Black Sea and the Achara-Imereti Mountains. These mountains trap moist air from the sea and create a very humid climate for Kintrish. The annual rainfall is almost 3,000 mm. The average temperature in August is +24 degrees, and +4 degrees in January. The mountainous terrain of the reserve is criss-crossed by deep valleys. The main water vein of the reserve - the Kintrishi River - rises in the Khino Mountain and flows into the Black Sea. Its total length is 45 kilometres. The other main watercourses of the area are: Kehnara, Peranga, Mamedagi, Didgele, Misanatisgele, which has a beautiful waterfall 30 metres high, and the rivers Bolkvadzeebisgele and Chrdila, the latter with a two-tired waterfall 70 metres high. In the high mountains, at an altitude of 2200 metres, there are two small lakes, namely the Tbikeli (Neck Lake) and Sidzerdzali (Son-in-law and Daugter-in-law), whose area is about 1.5 hectares.

The ponto-mediterran vegetation belt (500 m) is replaced by oak-hornbeam (500-1,000 m) and oak (1,000-2,000 m) belts. Above these belts, subalpine birch forests (2,000-2,200 m) and alpine meadows (2,200-2,600 m) take place.

The unique botanical values of this area are the Colchian relict forests including sweet chestnuts (*Castanea sativa*), Colchian buxus trees (*Buxus*

colchica), oaks (*Quercus* spp.), yews (*Taxus baccata*) and conifs. The age of some Buxus trees exceeds 300 years. These forests provide habitat for endemic azaleas (*Rhododendron ponticum* and *Rhodondendron caucasicum*).

The date of the description of the first sawfly species from Georgia is uncertain. In the 19th century, authors simply wrote: ″Patria Caucasus" or ″Transcaucasia" or ″Rossia: Caucasus″. Without precise locality information, it is difficult to decide wether these species were described from the Caucasian part of Russia, from Georgia, Armenia or Azerbaijan [2-6]. The first Georgian checklist was published by Radde [7], keys for sawflies and horntails (Symphyta) were compiled by Andguladze [8] and Dadurian [9]. So far, 105 species of Symphyta are listed in the Georgian Biodiversity Database [10], but these data need to be carefully checked and corrected. In fact, the estimated actual species richness of Symphyta is probably 4 times greater.

Methods and material

Three Malaise traps (Fig.2) were used to sample sawflies and were in operation from 23 April to 3 November 2018. The traps were checked every 12-17 days and insects were removed . The material was preserved in alcohol, later, in 2021, the sawflies were mounted and genitalia were dissected for further identification.

The following keys were used for species identification: Zhelochovtsev's work [11] on the sawflies of the European part of the former USSR, Lacourt´s manual [12] on the identification of European sawflies, Robert Benson´s monograph [13] on the Turkish sawfly fauna, Gussakovsky's monographs [14,15] on the Symphyta of the former USSR and the latest monograph on Czech and Slovakian sawflies [16]. We also used some recent revisions and works to make the identifications and biological data even more accurate [17-26].

Voucher specimens are deposited in the entomological collection of the Institute of Entomology of the Agricultural University of Georgia.

For the discussion of the distribution of sawflies, we have consulted the book by Roller and Haris entitled Sawflies of the Carpathian Basin, History and Current Research [27], the most recent European checklist of species [28] and the monograph by Sundukov on the sawflies of Russia [29], supplemented by other faunistic records [29-35].

The nomenclature used in this article, follows the latest monograph of the European sawflies [12] with special attention to the subfamily Nematinae and corrects the conclusions of Prous et al. [36].

For above reasons, if only the name „Caucasus" was given as the distribution, we have considered these species as not previously recorded from Georgia and marked them as new country records. New country records are indicated with an asterisk.

The higher classification of sawflies used in this paper follows the Hymenoptera section of Fauna Europaea [37].

Models for flight activity and dynamics of biodiversity, indices of biodiversity and dominance were interpreted and applied following the work of Daly et al. [38], Nedorezov [39] and Young [40]. In classifying the biogeographical region, we followed the latest publication of the European Environment Agency [41] entitled Biogeographical regions in Europe.

List of sampling sites (Fig.1).

Zeraboseli: Kintrishi River: N 41°44'13.7364, E 41°58'45.1668, altitude: 404 m.

Khinotsminda: Cherulisghele River: N 41°44'38.8824, E 42°5'0.2904, altitude: 1264 m.

Khinotsminda: Khinotsminda Monastery: N 41°43'45.9768, E 42°4'38.8812, altitude: 1020 m.

Results and Discussion

List of species

Family – Argidae

Genus *Arge* Schrank, 1802

1. *Arge cyanocrocea* (Forster, 1771)*(*= first record for Georgia)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 2 males, 05. 05. – 20. 05. 2018, 1 female; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 female, 1 male, Khinotsminda Monastery, 27. 07. – 10. 08. 2018, 1 female. (All collected individuals belong to the colour variety formerly classified as *Arge syriaca* (Mocsáry, 1880)). Common, West Palaearctic species. Known host plants: *Rubus idaeus* and

Sanguisorba officinalis.

Genus *Sterictiphora* Billberg, 1820*

2. *Sterictiphora angelicae* (Panzer, 1799)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male. Frequent. Larva on *Prunus spinosa* and *Rubus* spp. West Palaearctic.

Family – Cephidae

Genus *Janus* Stephens, 1829

3. *Janus cynosbati* (Linné, 1758)*

Material examined: Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 3 females. Sporadic, West Palaerarctic species, larva in shots of *Quercus* spp.

Family - Pamphiliidae

Genus *Onycholyda* Takeuchi, 1938

4. *Onycholyda trigaria* (Konow, 1897)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male, 05. 05. – 20. 05. 2018, 1 female, 1 male, 19. 05. – 01. 06. 2018, 5 males, 01. 06. – 15. 06. 2018, 2 males; Khinotsminda: Cherulisghele River, 01. 06. – 15. 06. 2018, 1 female, 3 males. Frequent, Ponto-Caspian-Iranian species. Hostplant unknown.

Genus Pamphilius Latreille, 1803

5. *Pamphilius pugnax* Konow, 1897

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male. Sporadic, Ponto-Caspian species. Hostplant unknown.

Family - Tenthredinidae

Genus *Allantus* Panzer, 1801

6. *Allantus* (Emphytus) *cinctus* (Linné, 1758)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 20 females, 52 males, 05. 05. – 20. 05. 2018, 11 females, 39 males, 19. 05. – 01. 06. 2018, 11 females, 19 males, 01. 06. – 15. 06. 2018, 2 females, 14 males, 15. 06. – 29. 06. 2018, 2 females, 15 males, 29. 06. – 13. 07. 2018, 6 males, 13. 07. – 27. 07. 2018, 6 females, 60 males, 27. 07. – 10. 08. 2018, 2 females, 60 males, 10. 08. – 24. 08. 2018, 1 female, 32 males, 24. 08. – 07. 09. 2018, 6 females, 41 males, 21. 09. – 05. 10. 2018, 1 female, 19. 10. – 03. 11. 2018, 1 female; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 female, 10 males, 05. 05. – 20. 05. 2018, 4 females, 9 males, 01. 06. – 15. 06. 2018, 3 females, 9 males; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 16 females, 3 males, 05. 05. – 20. 05. 2018, 5 females, 19. 05. – 01. 06. 2018. 6 females, 1 male, 01. 06. – 15. 06. 2018. 2 females, 1 male, 15. 06. – 29. 06. 2018, 2 females, 5 males, 29. 06. – 13. 07. 2018, 2 females, 27. 07. – 10. 08. 2018, 2 females, 5 males, 24. 08. – 07. 09. 2018, 2 females, 07. 09. – 21. 09. 2018, 1 female. Common. Host plants: *Rosa* and *Fragaria* spp. Holarctic.

Genus *Ametastegia* Costa, 1882

7. *Ametastegia* (Ametastegia) *equiseti* (Fallén, 1808)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 2 females, 4 males, 05. 05. – 20. 05. 2018, 1 male, 19. 05. – 01. 06. 2018, 1 male, 01. 06. – 15. 06. 2018, 1 male, 15. 06. – 29. 06. 2018, 1 female, 1 male; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 female, 05. 05. – 20. 05. 2018, 1 male. Frequent. Larva on *Chenopodium album*, *Lythrum salicaria*, *Polygonum persicaria* and *Rumex acetosella*. Holarctic.

8. *Ametastegia* (Protemphytus) *carpini* (Hartig, 1837)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female, 15. 06. – 29. 06. 2018, 1 female, 13. 07. – 27. 07. 2018, 2 females. Frequent. Holarctic. Host plants: *Geranium* spp.

9. *Ametastegia* (Protemphytus) *pallipes* (Spinola, 1808)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male, 05. 05. – 20. 05. 2018, 1 female, 1 male, 01. 06. – 15. 06. 2018, 1 female, 13. 07. – 27. 07. 2018, 1 female, 27. 07. – 10. 08. 2018, 1 female, 1 male. Frequent. Host plants: *Viola* spp. Holarctic.

Genus *Aneugmenus* Hartig, 1837

10. *Aneugmenus coronatus* (Klug, 1818)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 3 females, 05. 05. – 20. 05. 2018, 3 females,19. 05. – 01. 06. 2018, 3 females, 01. 06. – 15. 06. 2018, 7 females, 15. 06. – 29. 06. 2018, 2 females, 29. 06. – 13. 07. 2018, 1 female, 13. 07. – 27. 07. 2018, 2 females, 27. 07. – 10. 08. 2018, 3 females, 10. 08. – 24. 08. 2018,1 female; Khinotsminda: Cherulisghele River, 01. 06. – 15. 06. 2018, 3 females; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female, 05. 05. – 20. 05. 2018, 1 female, 15. 06. – 29. 06. 2018, 3 females, 29. 06. – 13. 07. 2018, 1 female, 27. 07. – 10. 08. 2018, 4 females. Sporadic, Palaearctic species. Larva on *Dryopteris filix-mas*, *Aspidium* sp., *Athyrium filix-femina* and *Pteridium aquilinum*.

Genus *Athalia* Leach, 1817

11. *Athalia circularis* (Klug, 1815)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 4 males, 05. 05. – 20. 05. 2018, 4 males, 19. 05. – 01. 06. 2018, 1 male, 24. 08. – 07. 09. 2018, 1 female, 2 males, 13. 07. – 27. 07. 2018, 1 female, 1 male; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 male; Khinotsminda Monastery, 05. 05. – 20. 05. 2018, 1 male, 24. 08. – 07. 09. 2018, 1 female. Frequent. Host plants: *Arctium lappa*, *Ajuga reptans*, *Veronica beccabunga*, *V. longifolia*, *V. officinalis*, *Alliaria petiolata*, *Glechoma hederacea*, *Melampyrum*, *Capsella* and *Lycopus* spp. Palaearctic.

12. *Athalia cordata* Serville, 1823

Material examined: Zeraboseli: Kintrishi River, 19. 10. – 03. 11. 2018, 1 female. Common. Larva on *Misopates orontinum*, *Antirrhinum majus*, *Ajuga reptans*, *Teucrium scorodonia* and *Plantago* spp. West Palaearctic.

13. *Athalia liberta* (Klug, 1815)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 4 males, 29. 06. – 13. 07. 2018 , 1 male, 13. 07. – 27. 07. 2018, 2 females, 2 males, 27. 07. – 10. 08. 2018, 1 female, 1 male, 29. 06. – 13. 07. 2018, 1 female, 10. 08. – 24. 08. 2018, 2 females, 24. 08. – 07. 09. 2018, 2 females; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 male, 19. 05. – 01. 06. 2018, 2 females, 24. 08. – 07. 09. 2018, 3 females. Frequent, West Palaearctic species. Feeding on *Alliaria petiolata*, *Arabidopsis thaliana*, *Cardamine hirsuta* and *Sisymbrium officinale*.

14. *Athalia lugens* (Klug, 1815)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 4 males, 05. 05. – 20. 05. 2018, 1 male, 19. 05. – 01. 06. 2018, 1 male, 01. 06. – 15. 06. 2018, 2 males, 15. 06. – 29. 06. 2018, 1 male, 29. 06. – 13. 07. 2018, 2 females, 1 male, 13. 07. – 27. 07. 2018, 1 female, 1 male, 27. 07. – 10. 08. 2018, 2 females, 24. 08. – 07. 09. 2018, 1 female, 21. 09. – 05. 10. 2018, 1 female, 19. 10. – 03. 11. 2018, 1 female; Khinotsminda: Cherulisghele River, 01. 06. – 15. 06. 2018, 1 female. Frequent Palaearctic species. Hostplants: *Raphanus* spp., *Lepidium sativum*, *Cardamine* spp., *Brassica* spp., *Cruciferae*.

Genus *Birka* Malaise, 1944*

15. *Birka* (Birka) *catellata* (Konow, 1900)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 4 females, 7 males, 05. 05. – 20. 05. 2018, 6 females, 15 males, 19. 05. – 01. 06. 2018, 2 females, 17 males, 01. 06. – 15. 06. 2018, 5 females, 20 males, 15. 06. – 29. 06. 2018, 1 female, 15. 06. – 29. 06. 2018 , 24 males, 13. 07. – 27. 07. 2018, 10 females, 14 males, 27. 07. – 10. 08. 2018, 13 males, 10. 08. – 24. 08. 2018, 3 females, 1 male, 24. 08. – 07. 09. 2018, 1 female; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 male, 05. 05. – 20. 05. 2018, 1 male, 01. 06. – 15. 06. 2018, 5 males; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female, 15. 06. – 29. 06. 2018, 1 female, 27. 07. – 10. 08. 2018, 1 female, 27. 07. – 10. 08. 2018, 3 males. Ponto-Caspian and Turanian. Common species. Hostplant unknown.

16. *Birka* (Birka) *cinereipes* (Klug, 1816)*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 male, 15. 06. – 29. 06. 2018, 2 males. Sporadic. Host plants: *Myosotis* spp. Palaearctic.

Genus *Caliroa* Costa, 1859

17. *Caliroa cothurnata* (Serville, 1823)*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 2 females, 19. 05. – 01. 06. 2018, 1 female, 01. 06. – 15. 06. 2018, 1 female, 13. 07. – 29. 07. 2018, 1 female. West Palaearctic. Frequent. Larva on *Quercus* spp.

18. *Caliroa tremulae* Chevin, 1974*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 male, 01. 06. – 15. 06. 2018, 1 female, 24. 08. – 07. 09. 2018, 2 females. Sporadic. Hostplant: *Populus tremula*. West Palaearctic.

19. *Caliroa varipes* (Klug, 1816)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female. Sporadic. Palaearctic. Larva on *Quercus*.

Genus *Cladius* Illiger, 1807

20. *Cladius pectinicornis* (Geoffroy, 1785)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male, 05. 05. – 20. 05. 2018, 1 female, 19. 05. – 01. 06. 2018, 1 male, 01. 06. – 15. 06. 2018, 1 female, 1 male, 29. 06. – 13. 07. 2018, 1 male, 24. 08. – 07. 09. 2018, 1 male; Khinotsminda Monastery, 27. 07. – 10. 08. 2018, 1 female. Common. Host plants: *Alchemilla*, *Filipendula*, *Fragaria*, *Potentilla*, *Sanguisorba*, *Rosa* and *Rubus* spp. Holarctic.

Genus *Claremontia* Rohwer, 1909*

21. *Claremontia alternipes* (Klug, 1816)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 4 females, 1 male, 05. 05. –

20. 05. 2018, 1 female; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 4 females. Sporadic. Host plant: *Rubus idaeus*. West Palaearctic.

Genus *Craesus* Leach, 1817*

22. *Craesus brischkei* (Zaddach, 1876)*

Material examined: Zeraboseli: Kintrishi River, 13. 07. – 29. 07. 2018, 1 female. Sporadic. Larva on *Carpinus betulus* and *Corylus avellana*. West Palaearctic.

Genus *Dolerus* Panzer, 1801

23. *Dolerus* (Dicrodolerus) *vestigialis* (Klug, 1818)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 2 females; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 female. Common. Host plants: *Equisetum palustre*, *E. sylvaticum*, *E. arvense* and *E. pratense*. Palaearctic.

Genus *Empria* Lepeletier & Serville, 1828

24. *Empria longicornis* (Thomson, 1871)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male, 05. 05. – 20. 05. 2018, 1 female, 1 male; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 2 males, 4 females, 05. 05. – 20. 05. 2018, 4 females, 19. 05. – 01. 06. 2018, 1 female, 01. 06. – 15. 06. 2018, 1 female, 15. 06. – 29. 06. 2018, 1 female. Frequent, West Palaearctic species. Larva on *Rubus idaeus*.

25. *Empria testaceipes* (Konow, 1896)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male. Sporadic West Palaearctic species. Larva on *Sanguisorba officinalis*.

Genus *Eriocampa* Hartig, 1837

26. *Eriocampa umbratica* (Klug, 1816)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 6 females, 55 males, 05. 05. – 20. 05. 2018, 15 males, 19. 05. – 01. 06. 2018, 1 male, 01. 06. – 15. 06. 2018, 1 female, 2 males; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 10 males; Khinotsminda Monastery, 27. 07. – 10. 08. 2018, 1 female. Frequent on *Alnus glutinosa* and *A. incana*. West Palaearctic.

Genus *Eurhadinoceraea* Enslin, 1920*

27. *Eurhadinoceraea fulviventris* (Scopoli, 1763)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 2 females, 05. 05. – 20. 05. 2018, 1 female, 19. 05. – 01. 06. 2018, 2 females, 57 males, 01. 06. – 15. 06. 2018, 4 females, 21 males; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 3 males, 05. 05. – 20. 05. 2018, 2 males, 01. 06. – 15. 06. 2018, 5 males; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 2 females, 01. 06. – 15. 06. 2018, 1 male, 27. 07. – 10. 08. 2018, 2 females, 4 males. Common. Hostplant unknown. Southern part of the Palaearctic region.

Genus *Eutomostethus* Enslin, 1914

28. *Eutomostethus vopiscus* (Konow, 1899)* (Fig.3A)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 2 females, 9 males, 05. 05. – 20. 05. 2018, 7 females, 8 males, 01. 06. – 15. 06. 2018, 8 females, 2 males, 29. 06. – 13. 07. 2018, 2 males, 13. 07. – 27. 07. 2018, 1 male, 27. 07. – 10. 08. 2018, 2 females, 10. 08. – 24. 08. 2018, 2 females, 1 male; Khinotsminda: Cherulisghele River, 01. 06. – 15. 06. 2018, 1 female; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 3 females, 05. 05. – 20. 05. 2018, 2 females, 19. 05. – 01. 06. 2018, 1 female, 01. 06. – 15. 06. 2018, 2 females, 15. 06. – 29. 06. 2018, 2 females, 27. 07. – 10. 08. 2018, 1 female. Common. Hostplants: Poaceae. Ponto-Caspian subspecies.

29. *Eutomostethus luteiventris* (Klug, 1816)*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 female. Frequent. Larva on *Juncus effusus*. West Palaearctic, introduced to North America.

Genus *Halidamia* Benson, 1939

30. *Halidamia affinis* (Fallén, 1807)

Material examined: Zeraboseli: Kintrishi River, 19. 05. – 01. 06. 2018, 5 females, 01. 06. – 15. 06. 2018, 3 females; Khinotsminda Monastery, 27. 07. – 10. 08. 2018, 1 female. Frequent. Host plants: *Galium aparine*, *G.odoratum* and *G. molugo*. West Palaearctic, introduced to North America.

Genus *Heterarthrus* Stephens, 1835

31. *Heterarthrus vagans* (Fallén, 1808)*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 female, 19. 05. – 01. 06. 2018, 2 females, 15. 06. – 29. 06. 2018, 1 female, 29. 06. – 13. 07. 2018, 1 male, 13. 07. – 27. 07. 2018, 3 females, 27. 07. – 10. 08. 2018, 4 females, 10. 08. – 24. 08. 2018, 1 male, 24. 08. – 07. 09. 2018, 1 female, 07. 09. – 21. 09. 2018, 1 female, 21. 09. – 05. 10. 2018, 1 female. Sporadic, larva on *Alnus* spp. Holarctic.

Genus *Hemichroa* Stephens, 1835*

32. *Hemichroa australis* (Serville, 1823)*

Material examined: Khinotsminda: Cherulisghele River, 05. 05. – 20. 05. 2018, 1 female. Hostplants: *Alnus glutinosa* and *Betula* spp. Sporadic. Palaearctic.

Genus *Macrophya* Dahlbom, 1835

33. *Macrophya* (Macrophya) *albicincta* (Schrank, 1776)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 18 females, 57 males, 05. 05. – 20. 05. 2018, 2 females, 13 males, 19. 05. – 01. 06. 2018, 4 males, 01. 06. – 15. 06. 2018, 2 females, 1 male; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 female, 12 males, 05. 05. – 20. 05. 2018, 1 female, 7 males, 01. 06. – 15. 06. 2018, 2 males; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female, 01. 06. – 15. 06. 2018, 1 female. Common. Host plants: *Sambucus ebulus*, *S. nigra*, *S. racemosa*, *Valeriana officinalis* and *Viburnum opalus*. Palaearctic.

34. *Macrophya* (Macrophya) *caucasicola* (Muche, 1969)* (Fig.3B)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 5 males, 05. 05. – 20. 05. 2018, 2 females, 32 males, 19. 05. – 01. 06. 2018, 4 females, 4 males; Khinotsminda: Cherulisghele River, 05. 05. – 20. 05. 2018, 2 males; Khinotsminda Monastery, 05. 05. – 20. 05. 2018, 2 females, 19. 05. – 01. 06. 2018, 2 females, 01. 06. – 15. 06. 2018, 1 female, 15. 06. – 29. 06. 2018, 1 female. Frequent. Ponto-Caspian. Hostplant unknown.

35. *Macrophya* (Macrophya) *postica* (Brullé, 1832)

Material examined: Zeraboseli: Kintrishi River, 19. 05. – 01. 06. 2018, 1 male. Frequent. Hostplant unknown. West Palaearctic.

36. *Macrophya* (Macrophya) *sanguinolenta* (Gmelin, 1790):

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 3 males, 01. 06. – 15. 06. 2018, 2 males; Khinotsminda: Cherulisghele River, 05. 05. – 20. 05. 2018, 2 males, Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 male. Frequent, Palaearctic species. Larva on *Galenopsis*, *Senecio* and *Veronica*.

Genus *Metallus* Forbes, 1885

37. *Metallus beckeri* (Konow, 1904)

Material examined: Zeraboseli: Kintrishi River, 15. 06. – 29. 06. 2018, 1 female, 29. 06. – 13. 07. 2018, 1 female, 13. 07. – 27. 07. 2018, 1 female, 27. 07. – 10. 08. 2018,1 female, 10. 08. – 24. 08. 2018, 1 female, Khinotsminda Monastery, 19. 05. – 01. 06. 2018, 1 female, 15. 06. – 29. 06. 2018, 1 female, 24. 08. – 07. 09. 2018, 2 females. Frequent, Ponto-Caspian-Persian species. Hostplant unknown.

38. *Metallus lanceolatus* (Thomson, 1870)*

Material examined: Zeraboseli: Kintrishi River, 13. 07. – 27. 07. 2018, 1 female, 10. 08. – 24. 08. 2018, 1 female. Sporadic. Palaearctic, introduced to USA. Larva inside the leaves of *Geum urbanum* and *G. rivale*.

39. *Metallus pumilus* (Klug, 1816)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 7 males, 05. 05. – 20. 05. 2018, 7 males, 19. 05. – 01. 06. 2018, 11 males, 01. 06. – 15. 06. 2018, 25 males, 15. 06. – 29. 06. 2018, 19 males, 29. 06. – 13. 07. 2018, 4 males, 13. 07. – 27. 07. 2018, 16 males, 27. 07. – 10. 08. 2018, 12 males, 1 female, 10. 08. – 24. 08. 2018, 3 males, 24. 08. – 07. 09. 2018, 6 males, 07. 09. – 21. 09. 2018, 1 male, 21. 09. – 05. 10. 2018, 3 males, 19. 10. – 03. 11. 2018, 1 female; Khinotsminda: Cherulisghele River, 01. 06. – 15. 06. 2018, 2 males; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 male, 27. 07. – 10. 08. 2018, 6 males. Common Palaearctic species. Larva inside the leaves of *Rubus caesius* and *Rubus idaeus*.

Genus *Monsoma* MacGillivray, 1908*

40. *Monsoma pulveratum* (Retzius, 1783)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female, 4 males. Frequent. Holarctic. Hostplants: *Alnus glutinosa* and *Alnus incana*.

Genus *Nematinus* Rohwer, 1911*

41. *Nematinus steini* Blank, 1998*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 male, 19. 05. – 01. 06. 2018, 1 male. Frequent, West Palaearctic species. Larva on *Alnus* spp.

Genus *Nematus* Panzer, 1801*

42. *Nematus lucidus* (Panzer, 1801)*

Material examined: Khinotsminda: Cherulisghele River, 01. 06. – 15. 06. 2018, 1 female; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female. Frequent. Larva on *Crataegus*, *Rosa* spp. and *Prunus spinosa*. Palaearctic.

Genus *Nesoselandria* Rohwer, 1910

43. *Nesoselandria morio* (Fabricius, 1781)

Material examined: Zeraboseli: Kintrishi River, 01. 06. – 15. 06. 2018, 1 female, 29. 06. – 13. 07. 2018, 1 female, 10. 08. – 24. 08. 2018,

2 fenales, 24. 08. – 07. 09. 2018, 4 females, 19. 10. – 03. 11. 2018, 1 female. Frequent. Host plants: *Brachytecium reflexum*, *Ceratodon purpureus*, *Chenopodium album*, *Dicranum scoparium*, *Fragaria vesca*, *Hedwigia ciliata*, *Myosotis arvensis*, *Plagiomnium cuspidatum*, *Plagiothecium denticulatum*, *Polygonum aviculare*, *Polytrichum commune*, *Pseudobryum cinclidiodes*, *Sanionia uncinata*, *Stellaria media*, *Veronica chamaedrys* and *V. officinalis*. Holarctic.

Genus *Pachyprotasis* Hartig, 1837*

44. *Pachyprotasis rapae* (Linné, 1767)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 3 females, 05. 05. – 20. 05. 2018, 1 female, 19. 05. – 01. 06. 2018, 3 males, 01. 06. – 15. 06. 2018, 1 male; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 1 female, 05. 05. – 20. 05. 2018, 1 male. Common Holarctic species. Hostplants: *Solanum tuberosum*, *Pedicularis palustris*, *Angelica sylvestris*, *Veronica beccabunga*, *Betonica officinalis*, *Corylus avellana*, *Salix caprea*, *Fraxinus excelsior*, *Tussilago farfara*, *Symphoricarpos albus*, *Scrophularia*, *Solanum*, *Solidago virgaurea*, *Verbascum*, *Origanum vulgare*, *Atropa belladonna*, *Sarothamnus*, *Senecio*, *Polygonum*, *Lamium*, *Aspidium*, *Epilobium*, *Hypericum*, *Galeopsis*, *Glechoma*, *Mentha*, *Polystichum*, *Plantago*, *Misopates*, *Veronica*, *Quercus* and *Stachys* spp.

Genus *Parna* Benson, 1936*

45. *Parna tenella* (Klug, 1816)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 3 females. Sporadic,West Palaearctic species. Larva inside the leaves of *Tilia* spp.

Genus *Profenusa* MacGillivray, 1914*

46. *Profenusa thomsoni* (Konow, 1886)*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 female, 10. 08. – 24. 08. 2018, 1 female. Sporadic, Palaearctic species. Host plants: *Betula* spp.

Genus *Priophorus* Dahlbom, 1835*

47. *Priophorus brullei* Dahlbom, 1835*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 male, 19. 05. – 01. 06. 2018, 4 males, 01. 06. – 15. 06. 2018, 15 males, 2 females, 15. 06. – 29. 06. 2018, 6 males, 29. 06. – 13. 07. 2018, 10 males, 13. 07. – 27. 07. 2018, 51 males, 1 female, 27. 07. – 10. 08. 2018 , 15 males, 1 female,10. 08. – 24. 08. 2018, 8 males, 24. 08. – 07. 09. 2018, 15 males, 2 females, 07. 09. – 21. 09. 2018, 1 male, 1 female, 21. 09. – 05. 10. 2018, 1 female; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female, 27. 07. – 10. 08. 2018, 1 male, 07. 09. – 21. 09. 2018, 2 females. Common. Larva on *Rubus* spp. like *R. idaeus*, *R. caesius* and *R. saxatilis*. Cosmopolitan.

48. *Priophorus compressicornis* (Fabricius, 1804)*

Material examined: Khinotsminda Monastery, 15. 06. – 29. 06. 2018, 1 female. Frequent pest. Hostplants: *Betula*, *Cotoneaster*, *Prunus*, *Rubus*, *Sorbus*, *Fragaria*, *Crataegus*, *Corylus* and *Rosa* spp. Holarctic.

Genus *Pristiphora* Latreille, 1810

49. *Pristiphora* (Pristiphora) *armata* (Thomson, 1863)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 2 females, 1 male, 05. 05. – 20. 05. 2018, 1 male, 19. 05. – 01. 06. 2018, 3 females, 01. 06. – 15. 06. 2018, 1 female; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 male. Frequent Palaearctic species. Larva on *Crataegus* spp.

50. *Pristiphora* (Lygaeophora) *lanifica* (Zaddach, 1883)*

Material examined: Zeraboseli: Kintrishi River, 13. 07. – 27. 07. 2018, 1 female, Khinotsminda Monastery, 20. 04. – 05. 05. 2018,1 female. Sporadic, West-Palaearctic species. Larva on *Salix* spp.: *S. aurita*, *S. livida* and *S. caprea*.

51. *Pristiphora* (Pristiphora) *leucopus* (Hellén, 1948)*

Material examined: Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female, 1 male, 15. 06. – 29. 06. 2018, 1 female, 24. 08. – 07. 09. 2018, 1 female. Frequent, West-Palaearctic species. Larva on *Tilia* spp.

52. *Pristiphora* (Pristiphora) *pallidiventris* (Fallén, 1808)

Material examined: Zeraboseli: Kintrishi River, 15. 06. – 29. 06. 2018, 1 female, 29. 06. – 13. 07. 2018, 1 female; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female, 01. 06. – 15. 06. 2018, 1 female. Frequent. Larva on *Geum*, *Potentilla*, *Rubus* and *Filipendula* spp. Holarctic.

Genus *Pteronidea* Rohwer, 1911*

53. *Pteronidea* (Pteronidea) *glutinosae* Cameron, 1882*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 5 males, 05. 05. – 20. 05.

2018, 1 female, 19. 05. – 01. 06. 2018, 4 males, 01. 06. – 15. 06. 2018, 4 males, 15. 06. – 29. 06. 2018, 1 male. Sporadic, West Palaearctic species. Hostplant: *Alnus* spp.

54. *Pteronidea* (Pteronidea) *myosotidis* (Fabricius, 1804)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female, 05. 05. – 20. 05. 2018, 1 female, 1 male; Khinotsminda: Cherulisghele River, 05. 05. – 20. 05. 2018, 1 male; Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female, 19. 05. – 01. 06. 2018, 1 female, 27. 07. – 10. 08. 2018, 2 males. Common. Larval hosts: *Onobrychis*, *Vicia, Trifolium* spp. and *Lathyrus pratensis*. Palaearctic.

Genus *Rhogogaster* Konow, 1884

55. *Rhogogaster* (Rhogogaster) *chlorosoma* (Benson, 1943)*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 female, 19. 05. – 01. 06. 2018, 2 females, 01. 06. – 15. 06. 2018, 1 female, 15. 06. – 29. 06. 2018, 1 female. Frequent. Host plants: *Salix alba*, *S. purpurea*, *Salix* spp.. Palaearctic.

Genus *Sciapteryx* Stephens, 1835

56. *Sciapteryx circassica* Dovnar-Zapolskij, 1930

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female, 1 male. Sporadic, Ponto-Caspian species. Hostplant unknown.

Genus *Sharliphora* Wong, 1969*

57. *Sharliphora parva* (Hartig, 1837)*

Material examined: Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 1 female. Sporadic, West Palaearctic species. Larva on *Picea* spp.

Genus *Stauronematus* Benson, 1953*

58. *Stauronematus platycerus* (Hartig, 1840)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female. Sporadic, Palaearctic species. Larva on *Populus tremula*, *P.nigra* and *P. balsamifera*.

Genus *Strongylogaster* Dahlbom, 1835

59. *Strongylogaster caucasica* Schaposchnikov, 1885*(Fig.3C)

Material examined: Khinotsminda Monastery, 20. 04. – 05. 05. 2018, 5 females. Sporadic. Hostplants unknown. Ponto-Caspian.

60. *Strongylogaster macula* (Klug, 1817)*

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female. Sporadic, Holarctic species. Hostplants: *Athyrium filix-femina*, *Dryopteris filix-mas*, *Polystichum aculeatum* and *Pteridium aquilinum*.

61. *Strongylogaster multifasciata* (Geoffroy, 1785)

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 9 females, 05. 05. – 20. 05. 2018, 1 female, 15. 06. – 29. 06. 2018, 1 female, 27. 07. – 10. 08. 2018, 1 female, 10. 08. – 24. 08. 2018, 1 female; Khinotsminda: Cherulisghele River, 20. 04. – 05. 05. 2018, 2 females, 05. 05. – 20. 05. 2018, 1 female; Khinotsminda Monastery, 27. 07. – 10. 08. 2018, 1 female. Frequent. Hostplants: *Dryopteris* sp., *Matteuccia struthiopteris*, *Aspidium* sp., *Polystichum* sp. and *Pteridium aquilinum*. Palaearctic.

Genus *Tenthredo* Linné, 1758

62. *Tenthredo* (*Tenthredella*) *procera* Klug, 1817*

Material examined: Zeraboseli: Kintrishi River, 05. 05. – 20. 05. 2018, 1 female. West Palaearctic, sporadic species. Hostplants: *Petasites* and *Symphytum* spp.

63. *Tenthredo* (*Tenthredella*) *purpurea* Puls, 1870

Material examined: Zeraboseli: Kintrishi River, 23. 04. – 05. 05. 2018, 1 female. Sporadic, Ponto-Caspian. Hostplant unknown.

Genus *Tenthredopsis* Costa, 1859

64. *Tenthredopsis friesei* (Konow, 1884)*

Material examined: Khinotsminda Monastery, 01. 06. – 15. 06. 2018, 3 females, 15. 06. – 29. 06. 2018, 5 females. Frequent. Host plants: *Holcus mollis* and other Poaceae. Palaearctic.

Family – Xiphydriidae

Genus *Xiphydria* Latreille, 1803

65. *Xiphydria caucasica* Semenov & Gussakovskij, 1935

Material examined: Khinotsminda Monastery, 27. 07. – 10. 08. 2018, 1 female. Sporadic, Ponto-Caspian species. Hostplant unknown.

Species richness

Sixty-five sawfly species were identified from a total of 1,703 specimens collected in Kintrishi National Park at three different altitudes using Malaise traps. Sixteen genera and 42 species were recorded from Georgia (Sakartvelo) for the first time. This brings the number of Sympyta species recorded in Georgia to 147. We believe that this number will at least double in our future studies.

Seasonal dynamics of flight activity of sawflies

Seasonal dynamics in abundance of sawflies in the Alpine biogeographical region to which Kintrishi National Park belongs, were studied using Malaise traps in the Western Carpathians, Central Europe [42]. The patterns of seasonal distribution of sawflies in the Carpathians were very different from those we observed in Georgia. In the submontane zone of the Carpathians, a prominent activity peak in early June is followed by a second summer peak, sometimes absent (Štefanová) and sometimes as prominent as the spring peak (Hriňová). In the Pannonian biogeographical region, according to our experience [43-51], the flight activity curve always follows the pattern shown in Fig.4. The curves were not figured but the already published faunistic data were analysed and will be published separately. In this point, the fligth activity curve of the Ponto-Caspian Alpine region is strickingly different from that of the Central European Alpine region and in interesting way, it perfectly agrees with the flight activity curves in the Pannonian biogeographical region.

Two peaks were observed during the year, which can be modelled by a normal distribution. The first curve is the spring flight season and the second is the summer flight season. These 2 curves are separated by 40 days when the densities of imago populations are lowest (in the Pannonian Zoogeographic region this low intermediate period is close to zero, and in the neighbouring Anatolian zoogeographical region there is no second curve).

The peak of the first curve was 399 specimens collected (between 23. 04. and 05. 05.), while the peak value of the second curve was 180. The approximate ratio is 2:1 (in the Pannonian region this ratio varies strongly between 2:1 and 7:1). The beginning of the first flight period is uncertain and ends in the second decade of August, while the second flight period begins in the second decade of August and ends in the last decade of October.

Seasonal dynamics of species richness

During the first culmination, we caught 60 species, but during the second culmination only 28 species. The first culmination period was between 23. 04. and 05. 05. And the second culmination period was between 27, 07.. and 10. 08 (Fig.5). After the second culmination period, in early autumn, only four to five species occured. The number of species was 2 times higher in the first spring period than in the second summer period. This ratio could behigher for the first period, as the earliest sawfly species were not recorded. In the Pannonian zoogeographical region, this ratio is 1: 12 for the spring period, in the Anatolian zoographical region, there is no second period.

Only representatives of Pamphilidae, Argidae, Cephidae and Tenthredinidae were collected. Species of other Symphyta families are probably not common in Kintrishi National Park or the positions of the Malaise traps did not cover the whole vegetation with special attention to conifers and birches (*Betul*a spp.).

Biodiversity and dominancy indices

The dominant species was *Allantus cinctus* with 490 specimens, ahead of *Birka catellata* with 156 specimens, *Cladius brullei* with 138 specimens, *Metallus pumilus* with 125 specimens, *Macrophya albicincta* with 122 specimens and *Eurhadinoceraea fulviventris* with 106 specimens. These 6 species (over 100 specimens each) account for 66.8% of the total collected material. However, further research is needed to determine which species dominate the sawfly fauna overall and which species only had outbreak in 2018.

Biodiversity and dominance indices (Table 1) are good tools to track spatial and temporal changes in biodiversity and species composition. They are very important to compare different areas and different time periods and to identify trends. They are also useful for conservation and zoogeography. Unfortunately, these indices have not yet been used in Georgian sawfly faunistics .

Table 1. *Biodiversity and dominance indices, Kintrishi National Park, 2018*

Indices	Values	Indices	Values
Simpson Index	0.118768	Buzas and Gibson's Index	0.253076
Dominance Index	0.881232	Equitability Index	0.670835
Reciprocal Simpson Index	8.41977	Margalef Richness Index	8.60402
Shannon Index log2	4.04001	Berger-Parker Dominance Index	0.288235
Shannon Index ln	2.80032	Inverted Berger-Parker Dominance Index	3.46939
Shannon Index log10	-1.21617	Gini Coeffificient	0.783891
Menhinick Index	1.57648		

These indices above (in contrast to the curves of flight activity and biodiversity dynamics) show a close relationship with the Anatolian sawfly fauna [52] (personal communications). No significant differences were found in any of the above parameters compared to the Anatolian zoogeographical region (these values will be published separately). Conversely, there was no overlap with the Pannonian zoogeographic region in any of the above indices, although, the similarity between the 2 regions in species composition is 84% and in addition the curves (discussed previously) strictly follow the available data from the Pannonian region.

Abundance and species richness of sawflies as a function of altitude.

Abundance of sawflies and their species richness were measured at 3 different altitudes, namely 404 metres, 1,020 metres and 1,284 metres. The highest diversity and abundance, 83.1% of sawflies (1,416 specimens), were collected at the altitude of 404 metres (Zeraboseli: Kintrishi River). 172 specimens (10.1%) were collected at 1,020 meters and only 115 specimens (6.8%) in 1,264 metres (Fig.6).

The number of sawfly species was also lowered depending on the altitude. 56 species was cought at 404 metres altitude, 30 at 1,020 metres and 19 at 1,264 metres. *Janus cynosbati* (Linné, 1758), *Xiphydria caucasica* Semenov & Gussakovskij, 1935, *Strongylogaster caucasica* Schaposchnikov, 1885, *Tenthredopsis friesei* (Konow, 1884), *Priophorus compressicornis* (Fabricius, 1804), *Hemichroa australis* (Serville, 1823), *Nematus lucidus* (Panzer, 1801), *Pristiphora leucopus* (Hellén, 1948) and *Pristiphora parva* (Hartig, 1837) were only caught at higher altitudes. This decline in species richness at higher altitudes is probably due to the vegetation zones and climatic conditions at the different altitudes.

Zoogeographical analysis

The proportion of the collected sawfly species with the specific zoogeographical distribution can be found in Table 2.

Table 2. *Zoogeographical composition of sawflies, Kintrishi National Park, 2018.*

Zoogeographical area	**Number of species**	**%**
Ponto-Caspian-Persian	2	3.1
Ponto-Caspian	7	10.8
Ponto-Caspian-Turanian	1	1.5
West-Palaearctic	21	32.3

Palaearctic	20	30.8
Southern Palaearctic	1	1.5
Holarctic	12	18.5
Cosmopolitan	1	1.5

Most recorded species have a wide range: Holarctic, Palaearctic, West Palaearctic and Cosmopolitan. Their proportion is 84.6 %. The so-called characteristic components are the species with narrow ranges: Ponto-Caspian, Ponto-Caspian-Turanian and Ponto-Caspian-Persian components. These species are: *Onycholyda trigaria* (Konow, 1897), *Pamphilius pugnax* Konow, 1897, *Xiphydria caucasica* Semenov & Gussakovskij, 1935, *Birka catellata* (Konow, 1900), *Strongylogaster caucasica* Schaposchnikov, 1885, *Metallus beckeri* (Konow, 1904), *Eutomostethus ephippium* ssp. *vopiscus* (Konow, 1899), *Macrophya hamata* ssp. *caucasicola* Muche, 1969, *Sciapteryx circassica* Dovnar-Zapolskij, 1930 and *Tenthredo purpurea* Puls, 1870, accounting for 15.4%. 84% of the recorded species belong to the Pannonian faunal elements, while only 12% belong to the Anatolian faunal elements, although the Anatolian region is less tha 120 km away from the study area.

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List of Figures:

Fig. 1: The location of sampling sites, Kintrishi National Park.

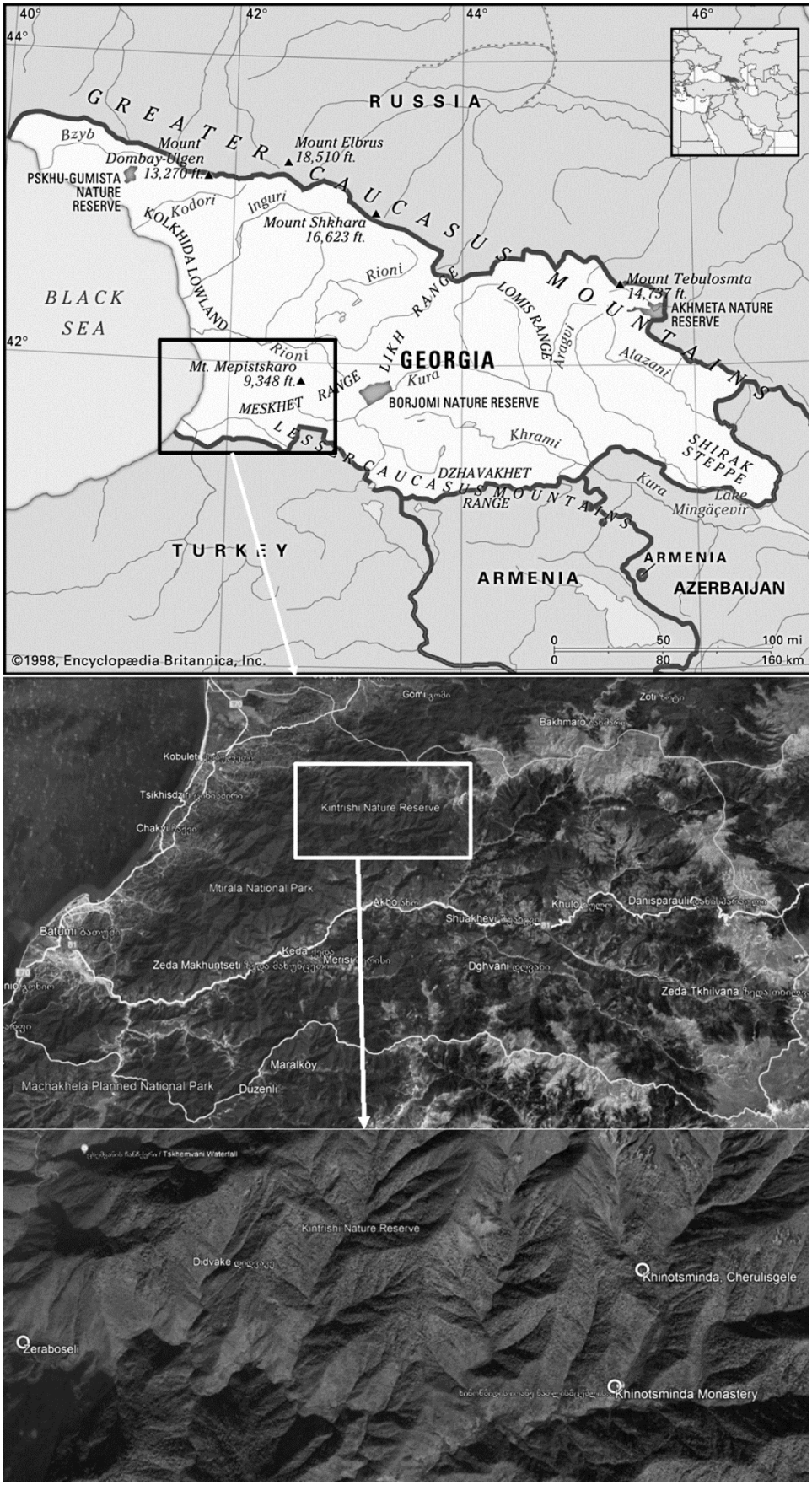

Fig. 2: *Malaise trap*

Fig. 3: A – *Eutomostethus vopiscus*; B – *Macrophya caucasicola*; C – *Strongylogaster caucasica*.

Fig. 4: *Seasonal dynamics of sawfly numbers in Kintrishi National Park in 2018 (number of specimens/time)*

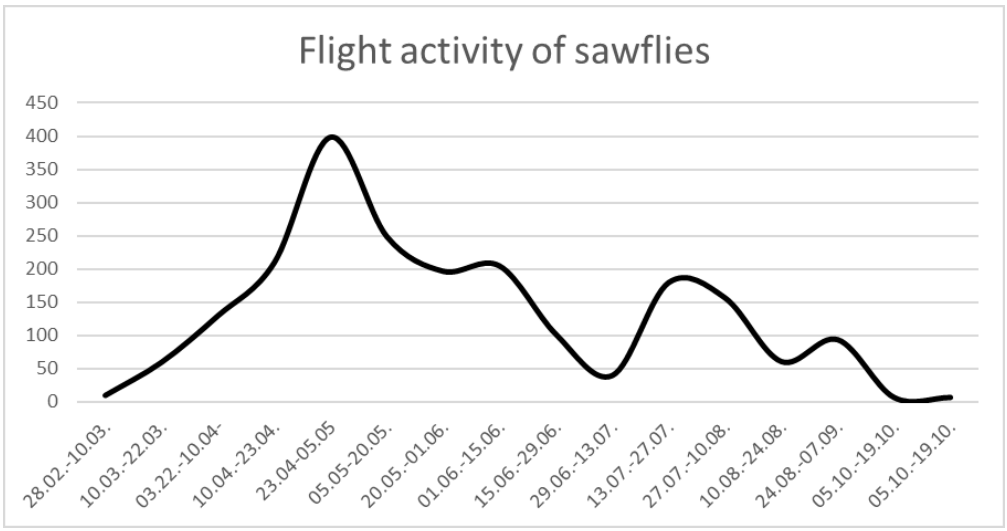

Fig. 5: *Seasonal dynamics in the number of sawfy species in Kintrishi National Park in 2018 (number of species caught / time)*

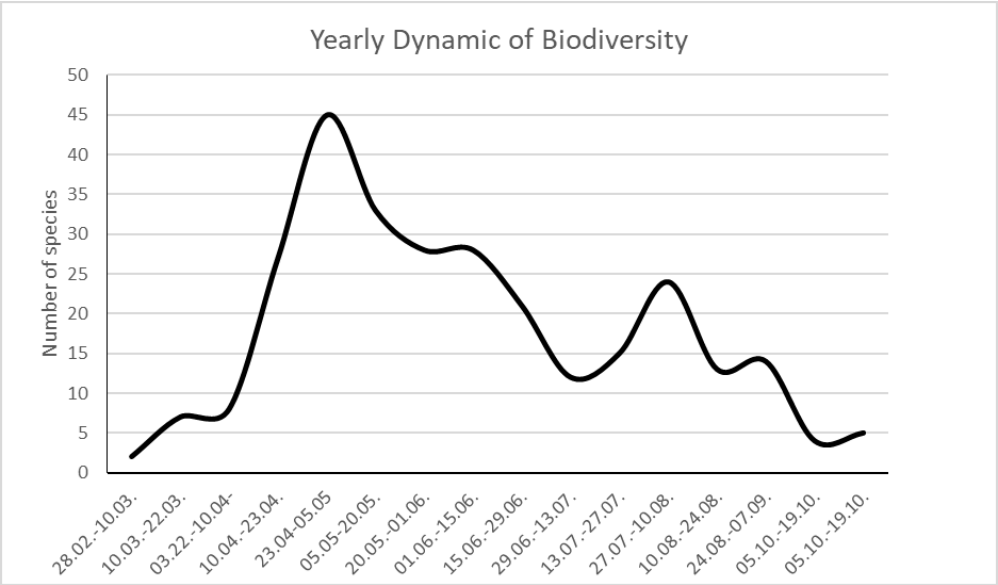

Fig. 6: *Number of sawfly specimens collected at different altitudes*

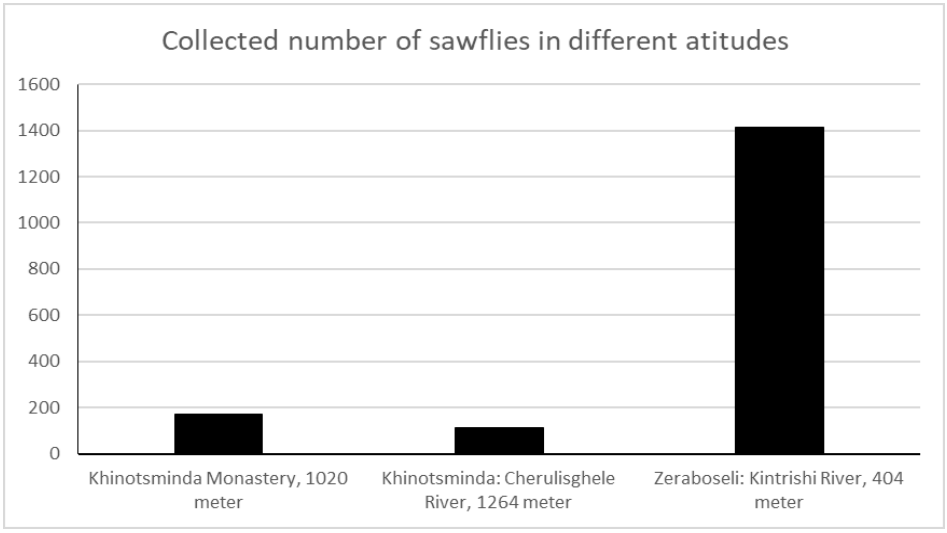

Fig. 7*: Proportion of zoogeographical elements to which the sawfly species recorded in Kintrishi National Park belong*