On the Trichoptera of the Caucasus with focus on *Wormaldia*, *Kelgena, Thremma*, *Martynomyia* and *Schizopelex* genera

J. OLÁH & G. VINÇON

János Oláh, Residence postal address: Tarján u. 28, H-4032 Debrecen, Hungary. E-mail: profolah@gmail.com
https://orcid.org/0000-0002-6137-0553

Gilles Vinçon, 55 Bd Joseph Vallier, F-38100 Grenoble, France. E-mail: gvincon@gmail.com
https://orcid.org/0000-0003-4702-5136

Abstract. In this work we describe 47 new Trichoptera species most of them from Georgia: *Wormaldia kala* sp. nov., *W. khizabavra* sp. nov., *W. kokoa* sp. nov., *W. kulbaka* sp. nov., *W. lopota* sp. nov., *W. varjanulia* sp. nov., *Tinodes abana* sp. nov., *Plectrocnemia zekaria* sp. nov., *Hydropsyche adjaria* sp. nov., *H. gouria* sp. nov., *H. svanetica* sp. nov., *Rhyacophila aragva* sp. nov., *R. chakvistskala* sp. nov., *R. kakhetia* sp. nov., *R. kokoa* sp. nov., *R. namona* sp. nov., *Agapetus kintrisha* sp. nov., *Thremma balcanum* sp. nov., *T. svaneticum* sp. nov., *Martynomyia svanetia* sp. nov., *M. zazai* sp. nov., *Apataniana bakhmara* sp. nov., *A. gouria* sp. nov., *Drusus stephantsmind* sp. nov., *Badukiella markha* sp. nov., *Kelgena bakhmara* sp. nov., *K. bellae* sp. nov., *K. goderdza* sp. nov., *K. lapankura* sp. nov., *K. levani* sp. nov., *K. samtskha* sp. nov., *K. tetnulda* sp. nov., *K. tobara* sp. nov., *K. vekona* sp. nov., *Rizeiella keda* sp. nov., *R. sashuala* sp. nov., *R. tbetia* sp. nov., *R. varjana* sp. nov., *Stenophylax almat* sp. nov., *S. kulbak* sp. nov., *Ernodes bakhmarensis* sp. nov., *E. mingreliensis* sp. nov., *Schizopelex akhalchala* sp. nov., *S. mingrelia* sp. nov., *S. jvaria* sp. nov., *S. masula* sp. nov., *S. nazhala* sp. nov. Moreover, 9 other species are new for Georgia: *Wormaldia hoska* Oláh, 2020, *W. obola* Oláh, 2020, *W. sakaorum* Oláh, 2020, *Diplectrona robusta* Martynov, 1934, *Rhyacophila kora* Oláh, 2020, *Agapetus caucasicus* Martynov, 1913, *Lepidostoma iranicum* Schmid, 1959, *Grammotaulius nigropunctatus* (Retzius, 1783) and *Ernodes ordubadensis* Oláh & Kerimova, 2020. The family Uenoidae and the genus *Thremma* are new for Georgia.

Keywords. Caucasus, Georgia, Trichoptera, species complexes, new species.

INTRODUCTION

In 2018 and 2019, during a two years long International Visegrad Fund research project on the biodiversity of aquatic insects in the Caucasian countries of Georgia and Azerbaijan, we have discovered and described 70 new Trichoptera species just in the first collecting and sampling trip (Oláh *et al.* 2020). Due to the limited European research resources devoted to our declining science of taxonomy and motivated by accelerating degradation of biodiversity we felt obliged to continue the study of the caddisfly communities in Georgian aquatic habitats by our private resources in the years between 2020 and 2023. Unfortunately our first investment in 2020–2021 was unsuccessful; due to covid limitations the second author of this paper was unable to complete our planned collecting trips until 2022.

Our present contribution to the knowledge of the Georgian caddisflies results in 47 new species and is based upon our 2022 and 2023 collecting effort supported by our local university partners, Dr. Bella Yaposhvili and Dr. Levan Mumladze, and with the help of a local student Aleksi Memishishi.

MATERIALS AND METHODS

Following the first collecting trips (2018 – 2019) (Oláh *et al*. 2020), the recorded high Caucasian caddisfly diversity inspired us to continue our efforts to improve further the global knowledge of the Caucasian aquatic Fauna, mainly Trichoptera and Plecoptera. For efficiency reasons, and to reduce costs, our last collecting trips in the years of 2022 and 2023 were focused on Georgia, following the paths of our famous

urn: lsid:zoobank.org:pub:061FAA65-D83E-496D-9AA1-4DD2E8993365 *published: 17.08.2024*
HU ISSN 2063-1588 (online) *https://doi.org/10.18348/opzool.2024.S2.1*

ancestors, Andreas Vasilievitch Martynov and Lidia Andejevna Zhiltzova across the High and Lesser Caucasus.

During these visits, the second author has tried to have an overall view of the Georgian Caucasus, visiting all mountainous regions from east to west and north to south, and whenever possible, from the lower reaches to the higher springs. Each collecting trip took about around 15–18 days, a very short time to visit both the Lesser and the High Caucasus. To illustrate trip structures here we present the last planned itinerary for September 2023 (Map 0).

The collecting was done using a Japanese umbrella or simply on sight hunting; the insects were captured using the fingers impregnated with saliva, which seemed to be the most effective method especially for the Trichoptera. The maps (Apendix 1) and photos (Appendix 2.) reported all along the text to illustrate the ecology and disttribution of each new species are included at the end of the text, to help to find them,

TAXONOMY

Philopotamidae Stephens, 1829

Dolophilodes ornata Ulmer, 1909

Material examined. **Georgia**, Mtskheta-Mtianeti, above Stephantsminda, brook and spring, 2200–2240m, 42.661°N, 44.6081°E, 2.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Philopotamus tenuis Martynov, 1913

Material examined. **Georgia**, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Imerethie, above Sairme, nice brook, 1550–1600m, 41.8776°N, 42.7809°E, 22.V.2023, leg. Gilles Vinçon (1 male, 1 female; OPC).

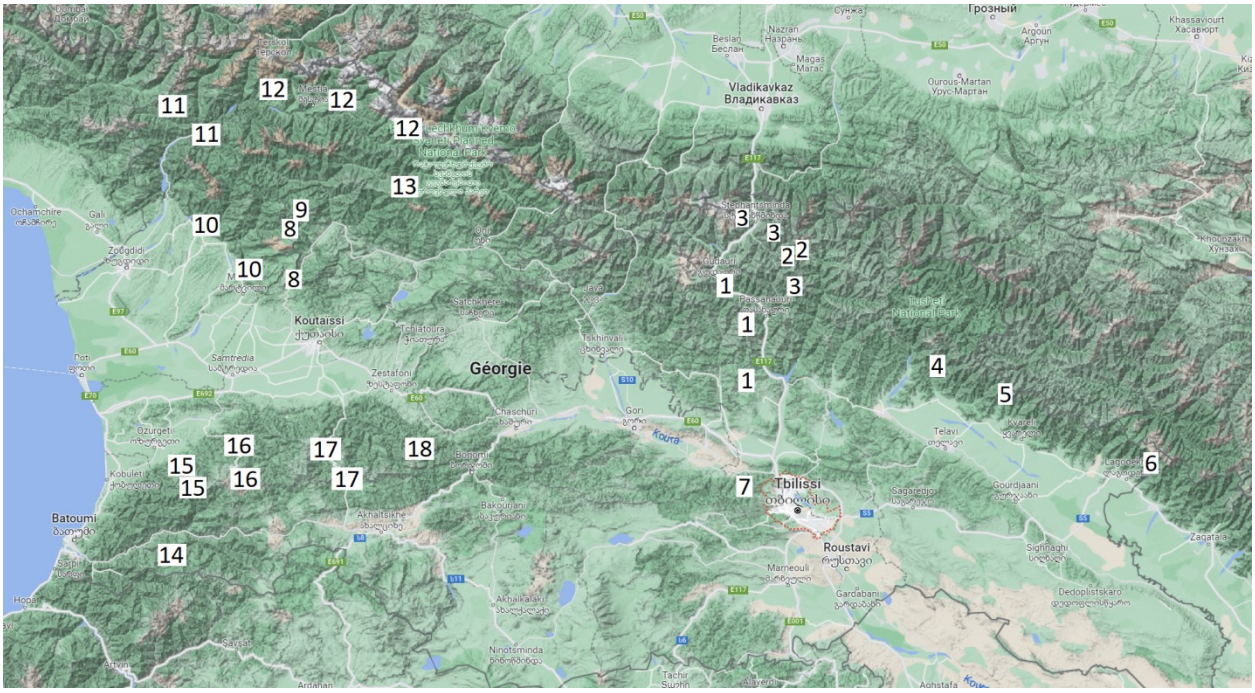
Wormaldia foslana Chvojka & Oláh, 2019

Material examined. **Georgia**, Mingrelia - High Svanetia, SE Jvari, brook tributary of Nazhala River, from 290m, 42.693°N, 42.072°E, to 340m, 42.6956°N, 42.0757°E, 30.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Remark. The species was only known from the holotype that was collected in Kutaisi town (Oláh *et al.* 2019).

Wormaldia harma Oláh & Vinçon, 2020

Material examined. **Georgia**, Gouria, NE Bakhmaro, nice brook tributary of Sashualo River, 1990–2000m, 41.859°N, 42.357°E, 27.IX. 2022, leg. Gilles Vinçon (23 males, 2 females in copula; OPC). Georgia, Gouria, SW Chkhakoura, nice brook tributary of Kalasha River, 1740m, 41.882°N, 42.358°E, 27.IX.2022, leg. Gilles Vinçon (9 males, 8 females; OPC). Georgia, Adjaria, Goderdzi Alpine Garden, springs and brook, 1960 m, 41.6253°N, 42.5364°E, 24.IX.2022, leg. Gilles Vinçon (5 males, OPC). Georgia, Adjaria, below Green Lake, brook below the swamp, 2045 m, 41.682°N, 42.5°E, 24.IX.2022, leg. Gilles Vinçon (9 males, 6 females; OPC). Georgia, Adjaria, big torrent tributary of Kintrishi River, 220m, 41.788° N, 41.963°E, 26.IX.2022, leg. Gilles Vinçon (3 males, OPC). Georgia, Adjaria, Mtirala National Park, brook tributary of Chakvistskali River, 180 m, 41.691°N, 41.831°E, 25. IX. 2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice torrent, 330m, 41.6762°N, 41.8707°E, 20.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, above Gadrekili, brook and spring, 2220–2240m, 41.8437°N, 42.3615°E, 14.IX.2023, leg. Gilles Vinçon (6 males, OPC). Georgia, Gouria, road to Bakhmaro, nice brook and spring, 2030m, 41.8586°N, 42.3564°E, 14.IX.2023, leg. Gilles Vinçon (9 males, OPC). Georgia, High Svanetie, between Lanteli and Lankhviri, Leshta torrent tributary of Ingouri River, 1440m, 43.0385°N, 42.5192°E, 11.IX.2023, leg. Gilles Vinçon (1 male, OPC).



Map 0. Provisional itinery for September 2023, around High and Lesser Caucasus in Georgia..

Remark. The species was described from Mingrelia, High-Svanetia (Oláh *et al.* 2020). The 23+9 males collected in Gouria all have been cleaned, cleared as well as endotheca properly pulled out to clearly expose the otherwise indistinct or indiscernible endothecal spine pattern. All the 23+9 males have, without exception or without any variation, a single stout spine and three slender spines attached to each other's and near to the doubled cluster of small spines similarly to the holotype and to all males collected in the locus typicus, Nakra Valley of Mingrelia and High Svanetia region.

Wormaldia holaga Oláh & Manko, 2020

Material examined. **Georgia**, Mingrelia - High Svanetia, Markhi Valley, brooklet, 1980m, 43.0796°N, 42.231°E, and spring, 2030m, 43.081°N, 42.231°E, 29.09.2022, leg. Gilles Vinçon (3 males, OPC). Georgia, Kakhetie, above Lapankuri, Lopota valley, torrent and nice lateral spring and brooklet, 1580m – 1620m, 42.15°N, 45.6668°E, 21.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Samtskhé-Djavakhétie, SE Tsaghveri, nice brook, 1210m, 41.791°N, 43.489°E, 23.IX.2022, leg. Gilles Vinçon (6 males, 2 females; OPC). Georgia, Mingrelia – High Svanetia, Markhi Valley, nice springs and brooklets near the sheepfold, 2080m, 43.0796°N, 42.2424°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Samtskhé-Djavakhétie, Ktsia-Tabatskuri Managed Reserve, spring and brook, 2380m, 41.6555°N, 43.49°E, 23.IX.2022, leg. Gilles Vinçon (2 males, 6 females; OPC). Georgia, Imerethie, E Ghvedi, Gelaveri Police Station, big brook tributary of the Tskhenistskali River, 330m, 42.462°N, 42.6°E, 1.X.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Kakhetia, road to Omalo, below first cascade, 1370m, 42.2224°N, 45.4764°E and below second cascade, 42.226°N, 45.4795°E, 1400m, 42.2785°N, 45.4917°E, 3.IX.2023, leg. Gilles Vinçon (12 males, 5 females; OPC). Georgia, High Svanetie, above Lanteli and Ughvali, torrent, 2250m, 43.0766°N, 42.549°E, 11.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower Svanetie, above Koruldashi, brooklet and torrent, 2380m, 42.9313°N, 43.1215°E, 12.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, spring and brook, 1240m, 41.8853°N, 46.2652°E and 41.8851°N, 46.2682°E, 1350m, 4.IX.2023, leg. Gilles Vinçon (3 males, 1 female; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, nice brook and torrent, 2120m, 42.6928°N, 42.6465°E, 8.IX.2023, leg. Gilles Vinçon (3 males, 1 female; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, brook and spring, 2210m, 42.6948°N, 42.6432°E, 8.IX.2023, leg. Gilles Vinçon (4 males, 3 females; OPC).

Remark. This species was only known from the holotype collected in the Mtskheta-Mtianeti region (Oláh *et al.* 2020). Its distribution area now appears very wide, in the whole Upper Caucasus from Svanetia to Kakhetia and in the central part of Lesser Caucasus.

***Wormaldia hoska* Oláh, 2020**

(Map 1)

Material examined. **Georgia**, Kakhetia, above Almati, nice spring, 1150m, 42.0841°N, 45.7246° E, 4.IX.2023, leg. Gilles Vinçon (1male, OPC).

Remark. This species was described from Azerbaijan and this is the first record in Georgia.

***Wormaldia kala* sp. nov.**

(Figures 1–3, Map 1, Photo 1–2)

Material examined. Holotype: **Georgia**, Gouria, SW Chkhakoura, spring tributary of Kalasha River, 1740m, 41.881°N, 42.3567°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This new species having tapering harpago, a single stout spine in the endotheca belongs to the *Wormaldia bulgarica* species complex of the *Wormaldia triangulifera* species group. It is close to *Wormaldia khizabavra* sp. nov., described from the Kakhetie region, but differs by the semicircular, not triangular apical excision on tergite VIII; by the right, not obtuse angled anterior ending of the head of segment X; by the regularly truncated, not rounded apical end of the cerci. There are also differences in the pattern of the endothecal spines.

Description. Male (in alcohol). Small castanean brown animal. Sclerites medium brown, setal warts both on head and thorax and legs brown. Maxillary palp formula is I-II-IV-III-V. Forewing length 6 mm. Spur formula is 244.

Male genitalia. Tergit VIII with deep and semicircular mesal excision on the apical margin with pronounced lateral lobes. Segment X characterized by elongated, rounded and stout head, with sharply right angled anterior ending of the head of segment X. Cerci with regularly truncated apex. Harpago tapering long, with slightly downward turning apical region, slightly shorter than the coxopodite. Phallic organ with a single curving stout large spine as well as with small spine cluster regularly arranged in two oblique rows accompanied by slender and curving longer spines.

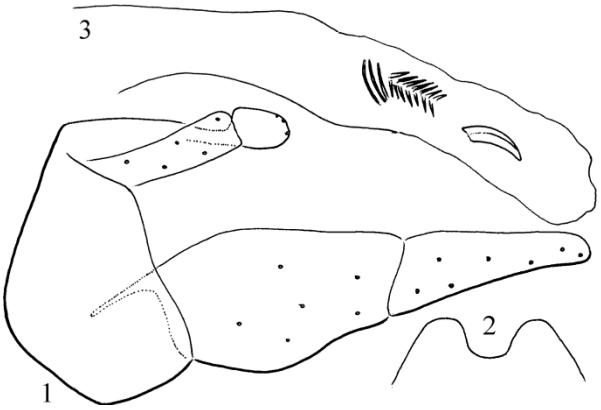
Etymology. Species name was coined from the Type locality, a noun in apposition

***Wormaldia khizabavra* sp. nov.**

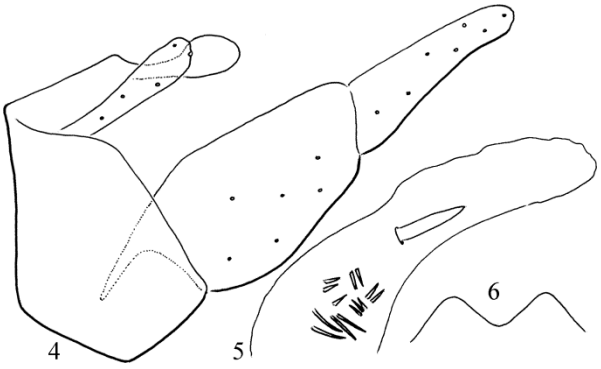
(Figures 4–6, Map 1, Photo 3–4)

Material examined. Holotype: **Georgia**, Kakhetie, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring and brook, 770m, 41.8846°N, 46.25°E, 22.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratypes: Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 930m, 41.8826°N, 46.2561°E, 13.V.2023, leg. Gilles Vinçon (14 males, OPC). Georgia, Kakhetia, above Lagodekhi, Shromis-Khevi valley, brook, 1290m, 41.8475°N, 46.326°E, 14.V.2023, leg. Gilles Vinçon (1 male, OPC).

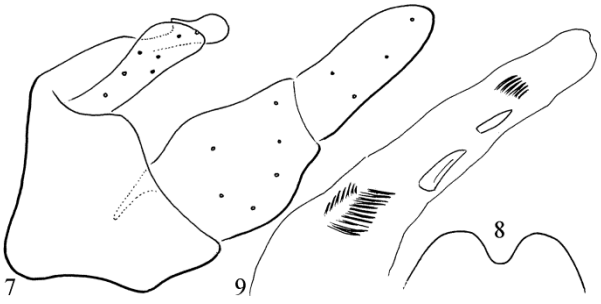
Diagnosis. This new species is close to *Wormaldia kumanskii* Oláh & Chvojka, 2019, but differs by the elongated, almost double long head of segment X, as well as by the clearly triangular, not semicircular apicodorsal excision of tergite VIII.



Figures 1–3. *Wormaldia kala* sp. nov. Holotype male: 1 = genitalia in left lateral view; 2 = tergite VIII in dorsal view; 3 = phallic organ in left lateral view.



Figures 4–6. *Wormaldia khizabavra* sp. n. Holotype male: 4 = genitalia in left lateral view; 5 = tergite VIII in dorsal view; 6 = phallic organ in left lateral view.



Figures 7–9. *Wormaldia kokoa* sp. nov. Holotype male: 7 = genitalia in left lateral view; 8 = tergite VIII in dorsal view; 9 = phallic organ in left lateral view.

Description. Male (in alcohol). Small castanean brown animal. Sclerites medium brown, setal warts both on head and thorax and legs brown. Maxillary palp formula is I-II-IV-III-V. Forewing length 6 mm. Spur formula is 244.

Male genitalia. Tergite VIII with deep and triangular mesal excision on the apical margin without pronounced lateral lobes. Segment X characterized by elongated, rounded and stout head, with smooth anterad sloping margin and without any sign of pointed process, as well as with deep subapical concavity and straight basal region. Cerci with roundly truncated apex. Harpago tapering long, with slightly downward turning apical region, almost as long as coxopodite. Phallic organ with a single large stout spine as well as with irregularly scattered small spines accompanied by four slender and longer spines. The irregularly scattered state of small spines could be the result of copulation activity.

Etymology. Species name was coined from the type locality, a noun in apposition.

Remarks. Detailed study on the properly cleared cleaned, and pincer withdrawn endothecal spine pattern revealed only a single stout spine in all of the 14 paratypes. In two specimens we have recorded two and three small spines detached from the small spine cluster as a result of copulatory processes. These detached small spines could be mistaken with smaller stout spines accompanying large stout spines in several species.

Wormaldia kitera Oláh, 2020

Material examined. **Georgia**, Kakhetia, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, brook, 930m, 41.8826°N, 46.2561° E, 13.V.2023, leg. Gilles Vinçon (3 males, OPC).

Remark. The species was formerly known only by the holotype. These specimens made it possible to examine by extra preparations and dissecttions the spine structure of the endotheca in more detail. The two stout spines examined from several plane are not equal. One is larger and more curved, the other smaller, more slender and less curved.

Wormaldia kokoa sp. nov.

(Figures 7–9, Map 1, Photos 5–6)

Material examined. Holotype: **Georgia**, Mingrelie, above Koko, nice spring on limestone substratum, 310m, 42.6467°N, 42.2028°E, brook and spring, 430m, 42.6573°N, 42.2297°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. Having very particular character combination this new species is a sibling of *Wormaldia davidi* Oláh & Vinçon, 2020. A truly chimeric species, difficult to classify because it is composed of characters from several species complexes or species groups. Most of its characters relate this species to the *Wormaldia triangulifera* species group, but has almost parallel-sided elongated harpago of the *W. occipitalis* species group. Its classification inside the *W. triangulifera* species group is further obscured by having dorsal concavity on the head of segment X a character state in *W. subnigra* complex and clusters of small spines in the endotheca of the *W. bulgarica* and *W. khourmai* species complexes. It differs from *Wormaldia davidi* by the narrow mesal excision and blunt lobes on tergite VIII; by the ventromesad produced, not excised cerci; by the shorter head and longer subapical concavity on segment X; by the two clusters of small spines in the endotheca.

Description. Male (in alcohol). Medium sized light brown animal. Sclerites medium brown, setal warts both on head and thorax and legs brown. Maxillary palp formula is I-II-IV-III-V. Forewing length 6 mm. Spur formula is 244.

Male genitalia. Tergite VIII with deep and narrow mesal excision on the apical margin formed by blunt lateral lobes. Segment X characterized by a dorsal small pointed subapical process visible in lateral view; the head elongated and characterized by dorsal concavity, subapical depression deep and long. Cerci with rounded apex, extended ventroapicad. Gonopods, both coxopodite and harpago short and high (broad), almost equal in length; harpagones with less pointed apex, almost parallel-sided as visible in lateral view. Phallic organ with eversible membranous endotheca containing one long and one smaller stout spine accompanied by two clusters of small spines; first cluster doubled and larger, second smaller and singled.

Etymology. Species name was coined from the type locality, a noun in apposition.

Wormaldia kulbaka sp. nov.

(Figures 10–12, Map 1, Photo 7)

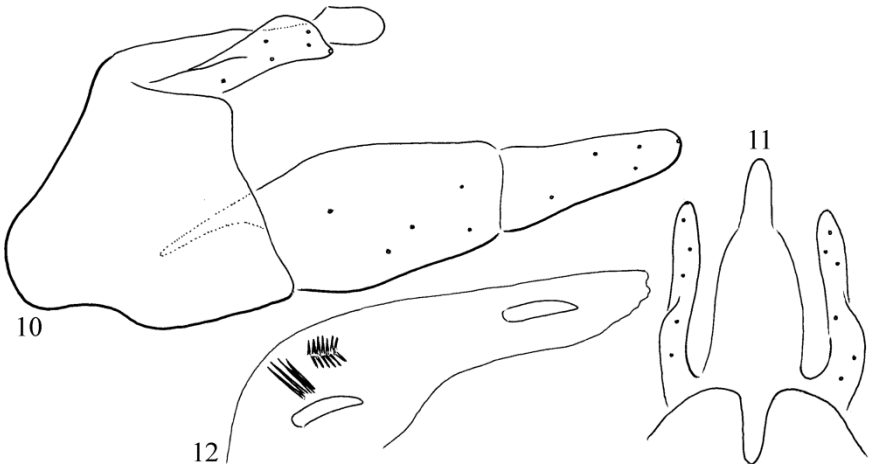
Material examined. Holotype: **Georgia**, Racha -Lechkumi and Lower-Svanetie, above Kulbaki, spring 1380m, 42.6341°N, 42.5821°E, 7.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. Having tapering harpago it belongs to the *Wormaldia triangulifera* species group, and having two stout spines to the *W. khourmai* species complex. Most close to *W. hoska* Oláh, 2020 described from Azerbaijan, and also found in Kakhetie, but differs by the very deep and narrow apicomesal excision on tergite VIII, by the shallow, not deep subapical dorsal depression on segment X, and by the two equally large stout spines in the endotheca.

Description. Male (in alcohol). Small castanean brown animal. Sclerites medium brown, setal warts both on head and thorax and legs brown. Maxillary palp formula is I-II-IV-III-V. Forewing length 5 mm. Spur formula is 244.

Male genitalia. Tergite VIII with very deep and narrow mesal excision on the apical margin without pronounced lateral lobes. Segment X characterized by elongated rounded head, shallow subapical concavity and by straight basal region. Cerci with downward oblique truncated apex. Harpago straight tapering, slightly shorter than coxopodite. Phallic organ with two almost equally large stout spines accompanied by a small cluster of small and short spines as well as by some longer and slender spines.

Etymology. Species name was coined from the type locality, a noun in apposition.



Figures 10–12. *Wormaldia kulbaka* sp. nov. Holotype male: 10 = genitalia in left lateral view; 11 = genitalia in dorsal view; 12 = phallic organ in left lateral view.

Wormaldia kumanskii Oláh & Chvojka, 2019

Material examined. **Georgia,** Adjaria, Mtirala National Park, nice torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°E, 26.IX. 2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, Chakvistskali River, 180m, 41.691°N, 41.83°E, 25.IX9.2022, leg. Gilles Vinçon (7 males, 12 females; OPC). Georgia, Adjaria, S Zeda Chkhutuneti, big torrent tributary of Machakhlistskali River, 1110m, 41.469°N, 41.853°E, 25.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, first brook, 220m, 41.791°N, 41.956°E and second smaller brook, 220m, 41.791°N, 41.9565°E, tributaries of Kintrishi River, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, SW Chkhakoura, nice spring tributary of Kalasha River, 1740m, 41.881°N, 42.3567°E, 27.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 930m, 41.8826°N, 46.2561°E, 13.V.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Samtskhe-Djavakhetie, above Abastumani, South slope of Zekari Pass, nice brook and spring, 2050–2070m, 41.7818°N, 42.8428°E, 22.V.2023, leg. Gilles Vinçon (2 males, 3 females; OPC). Georgia, Gouria, road to Bakhmaro, nice brook and spring, 2030m, 41.8586°N, 42.3564°E, 14.IX.2023, leg. Gilles Vinçon (3 males, OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, brooklet and spring, 1770–1870m, 41.7279°N, 43.5092°E, 7.IX.2023, leg. Gilles Vinçon (8 males, 4 females; OPC). Georgia, Gouria, above Gadrekili, nice brook, 2140–2200m, 41.8405°N, 42.3595°E, 14. IX.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Adjaria, above Keda, above Namonastrevi, nice brook, 1040m, 41.5765°N, 42.0672°E, 15.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC). Georgia, Gouria, above Bakhmaro, spring, 2030m, 41.8609°N, 42.3287°E, 14.IX. 2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Adjaria, above Keda, above Namonastrevi, brook and spring, 1730–1770m, 41.551°N, 42.0919°E, 16.IX.2023, leg. Gilles Vinçon (1 male, OPC).

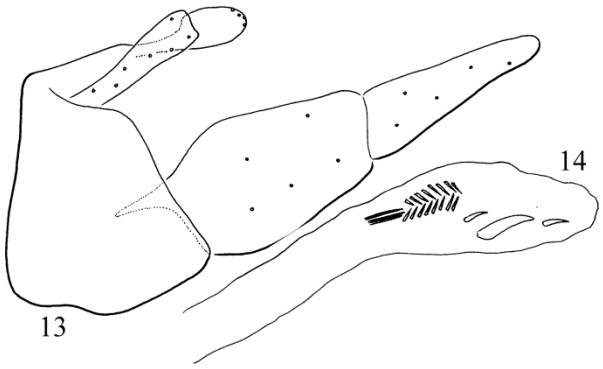
Remark. First report from the High Caucasus.

Wormaldia lopota sp. nov.

(Figures 13–14, Map 1, Photos 8–9)

Material examined. Holotype: **Georgia**, Kakhetie, above Lapankuri, Lopota valley, torrent and nice lateral spring and brooklet, 1580m – 1620m, 42.15°N, 45.6668°E, 21.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratype: Georgia, Kakhetie, above Lapankuri, Lopota valley, nice small lateral river, 660m, 42.078°N, 45.611°E, 21.IX. 2022, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This new species is distinguished from all the known species by the character com-



Figures 13–14. *Wormaldia lopota* sp. nov. Holotype male: 13 = genitalia in left lateral view; 14 = phallic organ in left lateral view.

bination of elongated and stout head of segment X, three endothecal stout spines, one large and two small, truncate apex of cerci and the deep and wide apical excision of tergite VIII. Having tapering harpago, it belongs to the *Wormaldia triangulifera* species group moreover, the endotheca of the phallic organ armed with elaborated cluster of small spines and three stout spines as well as the head of segment X without subapical pointed tip therefore it is a member of the *Wormaldia khourmai* species complex. Most close to *Wormaldia hoska* Oláh, 2020 described from Azerbaijan and also found in Kaketie, but differs by the more pronounced elongated head of segment X as well as by endothecal spine pattern having three stout spines, not only two.

Description. Male (in alcohol). Small castanean brown animal. Sclerites medium brown, setal warts both on head and thorax and legs brown. Maxillary palp formula is I-II-IV-III-V. Forewing length 6 mm. Spur formula is 244.

Male genitalia. Tergit VIII with deep and wide mesal excision on the apical margin without pronounced lateral lobes. Segment X characterized by very elongated and stout head, shallow subapical concavity and by straight basal region. Cerci with truncated apex. Harpago tapering long, with slightly downward turning apical region, almost as long as coxopodite. Phallic organ with a large and two smaller stout spines as well as with doubled cluster of small and short spines accompanied by some longer and slender spines.

Etymology. The species name was coined from the type locality, a noun in apposition.

***Wormaldia obola* Oláh, 2020**

(Map 1)

Material examined. **Georgia**, Kakhetia, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring and brook, 630m, 41.8778°N, 46.2425°E, 13.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 930m, 41.8826°N, 46.2561°E, 13.V.2023, leg. Gilles Vinçon (5 males, OPC).

Remarks. This species was only known from the Gədəbəy and Göygöl districts in the Azerbaijanian Lesser Caucasus (Oláh *et al*. 2020). It is new for the Georgian Fauna and High Caucasus.

***Wormaldia sakaorum* Oláh, 2020**

(Map 1)

Material examined. **Georgia**, Kakhetia, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring, 1250m, 41.8852°N, 46.2652°E, 13.V.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 930m, 41.8826°N, 46.2561°E, 13.V.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 1000m, 41.8823°N, 46.2585°E, 13.05.2023, leg. Gilles Vinçon (9 males, 6 females; OPC).

Remarks. At one specimen the head of segment X became injured, manipulated completely circular in lateral view during preparation by pulling too much out of the endotheca to expose clearly discernible the spine pattern. This species was only known from the type locality in the Azerbaijan High Caucasus (Şəki district). It is new for the Georgian Fauna.

***Wormaldia sima* Oláh & Chvojka, 2019**

Material examined. **Georgia**, Mingrelia - High Svanetia, Nenskra Valley, NE Kvemo Marghi, big

torrent, 1130m, 43.036°N, 42.213°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Ukanamkhari, nice spring, 1680m, 42.325°N, 44.607°E, 19.IX.2022, leg. Gilles Vinçon (3 males, OPC). Georgia, High Svanetie, above Mestia in direction of Tetnuldi ski station, nice springs and brooks, above the fish farm in construction, 1530m, 43.0477°N, 42.8091°E, 17.V.2023, leg. Gilles Vinçon (10 males, OPC). Georgia, High Svanetie, above Nakra, nice torrent with mosses, 1970m, 43.0722°N, 42.3442°E, 18.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, above Lanteli and Ughvali, nice torrent and brook, 1730–1830m, 43.0608°N, 42.5357°E, 11.IX.2023, leg. Gilles Vinçon (23 males, OPC). Georgia, Shida Kartli, below Shikhan Mount, brooklet very steep up to its spring, 1730–1820m, 41.748°N, 44.3934E to 41.7476°N, 44.3934°E, 17.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, above Mestia, brook and spring above the fish farm in construction, 1550m, 43.0477°N, 42.8091°E, 11.IX.2023, leg. Gilles Vinçon (8 males, 2 females; OPC).

Wormaldia varjanulia sp. nov.

(Figures 15–16, Map 1, Photo 10)

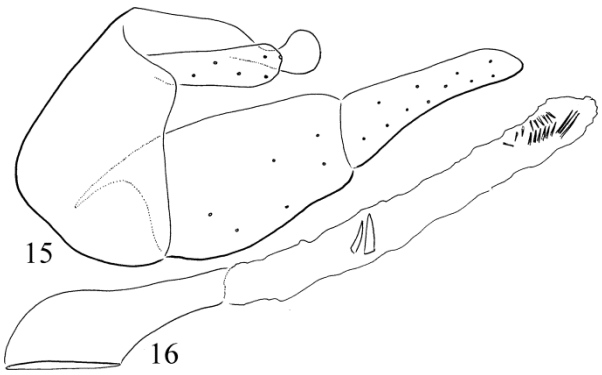
Material examined. Holotype: **Georgia**, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (1 male, in copula; OPC). Allotype: same as holotype (1 female, OPC).

Diagnosis. This new species is distinguished from all the known species by the character combination of the short and stout rounded head of segment X, two endothecal stout spines with almost equal length, but one is more robust, rounded truncate apex of cerci and the deep and wide apical excision of tergite VIII. Having tapering harpago it belongs to the *Wormaldia triangulifera* species group and the endotheca of the phallic organ armed with elaborated cluster of small spines and two stout spines as well as the head of segment X without subapical pointed tip therefore it is a member of the *Wormaldia khourmai* species complex. Most close to *Wormaldia holaga* Oláh & Manko, 2020 described from the High Caucasus (Mtskheta-Mtianeti region), but differs by the higher and shorter head of segment X as well as by endothecal spine pattern having only two stout spines, not three.

Description. Male (in alcohol). Small castanean brown animal. Sclerites medium brown, setal warts both on head and thorax and legs brown. Maxillary palp formula is I-II-IV-III-V. Forewing length 6 mm. Spur formula is 244.

Male genitalia. Tergite VIII with deep and wide mesal excision on the apical margin with pronounced lateral lobes. Segment X characterized by very short and high head without pointed subapical process, very deep subapical concavity and by straight basal region. Cerci with rounded truncated apex. Harpago tapering long, with slightly downward turning apical region, almost as long as coxopodite. Phallic organ with two stout spines, one is more robust as well as with doubled cluster of small and short spines accompanied by a small cluster of longer and slender spines. The entire endotheca is inserted and inverted into the allotype females.

Etymology. Species name was coined from the type locality, a noun in apposition.



Figures 15–16. *Wormaldia varjanulia* sp. nov. Holotype male: 15 = genitalia in left lateral view; 16 = phallic organ in left lateral view.

Psychomyiidae Walker, 1852

***Psychomyia pusilla* (Fabricius, 1781)**

Material examined. **Georgia**, Kvemo Kartli, West Tikilisa, Ktsia River, 1580m, 41.5929°N, 43.9469°E, 6.IX.2023, leg. Gilles Vinçon (5 males, OPC).

***Tinodes abana* sp. nov.**

(Figures 17–19, Photo 11)

Material examined. Holotype: **Georgia**, Kakhetie, above Lechuri, road to Abano Pass, steep brook and cascade, 1330–1370m, 42.2224°N, 45.4764°E, 24.V.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This new species relates to *Tinodes difficilis* Martynov, 1927 but differs by the lateral shape of the paraproct; it is longer than the phallic organ, not much shorter; differs also by the harpago and especially the process structure of the coxopodite.

Description. Small medium brown animal. Sclerites medium brown, setal warts both on head and thorax lighter. Grooves are dark, cranial areas are medium and warts are light brown. Maxillary palp formula is I-IV-III-II-V, second segment is almost as long as the fifth. Forewing length 5 mm.

Male genitalia. Segment IX represented by tergite and sternite; tergite elongated and roofing directly the dorsal paraproctal processes and the phallic apparatus; the triangular sternite with produced ventroproximal and ventrodistal angles; dorsoapical angle obtuse due to forming the fulcrum complex where it meets with tergite IX, cerci and paraproct as well as the median bridge providing sclerous connection between phallic apparatus and the sternite IX. Vestigial membranous segment X used to fuse to the tergum IX in *Tinodes* not discernible at all. Cerci setose, elongated as usual nearly equal rod-shaped, bending after midway. Paraproct is represented by a pair of pointed dorsal paraproctal processes longer than cerci, arching horizontal in lateral view with basal part turning to the fulcrum; armed with around 4 pairs of megasetae with well-developed alveoli. Gonopods the largest genital element composed of the rounded coxopodite with downward directed spine-like processes and the long digitiform harpagones and the basal plate with long anterior apodeme. Phallic apparatus located below the paraproctal processes and being in the double cover of cercus and paraproct on both sides; its apex upward directed hook-shaped; phallobase or more accurately the basal part of the phallotheca directed downward to the median bridge of the sternite IX; it is not easy to homologise the elements of the fulcrum, in the meeting point of Schmid's "jaws" of Psychomyiidae family; however in this new species it is discernible rather clear that cerci and paraproct meet near at the meeting area of the sternite and tergite IX; the phallobase supporting median bridge fused more mesally and anteriorly to the sternite IX.

Etymology. The name was coined from the type locality, a noun in apposition.

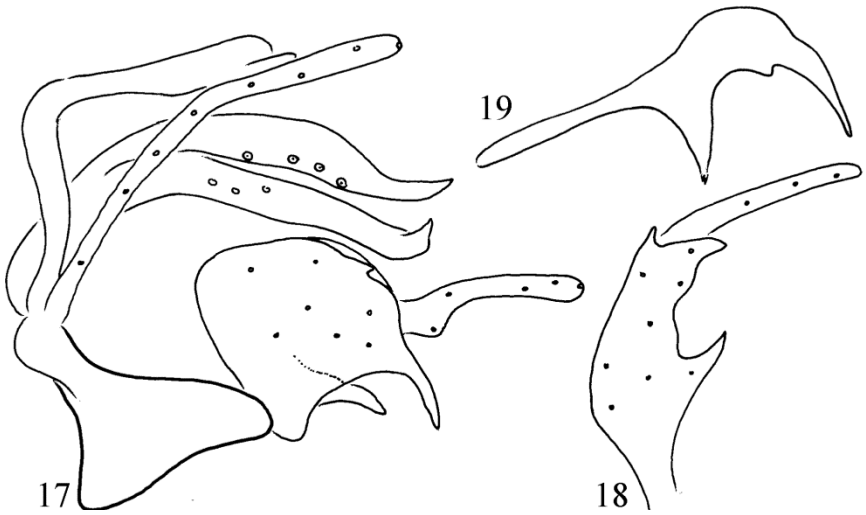
***Tinodes amtkela* Mey & Müller, 1979**

Material examined. **Georgia,** Mingrelia, above Koko, below water capture, springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC).

Remarks. This tiny species was described from Amtkel Lake, Gulripshi District of Abkhazia and known only from the single holotype. This is the second specimen of the species.

***Tinodes cheitani* Schmid, 1959**

Material examined. **Georgia,** Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, 1 female; in copula, OPC). Georgia, Adjaria, Mtirala National Park, nice brook, 1180m, 41.6473°N, 41.8829°E, 20.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelie, above Koko, nice spring on limestone substratum, 310m, 42.6467°N, 42.2028°E, brook and spring, 430m, 42.6573°N, 42.2297°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala



Figures 17–19. *Tinodes abana* sp. nov. Holotype male: 17 = genitalia in left lateral view; 18 = left gonopod in ventral view; 19 = basal plate of gonopod in lateral view.

National Park, nice torrent, 330m, 41.6762°N, 41.8707°E, 20.V.2023, leg. Gilles Vinçon (1 male, OPC).

Tinodes difficilis Martynov, 1927

Material examined. **Georgia**, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice torrent, 330m, 41.6762°N, 41.8707°E, 20.V.2023, leg. Gilles Vinçon (1 male, 1 female in copula; OPC).

Tinodes verethraghna Schmid, 1959

Material examined. **Georgia**, Kakhetie, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring and brook, 1180m, 41.8852° N, 46.2625°E, 22.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Polycentropodidae Ulmer, 1903

Plectrocnemia latissima Martynov, 1913

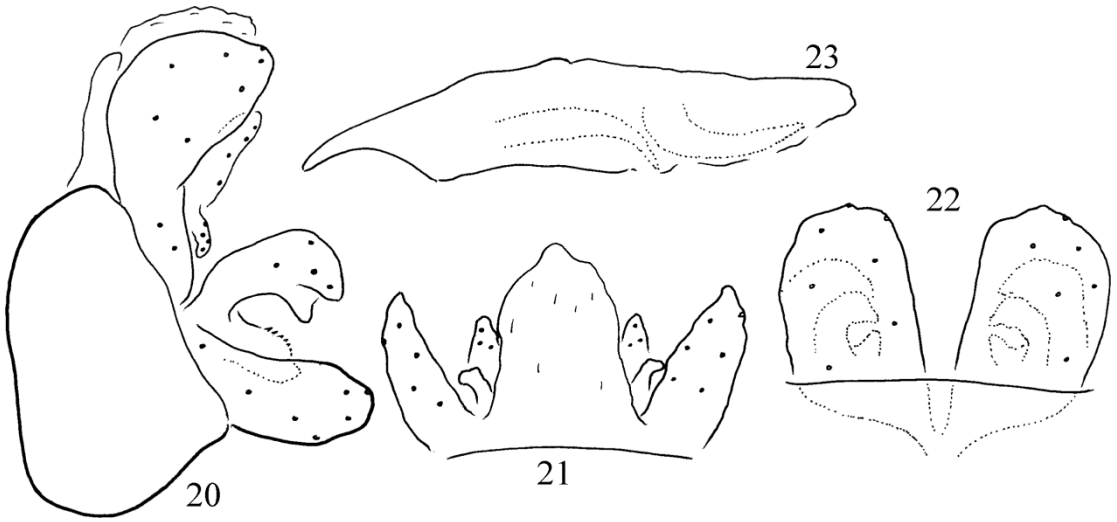
Material examined. **Georgia**, Kakhetia, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring, 1250m, 41.8852°N, 46.2652° E, 13.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Ukanamkhari, nice spring and brook, 1680–1730m, 42.324°N, 44.607°E, 31.VIII.2023, leg. Gilles Vinçon (1 male, OPC).

Remark. The dorsal arm of the paraproct is spine-like, that is slender in Martynov's original species description and drawing, and on a specimen collected nearby the locus typicus, but broad with almost spoon-like head on redrawing in the Malicky's atlases (1983, 2004). The present male from Georgia, Kakhetia has slender, spine-like dorsal arm of the paraproct identical with Martynov's holotype, but broad with spoon like head on the specimen from the Georgia Kvemo Kartli region (Oláh *et al.* 2020). More specimens are required to delineate these siblings.

Plectrocnemia zekaria sp. nov.

(Figures 20–23, Photos 12–13)

Material examined. Holotype: **Georgia**, Imerethie, below Zekari Pass, South slope, brook and spring, 2050–2070m, 41.8241°N, 42.852°E, 22.V. 2023, leg. Gilles Vinçon (1 male, OPC). Paratypes: same as holotype (2 males, 2 females; OPC). Georgia, Imerethie, above Sairme, nice



Figures 20–23. *Plectrocnemia zekaria* sp. nov. Holotype male: 20 = genitalia in left lateral view; 21 = genitalia in dorsal view; 22 = gonopods in ventral view; 23 = phallic organ in lateral view.

brook, 1550–1600m, 41.8776°N, 42.7809°E, 22. V.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. A sibling species of *Plectrocnemia rizeiensis* Sipahiler, 1987 described from Turkey (near Rize). This species from Turkey is characterized in the original description by the short, broad, inferior appendages (gonopods) and by two pairs of spines in the aedeagus; basal pair is longer nearly parallel-sided the other pair is curved. *Plectrocnemia zekaria* sp. nov. differs from *Plectrocnema rizeiensis* by the even shorter gonopods as well as by the two pairs of parameres (spines in aedeagus); both pairs curve; basal pair curves downward, apical pair curves upward.

Description. Medium-sized *Plectrocnemia* species of light brown, almost yellowish body and wing colour with forewing length of 10 mm. Forewing densely covered with recumbent setae.

Male genitalia. In lateral view sternite IX subtriangular, dominating over the entire genitalia articulating and holding the periphallic organs of cerci-paraproct fused complex and the gonopods. Tergite IX small vertically elongated giving support to the membranous segment X. Cerci large foliform. Paraproct bipartite vertically elongated, its dorsal arms form part of the phallocrypt giving ventral support for the phallic organ, its ventral arm directed downward deep and densely covered with short stout peg-like setae. Gonopods very short, subquadrangular in ventral view with rounded apical margin. Phallic organ supplied with two pairs of parameres corrugated from middle, both curving.

Etymology. Coined from the name of the locus typicus, a noun in apposition.

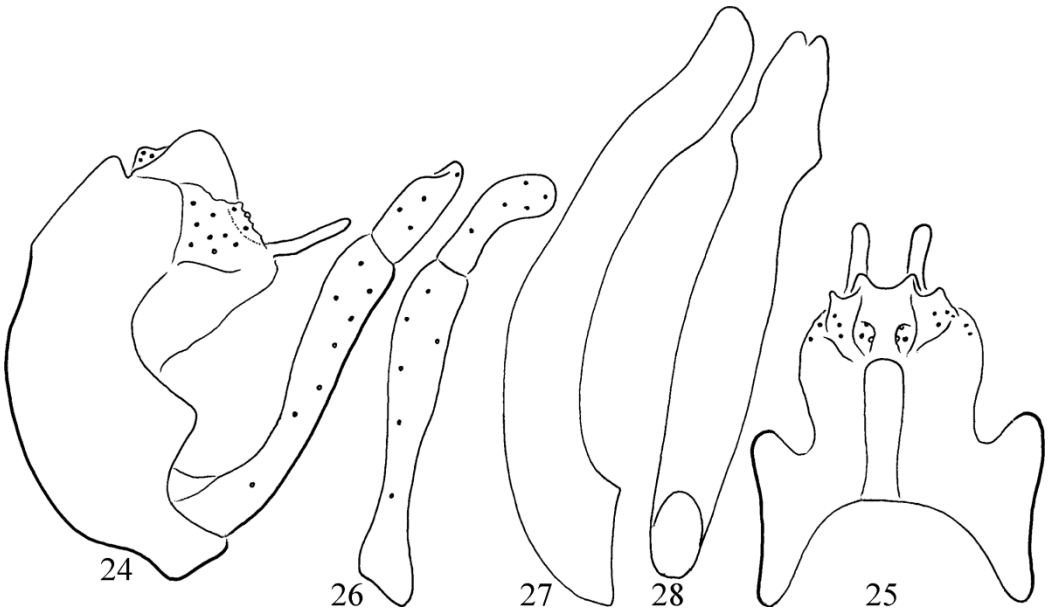
Hydropsychidae Curtis, 1835

Hydropsyche adjaria sp. nov.

(Figures 24–28)

Material examined. Holotype: **Georgia**, Adjaria, big torrent tributary of Kintrishi River, 220 m, 41.788°N, 41.963°E, 26.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This very dark, almost black new species has a genital structure similar to *Hydropsyche ejsaka* Oláh, 2020, but differs by having the median keel on tergite IX long and narrow, not short and broad; the apicomesal lobe of segment IX triangular not rounded; the unsetose dorsolateral rim of segment X narrowing traingular, not flat triangular in lateral view. Apical region of the phallic organ slightly narrowing



Figures 24–28. *Hydropsyche adjaria* sp. nov. Holotype male: 24 = genitalia in left lateral view; 25 = genitalia in dorsal view; 26 = left gonopod in ventral view; 27 = phallic organ in lateral view; 28 = phallic organ in ventral view.

apicad, not parallel-sided, the triangular subapical lateral projection is more produced in lateral view.

Description. Male. Body dark, dorsal thoracic sclerites darker, almost black. Wings dark brown, without pronounced pattern. Maxillary palp formula I-III-II-IV-V. Spur formula 244. Forewing length 8 mm.

Male genitalia. Segment IX fused annular and short; its median keel narrow and long, parallel-sided, rounded apicad with granulose dorsal surface; apical lobe on posterolateral margin rounded triangular, anterior margin convex. Intersegmental profile between the ninth and tenth segments modified into a deep and very short gap. Segment X short, rounded quadrangular in dorsal view; lateral setose area, the cerci fused with ventroapical setose lobe, located in posterad position; subtriangular in lateral view; dorsoapical setose lobes reduced to the setose anterior area of the unsetose dorsolateral rim of segment X in lateral view. The coxopodit of the gonopod longer than the apex of segment X; harpago spatulate in ventral view and narrowing ventrad in lateral view. Phallic organ with downward directed apical region and blunt head in lateral view; pronounced triangular subapical lateral projection in ventral view.

Etymology. Coined from the name of the type locality of Adjaria region, a noun in apposition.

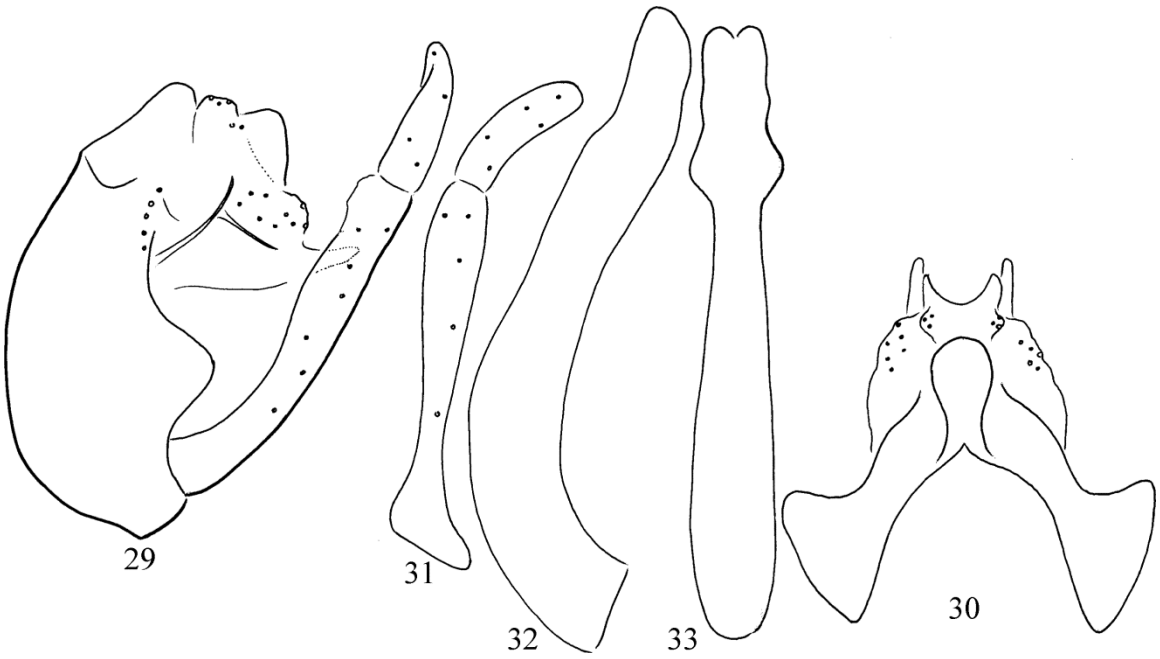
***Hydropsyche gouria* sp. nov.**

(Figures 29–33, Photos 14–15)

Material examined. Holotype: **Georgia,** Gouria, above Gadrekili, nice brook, 2140–2200m, 41.8405°N, 42.3595°E, 14.IX.2023, leg. Gilles Vinçon (1 male, OPC). Paratypes: same as holotype (1 male, 1 female; OPC).

Diagnosis. This dark new species has a genital structure similar to *Hydropsyche ejsaka* Oláh, 2020, but differs by having the median keel on tergite IX more spatulate, almost circular apicad, not parallel-sided; the unsetose dorsolateral rim of segment X well separated from the anterad shifted dorsoapical setose lobe, not fused together. Apical region of the phallic organ slightly narrowing apicad, not parallel-sided, the triangular subapical lateral projection is more produced in lateral view.

Description. Male. Body dark, dorsal thoracic sclerites darker, almost black. Wings dark brown, without pronounced pattern. Maxillary palp for-



Figures 29–33. *Hydropsyche gouria* sp. nov. Holotype male: 29 = genitalia in left lateral view; 30 = genitalia in dorsal view; 31 = left gonopod in ventral view; 32 = phallic organ in lateral view; 33 = phallic organ in ventral view.

mula I-III-II-IV-V. Spur formula 244. Forewing length 8 mm.

Male genitalia. Segment IX fused annular, rounded anterad; its median keel spatulate of circular broadened apex with granulose dorsal surface; apical lobe on posterolateral margin rounded triangular. Intersegmental profile between the ninth and tenth segments forms a short gap. Segment X short, quadrangular in lateral view; lateral setose area, the cerci fused with ventroapical setose lobe, located in posterad position; rounded in lateral view; dorsoapical setose lobes reduced to the setose anterior area of the unsetose dorsolateral rim of segment X in lateral view. The coxopodit of the gonopod longer than the apex of segment X; harpago parallel-sided and mesad turning in ventral view. Phallic organ with downward directed apical region and blunt head in lateral view; pronounced rounded triangular subapical lateral projection in ventral view.

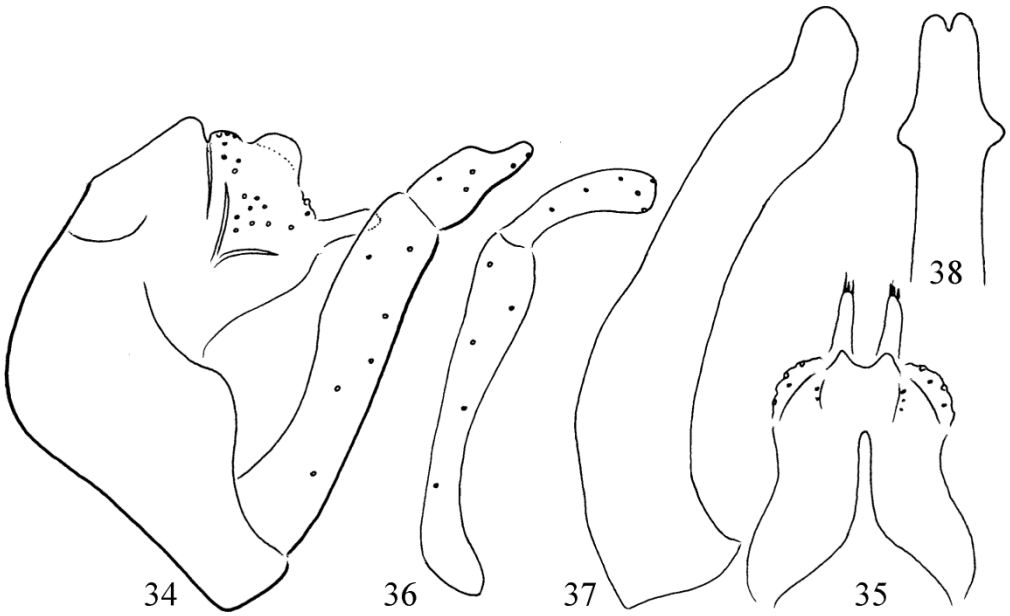
Etymology. Coined from the name of the type locality of Gouria region, a noun in apposition.

***Hydropsyche svanetica* sp. nov.**

(Figures 34–38, Photos 16–17)

Material examined. Holotype: **Georgia,** High Svanetia, above Mestia, brook and spring above the fish farm in construction, 1550m, 43.0477°N, 42.8091°E, 11.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This dark new species has a genital structure similar to *Hydropsyche ejsaka* Oláh, 2020, and particularly to *Hydropsyche adjaria* sp. nov. but differs by having the median keel on tergite IX long and extremely narrow, not short and broad like at *H. ejsaka* as well as not long and medium broad like at *H. adjaria* sp. nov. The apicomesal lobe of segment IX shallow, not triangular or rounded triangular; the anterad shifted setose dorsal lobe of segment X flat, not triangular in lateral view. Apical region of the phallic organ parallel sided, not slightly narrowing apicad in ventral view.



Figures 34–38. *Hydropsyche svanetica* sp. nov. Holotype male: 34 = genitalia in left lateral view; 35 = genitalia in dorsal view; 36 = left gonopod in ventral view; 37 = phallic organ in lateral view; 38 = phallic organ in ventral view.

Description. Male. Body dark, dorsal thoracic sclerites darker. Wings dark brown, with dense recumbent hairs. Maxillary palp formula I-III-II-IV-V. Spur formula 244. Forewing length 8 mm.

Male genitalia. Segment IX fused annular and short; its median keel very narrow and long, parallel-sided, rounded apicad with granulose dorsal surface; apical lobe on posterolateral margin short and rounded, anterior margin convex. Intersegmental profile between the ninth and tenth segments modified into a deep and very short gap. Segment X short, rounded quadrangular in dorsal view; lateral setose area, the cerci fused with ventroapical setose lobe, located in posterad position; dorsoapical setose lobes reduced to the setose anterior area of the unsetose dorsolateral rim of segment X in lateral view. The coxopodit of the gonopod longer than the apex of segment X; harpago spatulate in ventral view and narrowing significantly ventrad in lateral view. Phallic organ with downward directed apical region and further narrowed head in lateral view; pronounced triangular subapical lateral projection in ventral view.

Etymology. Coined from the name of the type locality of Svanetia region.

Diplectroninae Ulmer, 1951

Diplectrona georgica Oláh & Vinçon, 2020

Material examined. **Georgia**, Adjaria, above Varjanauli, spring and brook, 730m, 41.7791°N, 41.9417°E and 41.7771°N, 41.9426°E, 19.V. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, road to Bakhmaro, nice brook, 850m, 41.9134°N, 42.3913°E, 21.V.2023, leg. Gilles Vinçon (8 males, OPC). Georgia, Gouria, road to Bakhmaro, brook and cascade, 450m, 41.927°N, 42.3834°E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, after Kokhi, spring and brook, 730m, 41.807°N, 41.91°E, 19.V.2023, leg. Gilles Vinçon (12 males, OPC).

Diplectrona robusta Martynov, 1934

Material examined. Georgia, High Svanetia, below Lukhi Tobari, nice brook up to the cascade, 750m, 42.9563°N, 42.1965°E, 18.V.2023, leg. Gilles Vinçon (2 males, 4 females; OPC). Georgia, Imerethie, below Zekari Pass, South slope, brook and spring, 2050–2070m, 41.8241°N, 42.852°E, 22.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Imerethie, above Sairme, brook

and spring, 1300–1360m, 41.8814°N, 42.7577°E, 22.V.2023, leg. Gilles Vinçon (9 males, 6 females; OPC). Georgia, High Svanetia, brook above Kveda Luha, tributary of Ingouri River, 1150m, 43.0485°N, 42.4776°E, 18.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia, above Koko, nice spring on limestone substratum, 310m, 42.6467°N, 42.2028°E, brook and spring, 430m, 42.6573°N, 42.2297°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetia, above Mestia, brook and spring above the fish farm in construction, 1550m, 43.0477°N, 42.8091°E, 11.IX.2023, leg. Gilles Vinçon (1 male, 24 females; OPC). Georgia, Mingrelia, above Koko, nice springs on limestone substratum, 330m, 42.648°N, 42.2023°E, 9.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia, above Koko, nice brook and spring on limestone substratum below water capture, 310m, 42.6467° N, 42.2028°E, 9.IX.2023, leg. Gilles Vinçon (4 males, 2 females; OPC).

Remark. This species is new for Georgia.

Rhyacophilidae Stephens, 1836

***Philocrena trialetica* Lepneva, 1956**

Material examined. Georgia, Imerethie, above Sairme, nice brook, 1550–1600m, 41.8776°N, 42.7809°E, 22.V.2023, leg. Gilles Vinçon (4 males, 1 female; OPC). Georgia, Adjaria, above Keda, above Namonastrevi, nice torrent, 1160m, 41.5684°N, 42.073°E, 16.IX.2023, leg. Gilles Vinçon (1 male, OPC).

***Rhyacophila aberrans* Martynov, 1913**

Material examined. **Georgia**, Adjaria, Mtirala National Park, nice torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°E, 26.IX. 2022, leg. Gilles Vinçon (3 males, OPC). Georgia, Adjaria, big torrent tributary of Kintrishi River, 220m, 41.788°N, 41.963°E, 26.IX.2022, leg. Gilles Vinçon (3 males, 2 females; OPC). Georgia, Adjaria, Mtirala National Park, Chakvistskali River, 180m, 41.691°N, 41.83°E, 25.IX9.2022, leg. Gilles Vinçon (4 males, 2 females; OPC). Georgia, Imerethie, E Ghvedi, Gelaveri Police Station, big brook tributary of the Tskhenistskali River, 330m, 42.462°N, 42.6°E, 1.X.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice torrent, 330m, 41.6762N, 41.8707E, 20.V.2023, leg. Gilles Vinçon (8 males, OPC).

***Rhyacophila aliena* Martynov, 1916**

(Map 2)

Material examined. **Georgia**, Mtskheta-Mtianeti, Chaukhistskali valley, brook and spring, 2840m, 42.559°N, 44.7915°E, 20.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, Chaukhistskali valley, nice brook and spring, 3000–3040m, 42.562°N, 44.801°E, 20.IX. 2022, leg. Gilles Vinçon (1 male, 3 females; OPC). Georgia, Kakhetie, road to Abano Pass, above Lechuri, nice brook, 650–680m, 42.177°N, 45.4315°E, 24.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, road to Omalo, below first cascade, 1370m, 42.2224°N, 45.4764° E and below second cascade, 42.226°N, 45.4795° E, 1400m, 42.2785°N, 45.4917°E, 3.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetia, brooklet tributary of Ingouri River, 1830m, 42.9281°N, 42.9449°E, 12.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, between Lanteli and Lankhviri, Leshta torrent tributary of Ingouri River, 1440m, 43.0385°N, 42.5192°E, 11.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kvemo Kartli, Dashbashi cascades and Khrami River, 1400m, 41.5945°N, 44.1238°E, 6.IX.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Kakhetia, road to Omalo, before Abano Pass, nice brook, 2470m, 42.2785°N, 45.4917°E, 3.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, road to Omalo, before Abano Pass, nice spring, 2470m, 42.2681°N, 45.5118°E, 4.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, above Almati, nice spring, 1150m, 42.0841°N, 45.7246° E, 4.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, nice springs and cascades, 1560m, 42.4364°N, 44.4946°E, 31.VIII.2023, leg. Gilles Vinçon (2 males, OPC).

Rhyacophila aragva sp. nov.

(Figures 39–43, Map 2, Photo 18)

Material examined. Holotype: **Georgia**, Mtskheta-Mtianeti, above Kvemo Mleta, side spring and brook after the bridge above the village, tributary of Tetri Aragvi River, 1480m, 42.432°N, 44.5075°E, 19.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. Having broad parameres without large spines *R. aragva* sp. nov. belongs to the *Rhyacophila aliena* lineage, most close to *R. aliena*, but differs by having harpago the second segment of the gonopod with extremely elongated as well as upward and mesad turning ventral lobe also, the lateral profile of the paramere with regular straight dorsum and the middle broadening is less produced.

Description. Head, antennae, maxillary palps, legs and segmental sclerites medium brown. Forewing brown mottled with pale spotted reticulation, faded in alcohol, forewing length 14 mm.

Male genitalia. Dorsal shape of the apicodorsal process of segment IX narrow, elongated with short neck. Lateral shape of the harpago, the second segment of the gonopods with elongated and upward and mesad turning ventral lobe. The lateral profile of the aedeagus with horizontal dorsal process. The ventral shape of the ventral process on the aedeagus with slightly elongated rounded quadrangular apex. The lateral profile of the left paramere is characterized by regular straight dorsum.

Etymology. Coined from the name of the type locality, nearby Tetri Aragvi River, a noun in apposition.

Rhyacophila bacurianica Lepneva, 1961

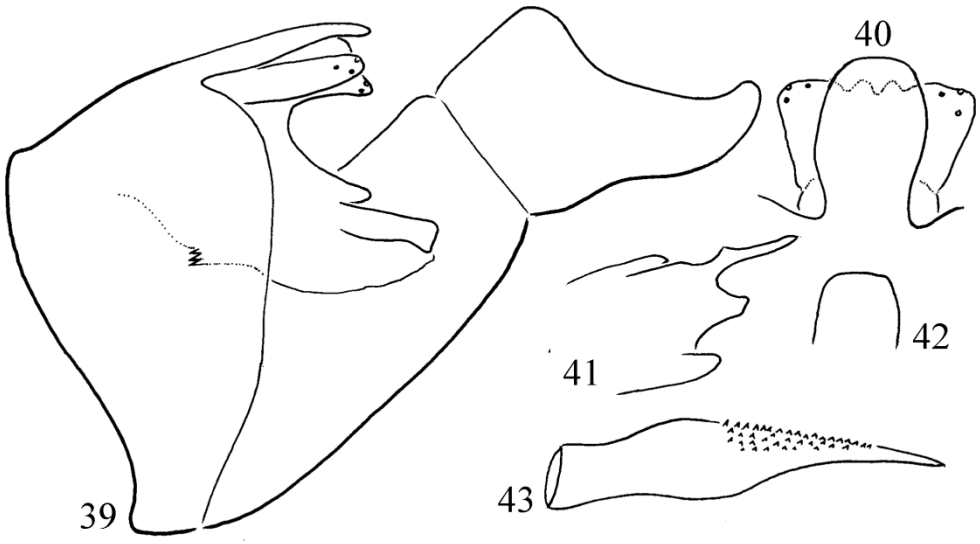
Material examined. **Georgia**, Mingrelia - High Svanetia, Markhi Valley, nice springs and brooklets near the sheepfold, 2080m, 43.0796°N, 42.2424°E, 29.IX.2022, leg. Gilles Vinçon (5 males, 2 females; OPC). Georgia, Samtskhé-Djavakhétie, above Bakuriani, before Tskhratskaro Pass, spring and brook, from 2380m, 41.693°N, 43.516°E, up to 2410m, 41.6935°N, 43.519°E, 23.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, above Lanteli and Ughvali, brook up to its spring, 2400–2480m, 43.0802N, 42.5482E, 11.IX.2023, leg. Gilles Vinçon (11 males, 5 females; OPC). Georgia, High Svanetia, above Lanteli and Ughvali, torrent, 2250m, 43.0766°N, 42.549°E, 11.IX.2023, leg. Gilles Vinçon (4 males, 5 females; OPC). Georgia, High Svanetia, nice torrent above Murkmeli, 2130m, 42.91°N, 43°E, 12.IX.2023, leg. Gilles Vinçon (7 males, 5 females; OPC). Georgia, High Svanetia, near Zagari Pass, nice brook below cascade, 2570m, 42.9084°N, 43.0926°E, 12.IX. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetia, above Shkedi, nice brook, 2350m, 42.743°N, 43.1243°E, 13.IX.23, leg. Gilles Vinçon (6 males, 3 females; OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, nice torrent, 2440–2540m, 43.0669°N, 42.0623°E to 43.0713°N, 42.0657°E, 10.IX.2023, leg. Gilles Vinçon (9 males, 3 females; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Koruldashi, brooklet and torrent, 2380m, 42.9313°N, 43.1215°E, 12.IX. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, brook and spring, 2600–2640m, 43.0752°N, 42.0668°E, 10.IX.2023, leg. Gilles Vinçon (4 males, 1 female; OPC). Georgia, Kakhetia, road to Omalo, before Abano Pass, nice spring, 2470m, 42.2681°N, 45.5118°E, 4.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Remarks. This species was only known from the Bakuriani region in the Lesser Caucasus (Lepneva 1957), and from the Artvin region (Turkey) also belonging to the Lesser Caucasus (Sipahiler 2000). We report it for the first time in the High Caucasus.

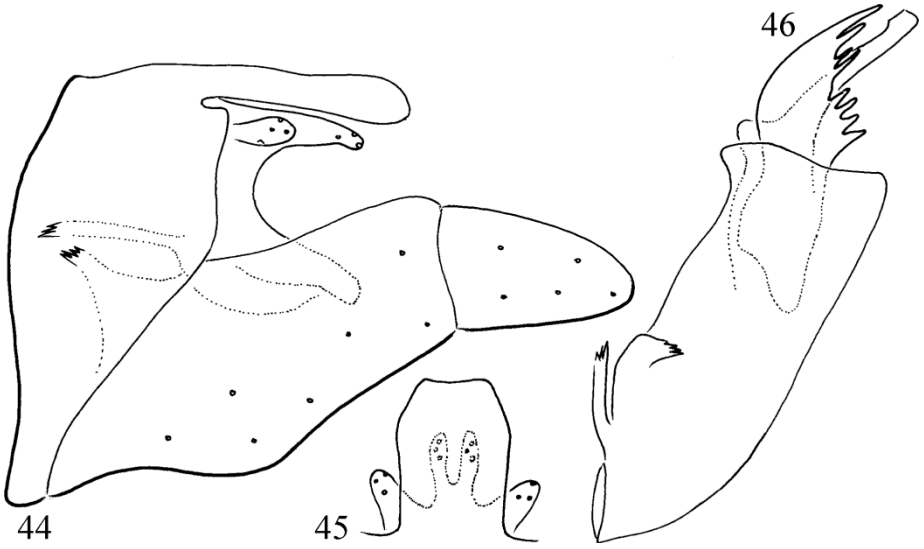
Rhyacophila chakvistskala sp. nov.

(Figures 44–46, Photos 19–20)

Material examined. Holotype: **Georgia,** Adjaria, Mtirala National Park, nice torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°



Figures 39–43. *Rhyacophila aragva* sp. nov. Holotype male: 39 = genitalia in left lateral view; 40 = dorsal process of segment IX and the cerci in dorsal view; 41 = aedeagus in lateral view; 42 = ventral process of aedeagus in ventral view; 43 = left paramere in lateral view.



Figures 44–46. *Rhyacophila chakvistskala* sp. nov. Holotype male: 44 = genitalia in left lateral view; 45 = dorsal process of segment IX and the cerci in dorsal view; 46 = phallic organ in lateral view.

E, 26.IX.2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratype: same as holotype (1 female, OPC).

Diagnosis. This new species is very close to *Rhyacophila arhaviensis* Sipahiler, 1986 described from Turkey, but differs by the highly modified paramere. The paramere of *R. arhaviensis* is a simple rod-like structure, slightly arching in lateral view and armed only with a single terminal spine-like seta. The unique new species is delineated only by the speciation trait of the paramere. This titillating organ frequently plays an important role in the copulatory processes of sexual integration. All the periphallic genital organs as well as the aedeagus of the phallic

organ are almost identical at the two species, only the paramere has undergone very great morphological modification resulting in great morphological modification. The paramere of the simple rod at *R. ahaviensis* diverged into a large plate with specific lateral profile and armed with a number of digitate processes apicoventrad at *R. chakvistskala* sp. nov. This unique new species is an excellent indicative model for the integratively organised speciation by sexual selection.

Description. Head, antennae, maxillary palps, legs and segmental sclerites medium brown. Forewing brown scarcely pale spotted, faded in alcohol, forewing length 12 mm.

Male genitalia. Dorsal shape of the apicodorsal process of segment IX elongated regular pentagonal. Lateral shape of the harpago, the second segment of the gonopods roundly narrowing. The lateral profile of the aedeagus long digitate with small dorsal hump on the middle. The paramere heavily sclerotized large vertical plate with rounded apicodorsum and with several digitiform processes on the apicoventral region.

Etymology. Coined from the name of the type locality, Chakvistskala River.

Rhyacophila clavalis Martynov, 1913

Material examined. Georgia, Mingrelie, below Jvari Pass, nice brook and lateral springs, 300-340m, 42.6956°N, 42.0757°E, 19.V.2023, leg. Gilles Vinçon (2 males, 2 females; OPC). Georgia, Gouria, road to Bakhmaro, nice spring 'Tskhratsqaro', 1380m, 41.8911°N, 42.3718°E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice brook, 1180m, 41.6473°N, 41.8829°E, 20.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Imerethie, E Ghvedi, spring with mosses, on limestone substratum, very steep, tributary of the Tskhenistskali River, 340m, 42.51°N, 42.6378°E, 16.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, above Gadrekili, brook and spring, 2220–2240m, 41.8437°N, 42.3615°E, 14. IX.2023, leg. Gilles Vinçon (4 males, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, nice spring, 1540m, 42.6311°N, 42.5764°E, 7.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, above Bakhmaro, brook and spring, 1980–2000m, 41.8386°N, 42.331°E, 14.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, above Keda, above Namonastrevi, nice brook, 850m, 41.5727°N, 42.0498°E, 15.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Rhyacophila cupressorum Martynov, 1913

Material examined. Georgia, Mingrelia, above Koko, nice springs on limestone substratum, 330 m, 42.648°N, 42.2023°E, 9.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC). Georgia, Mingrelia, above Koko, nice brook and spring on limestone substratum below water capture, 310m, 42.6467°N, 42.2028°E, 9.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Rhyacophila forcipulata Martynov, 1926

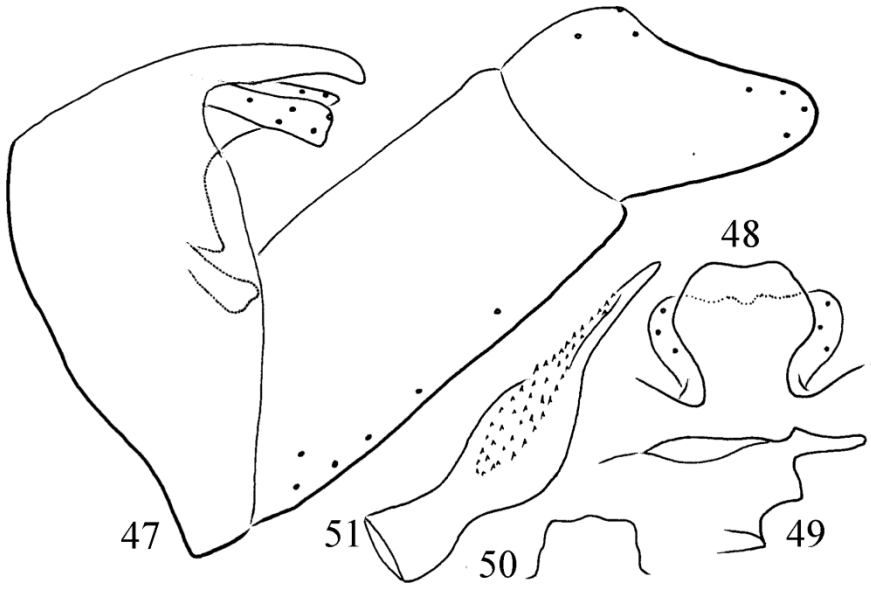
Material examined. Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, 1880m, brook, 42.6726°N, 42.6586°E, 8.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, nice brook and spring, 2300–2350m, 41.6925°N, 43.5161°E, 6.IX.2023, leg. Gilles Vinçon (3 males, 1 female; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, nice torrent, 1990–2050m, 42.6881°N, 42.6455° E, 8.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, above Gadrekili, nice brook, 2140–2200m, 41.8405°N, 42.3595°E, 14.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Rhyacophila kakhetia sp. nov.

(Figures 47–51, Map 2, Photos 3–4)

Material examined. Holotype: **Georgia**, Kakhetie, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring and brook, 770m, 41.8846°N, 46.25°E, 22.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. Having broad parameres without large spines *R. kakhetia* sp. nov. belongs to the



Figures 47–51. *Rhyacophila kakhetia* sp. nov. Holotype male: 47 = genitalia in left lateral view; 48 = dorsal process of segment IX and the cerci in dorsal view; 49 = aedeagus in lateral view; 50 = ventral process of aedeagus in ventral view; 51 = left paramere in lateral view.

Rhyacophila aliena lineage, most close to *R. aliena*, but differs by having dorsoapical process of segment IX short, broad, pentagonal, not elongated. The elongated character state of the dorsoapical process of segment IX is stable on the entire distributional area of *R. aliena* (Oláh et *al.* 2020) from the locus typicus, that is from the northern slope of the West Caucasus in Russia through Georgia, Armenia to Azerbaijan. This single male having short pentagonal dorsal process was collected in the putative distributional area of *R. aliena.* The holotype of *Rhyacophila kakhetia* sp. nov. has paramere with lateral shape characterized by more constricted subbasal region as well as the ventral shape of the ventral process is broad quadrangular, variously narrow and rounded in *R. aliena*.

Description. Head, antennae, maxillary palps, legs and segmental sclerites medium brown. Forewing brown mottled with pale spotted reticulation, faded in alcohol, forewing length 13 mm.

Male genitalia. Dorsal shape of the apicodorsal process of segment IX broad, abbreviated pentagonal with narrow neck. Lateral shape of the harpago, the second segment of the gonopods with rounded ventral lobe. The lateral profile of the aedeagus with horizontal dorsal process. The ventral shape of the ventral process on the aedeagus broad quadrangular with straight apex. The lateral profile of the left paramere is almost similar to the lateral profile of *R. aliena*.

Etymology. Coined from the name of the type locality, region Kakhetie.

***Rhyacophila kimara* Oláh & Vinçon, 2020**

Material examined. **Georgia**, Adjaria, Mtirala National Park, spring and brook tributaries of Chakvistskali River, 1340m, 41.645°N, 41.886°E, 26.IX.2022, leg. Gilles Vinçon (3 males, OPC). Georgia, Adjaria, S Zeda Chkhutuneti, big torrent tributary of Machakhlistskali River, 1110m, 41.469°N, 41.853°E, 25.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, S Zeda Chkhutuneti, nice torrent tributary of Machakhlistskali River, 740m, 41.481°N, 41.857°E, 25.IX. 2022, leg. Gilles Vinçon (3 males, OPC). Georgia, Adjaria, S Zeda Chkhutuneti, nice brook tributary of Machakhlistskali River, 770m, 41.478°N, 41.863°E, 25.IX.2022, leg. Gilles Vinçon (5 males, OPC). Georgia, Adjaria, SE Kveda Chkhutuneti, brook and cascade tributary of Machakh-

listskali River, 420m, 41.501°N, 41.838°E, 25.IX. 2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Gouria, SW Chkhakoura, nice springs tributary of Chkhakoura River, 1380m, 41.891°N, 42.372°E, 27.IX.2022, leg. Gilles Vinçon (4 males, 4 females; OPC). Georgia, Adjaria, Tskhemlara Stone Arch Bridge, big torrent and cascade tributary of Machakhlistskali River, 180m, 41.511°N, 41.822° E, 25.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Adjaria, Tbeti, nice spring and brook, 1190m, 41.568°N, 42.1526°E, 24.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Gouria, road to Bakhmaro, nice spring 'Tskhratsqaro', 1380m, 41.8911°N, 42.3718°E, 21.V.2023, leg. Gilles Vinçon (6 males, 2 females; OPC). Georgia, Adjaria, Mtirala National Park, nice brook with mosses, 130m, 41.6968°N, 41.8226°E, 20.V. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, above Keda, above Namonastrevi, brooklet, 1650m, 41.5598°N, 42.0808°E, 16.IX. 2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Adjaria, above Keda, above Namonastrevi, nice brook, 1040m, 41.5765°N, 42.067°E, 15.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC).

***Rhyacophila kokoa* sp. nov.**

(Figures 52–55, Photos 5–6, 50)

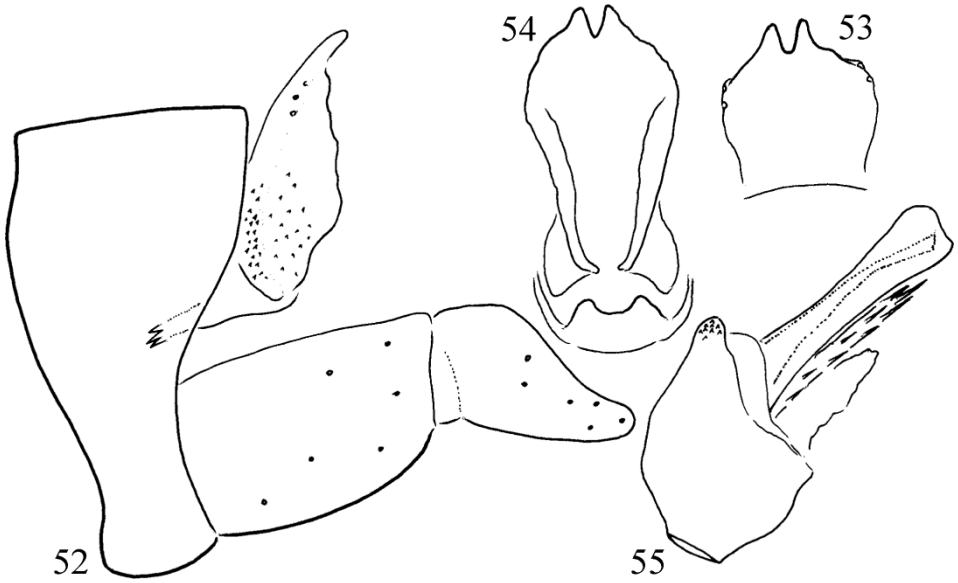
Material examined. Holotype: **Georgia**, Mingrelia - High Svanetia, NE Koko, nice spring on limestone substratum, 310 m, 42.6467°N, 42.2028°E, 30.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratypes: same as holotype (1 male, OPC). Georgia, Mingrelia - High Svanetia, NE Koko, nice brook tributary of the Khobitskhali River, 670 m, 42.6725°N, 42.2791°E, 30.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia, above Koko, nice spring on limestone substratum, 310m, 42.6467°N, 42.2028°E, brook and spring, 430m, 42.6573°N, 42.2297°E, 19.V.2023, leg. Gilles Vinçon (6 males, OPC). Georgia, Mingrelia, above Koko, nice brook and spring on limestone substratum below water capture, 310m, 42.6467° N, 42.2028°E, 9.IX.2023, leg. Gilles Vinçon (3 males, OPC).

Diagnosis. Having oblique vertical directed segment X with fused discernible epiproct and with membranous tergal strap this new species belongs to the *Rhyacophila tristis* species group; with its elongated pair of lateral lobes of the aedeagus, it belongs to the *Rhyacophila abchasica* species complex and most close to its sibling species *R. zekara* Oláh & Vinçon, 2020, but differs by the pattern of the lateral profile of segment X; by the very deep apical excision on segment X; by the concave, not convex apical margin of the harpago; by the short dorsal process of the phallotheca as well as by the truncated, not upward directed apex of the pair of long and less sclerotized processes of the aedeagus.

Description. Dark brown species. Head, antennae, maxillary palps, legs and segmental sclerites dark brown. Forewing brown without any pattern in alcohol, forewing length 7 mm.

Male genitalia. Segment X is rather enlarged and elongated with deep apical excision. Lateral shape of the harpago, the second segment of the gonopods with elongated, slightly and dorsally concave ventral lobe. Phallic organ is particularly organised; phallobase together with the phallotheca has a dorsal heavily sclerotized short process with membranous tergal strap connecting segment X to the phallic organ; endotheca clearly membranous sunken or immersed into phallobase; aedeagus seems rather complex composed of a membranous ventral lobe, a pair of long lateral lobes with truncated apex and a thin rod-like structure, probably the enforced, chitinised ductus ejaculatoricus difficult to discern because it is hidden between the less sclerotized large lateral lobes; the paramere is represented by the single fused structure composed of thin filaments of spines, a very unique modified process.

Etymology. kokoa, named after the type locality, a noun in apposition.



Figures 52–55. *Rhyacophila kokoa* sp. nov. Holotype male: 52 = genitalia in left lateral view; 53 = segment X in dorsal view; 54 = segment X with epiproct and paraproct in caudal view; 55 = phallic organ in lateral view.

Rhyacophila kora Oláh, 2020

(Map 2)

Material examined. **Georgia**, Adjaria, big torrent tributary of Kintrishi River, 220m, 41.788°N, 41.963°E, 26.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Remarks. This species of the *Rhyacophila aliena* lineage, with a particular paramere of almost circular middle region was described from Turkey, crossborder Artvin Province from the single holotype collected by P. Chvojka. This is the second specimen of this species and new to Georgia.

Rhyacophila kumanskii Spuris, 1988

Material examined. **Georgia**, Mingrelia - High Svanetia, Markhi Valley, brooklet, 1980m, 43.0796°N, 42.231°E, and spring, 2030m, 43.081°N, 42.231°E, 29.09.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Samtskhé-Djavakhétie, above Bakuriani, before Tskhratskaro Pass, spring and brook, from 2380m, 41.693°N, 43.516°E, up to 2410m, 41.6935°N, 43.519°E, 23.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, below Green Lake, nice brook below the swamp, 2045m, 41.682°N, 42.5°E, 24.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Samtskhé-Djavakhétie, Ktsia-Tabatskuri Managed Reserve, spring and brook, 2380m, 41.6555°N, 43.49°E, 23.IX.2022, leg. Gilles Vinçon (11 males, 8 females; OPC). Georgia, Gouria, SW Chkhakoura, nice spring tributary of Kalasha River, 1740m, 41.881°N, 42.3567°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Shida Kartli, below Shikhan Mount, brooklet very steep up to its spring, 1730–1820m, 41.748°N, 44.3934°E to 41.7476°N, 44.3934°E, 17.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, nice torrent, 2280m, 42.7485°N, 43.1212°E, 13.IX.23, leg. Gilles Vinçon (2 males, OPC).

Remarks. All females are brachypterous. Anterior wings are significantly shorter than the abdomen.

Rhyacophila kveda Oláh & Vinçon, 2020

Material examined. **Georgia**, Mingrelia - High Svanetia, Nenskra Valley, NE Kvemo Marghi, big

torrent, 1130m, 43.036°N, 42.213°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, near Zagari Pass, springs, 2650–2720m, 42.9048°N, 43.0916° E, 12.IX.2023, leg. Gilles Vinçon, (2 males, OPC).

Remark. This species was only known from its holotype collected in the Nakra valley (High Svanetia).

Rhyacophila mtirala Oláh & Vinçon, 2020

Material examined. **Georgia**, Adjaria, Mtirala National Park, spring and brook tributaries of Chakvistskali River, 1340m, 41.645°N, 41.886°E, 26.IX.2022, leg. Gilles Vinçon (11 males, 3 females; OPC). Georgia, Adjaria, Mtirala National Park, spring tributary of Chakvistskali River, 1020m, 41.657°N, 41.875°E, 26.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, S Zeda Chkhutuneti, nice torrent tributary of Machakhlistskali River, 740m, 41.481°N, 41.857° E, 25.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, S Zeda Chkhutuneti, nice brook tributary of Machakhlistskali River, 770m, 41.478°N, 41.863°E, 25.IX.2022, leg. Gilles Vinçon (3 males, OPC). Georgia, Adjaria, Mtirala National Park, spring and brook tributaries of Chakvistskali River, 1180m, 41.6473°N, 41.8829° E, 26.IX.2022, leg. Gilles Vinçon (6 males, OPC). Georgia, Adjaria, Tbeti, nice spring and brook, 1190m, 41.568°N, 42.1526°E, 24.IX.2022, leg. Gilles Vinçon (4 males, OPC). Georgia, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740 m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Adjaria, above Varjanauli, spring and brook, 730m, 41.7791°N, 41.9417°E and 41.7771°N, 41.9426°E, 19.V. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice torrent, 330m, 41.6762°N, 41.8707°E, 20.V.2023, leg. Gilles Vinçon (3 males, 2 females; OPC). Georgia, Gouria, above Gomi, small steep springs, 370m, 41.8738°N, 42.1061°E, 15.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Rhyacophila nakra Oláh & Vinçon, 2020

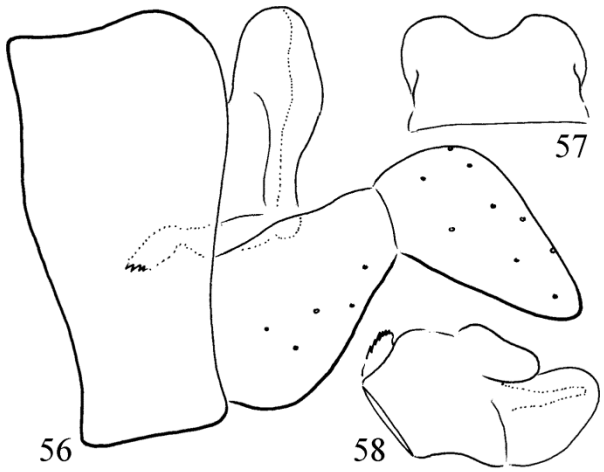
Material examined. **Georgia**, Mingrelia - High Svanetia, Markhi Valley, nice springs and brooklets near the sheepfold, 2080m, 43.0796°N, 42.2424°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia - High Svanetia, NE Koko, nice brook tributary of the Khobitskhali River, very steep, 1920 m, 42.7153°N, 42.274°E, and 1880m, 42.714°N, 42.2756°E, 30.IX.2022, leg. Gilles Vinçon (4 males, 1 female; OPC). Georgia, High Svanetie, below Lukhi Tobari, nice brook up to the cascade, 750m, 42.9563°N, 42.1965°E, 18.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, above Lanteli and Ughvali, torrent, 2250m, 43.0766°N, 42.549°E, 11.IX.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, nice spring, 1540m, 42.6311°N, 42.5764°E, 7.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, nice spring, 2320m, 43.0578°N, 42.0684°E, 10.IX. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, nice torrent, 2440–2540m, 43.0669°N, 42.0623°E to 43.0713°N, 42.0657°E, 10.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, nice brook, 1600m, 42.6338°N, 42.5746°E, 7.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, torrent 1380m, 42.6327°N, 42.583°E, 7.IX.2023, leg. Gilles Vinçon (6 males, 2 females; OPC).

Remark. This species was known from a unique male collected in the neighboring Nakra valley, in Svanetia.

Rhyacophila namona sp. nov.

(Figures 56–58, Photos 21–22)

Material examined. Holotype: **Georgia**, Adjaria, above Keda, above Namonastrevi, brook



Figures 56–58. *Rhyacophila namona* sp. nov. Holotype male: 56 = genitalia in left lateral view; 57 = segment X in dorsal view; 58 = phallic organ in lateral view.

and spring, 1730–1770m, 41.551°N, 42.0919°E, 16.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. Having oblique vertical directed segment X with fused discernible epiproct and with membranous tergal strap this new species belongs to the *Rhyacophila tristis* species group; with its abbreviated pair of lateral lobes of the aedeagus, it belongs to the *Rhyacophila spinulata* species complex and most close to its sibling species *R. mtirala*, but differs by the lateral and dorsal patterns of the complex of segment X, epiproct and paraproct.

Description. Head, antennae, maxillary palps, legs and segmental sclerites dark brown. Forewing brown without any pattern in alcohol, forewing length 8 mm.

Male genitalia. Segment X rather enlarged slightly narrowing ventrad. Lateral shape of the harpago, the second segment of the gonopods with elongated ventral lobe. Phallic organ is particularly organised; phallobase together with the phallotheca has a short dorsal and ventral process with membranous tergal strap connecting segment X to the phallic organ; endotheca clearly membranous sunken or immersed into phallobase; aedeagus seems complex composed of a pair of blunt lateral lobes less pigmented and a thin rod-like structure, probably the enforced, chitinised ductus ejaculatoricus difficult to discern because it is hidden between the less sclerotized lateral lobes; parameres lacking.

Etymology. coined from the name of the type locality.

Rhyacophila nubila Zetterstedt, 1840

Material examined. **Georgia**, Samtskhe-Djavakhetie, nice river between Baraleti and Kochio, 1720m, 41.5615°N, 43.5108°E, 6.IX.2023, leg. Gilles Vinçon (7 males, 2 female; OPC).

Rhyacophila sacokia Oláh & Vinçon, 2020

Material examined. **Georgia**, Gouria, SW Chkhakoura, nice brook tributary of Kalasha River, 1740m, 41.882°N, 42.358°E, 27.IX.2022, leg. Gilles Vinçon (8 males, 6 females; OPC). Georgia, Gouria, SW Chkhakoura, nice spring tributary of Kalasha River, 1740m, 41.881°N, 42.3567°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, spring and brook tributaries of Chakvistskali River, 1180m, 41.6473°N, 41.8829°E, 26.IX. 2022, leg. Gilles Vinçon (1 male, OPC).

Rhyacophila subovata Martynov, 1913

Material examined. **Georgia**, High Svanetie, above Mestia in direction of Tetnuldi ski station, nice springs and brooks, above the fish farm in construction, 1530m, 43.0477°N, 42.8091°E, 17. V.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Mtskheta-Mtianeti, above Stephantsminda, nice brook, 2150m, 42.6627°N, 44.6103°E, 25.V. 2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Gouria, above Bakhmaro, nice brook and spring with snow, 1980m, 41.8386°N, 42.331°E, 21.V. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, nice spring and small cascades, 1520–1550m, 42.4364°N, 44.4946°E, 25.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, nice spring and brook, 1480m, 42.432°N, 44.5075°E, 25.V.2023,

leg. Gilles Vinçon (2 males, OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, brooklet and spring, 1750m, 41.7368°N, 43.5132°E, 23.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, brook, 2200–2250m, 41.692°N, 43.5137°E, 23.V. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Imerethie, below Zekari Pass, nice brook, 2050m, 41.8499°N, 42.7997°E, 22.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice torrent, 330m, 41.6762°N, 41.8707°E, 20.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, nice spring and brook, 1480m, 42.432°N, 44.5075°E, 31.VIII.2023, leg. Gilles Vinçon (1 male, OPC).

Rhyacophila zekara Oláh & Vinçon, 2020

Material examined. **Georgia,** Imerethie, E Ghvedi, brook and small cascade, tributary of the Tskhenistskali River, 340m, 42.511°N, 42.6374° E, 16.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Imerethie, E Ghvedi, spring with mosses, on limestone substratum, very steep, tributary of the Tskhenistskali River, 340m, 42.51°N, 42.6378°E, 16.V.2023, leg. Gilles Vinçon (7 males, 3 females; OPC).

Glossosomatidae Wallengren, 1891

Agapetus caucasicus Martynov, 1913

Material examined. **Georgia**, Kvemo Kartli, Dashbashi cascades and Khrami River, 1400m, 41.5945°N, 44.1238°E, 6.IX.2023, leg. Gilles Vinçon (19 males, 2 females; OPC).

Remarks. New for Georgia. This species was only known from Turkey and Armenia.

Agapetus gouriensis Oláh & Vinçon, 2020

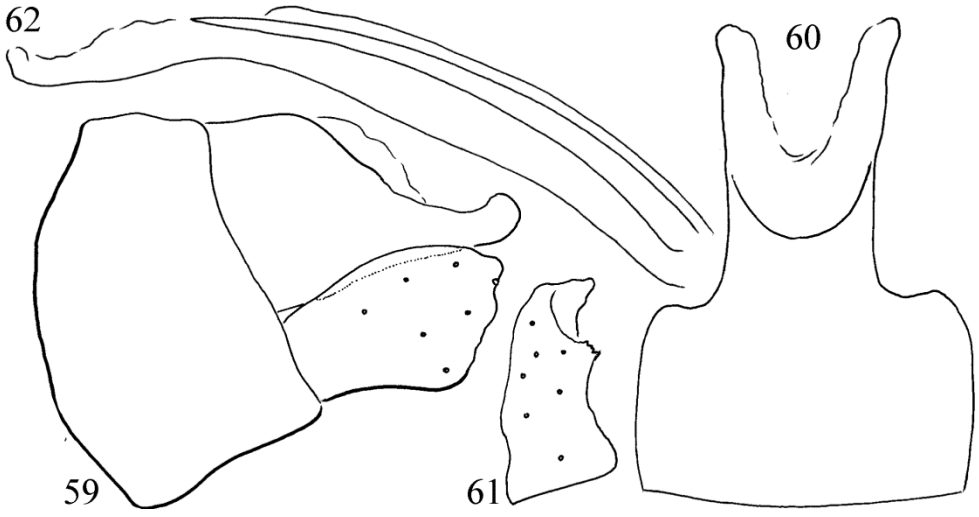
Material examined. **Georgia**, Gouria, NE Bakhmaro, nice brook, tributary of Sashualo River, 1990-2000m, 41.859°N, 42.357°E, 27.IX. 2022, leg. Gilles Vinçon (1 male, OPC).

Remark. This species was only known from the holotype that was also collected in the Gouria Region.

Agapetus kintrisha sp. nov.

(Figures 59–62, Photo 10)

Material examined. Holotype: **Georgia**, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratypes: same as holotype (9 males, 1 female; OPC).



Figures 59–62. *Agapetus kintrisha* sp. nov. Holotype male: 59 = genitalia in left lateral view; 60 = segment X in dorsal view; 61 = left gonopod in ventral view; 62 = phallic organ in lateral view.

Diagnosis. This new species is close to *Agapetus sarayensis* (Sipahiler, 1996) described from Turkey, but differs by both the lateral and ventral views of the gonopods as well as there is only a single sclerite accompanying the aedeagus, not three.

Description. Male (in alcohol). Dark brown animal, with legs and venter slightly lighter. Maxillary palp formula: I-II-IV-V-III, second segment with globular mesolateral projection. Wing membrane brown; forewing length 4 mm; Fork I on hindwing lost. Blister-like protuberance on the dorsal margin of sternite V absent, upward directed filament present; ventral process on sternite VI present, well developed.

Male genitalia. Segment IX synsclerotized with slightly convex anterior and straight posterior margins in lateral view. Segment X less pigmented, deeply divided with rounded basement in dorsal view. Cerci lacking. Gonopods quadrangular, slightly arching in lateral view; subapical dorsomesal lobes with dentate mesal margin. Aedeagus distinct tube with upward curving apex and with a single long paramere.

Etymology. Named after the type locality along Kintrishi River.

Ptilocolepidae Martynov, 1913

Ptilocolepus colchicus Martynov, 1913

Material examined. **Georgia,** Adjaria, Mtirala National Park, nice torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°E, 26. IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, road to Bakhmaro, nice spring 'Tskhratsqaro', 1380m, 41.8911°N, 42.3718°E, 21.V.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Mtskheta-Mtianeti, road to Chokhi, nice spring and brooklet, 1360m, 42.442°N, 44.722°E, 26.V.2023, leg. Gilles Vinçon (42 males, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, nice springs and brooks, 1400m, 42.6341°N, 42.5821°E, 16.V.2023, leg. Gilles Vinçon (6 males, 9 females; OPC). Georgia, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice brook, 1180m, 41.6473°N, 41.8829°E, 20.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Imerethie, below Zekari Pass, nice brook, 2050m, 41.8499°N, 42.7997°E, 22.V.2023, leg. Gilles Vinçon (4 males, OPC). Georgia, Mtskheta-Mtianeti, above Chokhi, brook very steep up to its spring, 1750–1940m, 42.4842°N, 44.7268°E, 27.V.2023, leg. Gilles Vinçon (4 males, 3 females; OPC). Georgia, Gouria, above Gadrekili, nice brook, 2140–2200m, 41.8405°N, 42.3595°E, 14.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelie, above Koko, nice springs on limestone substratum, 330m, 42.648°N, 42.2023°E, 9.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia, above Koko, nice brook and spring on limestone substratum below water capture, 310m, 42.6467° N, 42.2028°E, 9.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Ptilocolepus dilatatus Martynov, 1913

Material examined. **Georgia,** Adjaria, Mtirala National Park, nice torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°E, 26.IX. 2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, big torrent tributary of Kintrishi River, 220m, 41.788°N, 41.963°E, 26.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, brook tributary of Chakvistskali River, 180m, 41.691°N, 41.831°E, 25.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, Chakvistskali River, 180m, 41.691°N, 41.83°E, 25.IX. 2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, SE Kveda Chkhutuneti, brook and cascade tributary of Machakhlistskali River, 420m, 41.501°N, 41.838°E, 25.IX.2022, leg. Gilles Vinçon (1 female, OPC). Georgia, Adjaria, above Varjanauli, brook tributary of Kintrishi River, 410m, 41.7841°N, 41.955°E, 27.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Adjaria, Tbeti, nice spring and brook, 1190m, 41.568°N, 42.1526°E, 24.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia - High

Svanetia, NE Koko, nice brook tributary of the Khobitskhali River, 670 m, 42.6725°N, 42.2791° E, 30.IX.2022, leg. Gilles Vinçon (2 males, 3 females; OPC). Georgia, Gouria, road to Bakhmaro, 1750–1790m, 41.8808°N, 42.3567°E, 21.V. 2022, leg. Gilles Vinçon (18 males, 3 females; OPC). Georgia, Mtskheta-Mtianeti, above Chokhi, nice spring, 1580m, 42.4748°N, 44.729°E, 27.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice brook, 1180m, 41.6473°N, 41.8829°E, 20.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, above Nakra, torrent and brook at 1740m, 43.0811°N, 42.3617°E, and nice spring at 1910m, 43.0758°N, 42.3499°E, 18.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, above Keda, above Namonastrevi, nice brook, 1040m, 41.5765°N, 42.0672°E, 15.IX.2023, leg. Gilles Vinçon (4 males, 1 female; OPC).

Brachycentridae Ulmer, 1903

Goeridae Ulmer, 1903

***Lithax incanus* Hagen, 1859**

Material examined. **Georgia,** Adjaria, Mtirala National Park, nice torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°E, 26.IX. 2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, above Gadrekili, nice brook, 2140–2200m, 41.8405°N, 42.3595°E, 14.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelie, above Koko, nice springs on limestone substratum, 330m, 42.648°N, 42.2023°E, 9.IX.2023, leg. Gilles Vinçon (2 males, 2 females; OPC).

***Silo proximus* Martynov, 1913**

Material examined. **Georgia**, Kakhetia, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring, 1250m, 41.8852°N, 46.2652° E, 13.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 930m, 41.8826°N, 46.2561°E, 13.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 1000m, 41.8823°N, 46.2585°E, 13.05.2023, leg. Gilles Vinçon (4 males, 2 females; OPC). Georgia, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC).

Uenoidae Iwata, 1927

Thremmatinae Martynov, 1935

***Thremma anomalum* species complex**

The type species of the genus, *Thremma anomalum* McLachlan, 1876 has unique character state of the fused inferior appendages. The apical ending of the fused gonopods is bilobed that is deeply cleft on the middle. *Thremma anomalum* species complex comprised of four species: *Thremma anomalum* McLachlan, 1876; *Thremma artvinicum* Sipahiler, 2020; *Thremma balcanum* sp. nov.; *Thremma svaneticum* sp. nov.

Until the recent discovery of *Thremma artvinicum* Sipahiler, 2020 only the type species of the genus was known to have bilobed apical head on the fused gonopods. All six other known taxa of the genus have monolobed apical head on the fused gonopods: *Thremma africanum* Malicky & Lounaci, 1987; *T. arvernense* Giudicelli, 1971, *T. gallicum* McLachlan, 1880; *T. martynovi* Malicky, 1976; *T. sardoum* Costa, 1884; *T. tellae* Gonzalez, 1978.

We have collected a single *Thremma* male specimen in Svanetia of the Great Caucasus with bilobed apical head of the fused gonopods. In order to establish its real taxonomic status we had to re-examine and revise all our previously collected specimens with bilobed head and identified as *Thremma anomalum*. Earlier, before the discovery of the speciation traits (Oláh *et al.* 2015) and before the elaboration as well as the widespread application of the principles and procedures of fine phenomics (Oláh & Oláh 2017, Oláh *et al.* 2017, 2019a,b, 2020a,b) all *Thremma* specimens in the large distribution area, from Italy to northeastern Turkey, with bilobed apical head of the fused gonopods have been identified by

everyone, including us, as *Thremma anomalum* McLachlan, 1876.

As a result of our survey, based upon two speciation traits on the ventral profile of the bilobed head of the fused gonopods and on the lateral profile of the phallic organ we have distinguished two incipient sibling species populating various regions on the Apennine Peninsula, Balkan Peninsula and Turkey. The nominate species *Thremma anomalum* McLachlan, 1876 has long slightly laterad directed bilobed head of gonopods and low almost parallel-sided basement of the fused gonopods and short apical lip of the phallotheca. This species is collected and reported from Toscana to northeastern Turkey with very stable bilobed characters state of the fused gonopods. It was remarkable to detect the almost identical bilobed profiles of specimens from Toscana (Italy) to Arkadia (Greece).

Unfortunately we had no possibility to examine any specimens from Turkey. Due to lack of comparative studies with our fine phenomics of speciation trait we are unable to confirm what the specimens reported from Turkey actually represent. According to Sipahiler (2020) the Turkish specimens are identical with the drawings of Malicky (2004). "The apical part of the ventral plate (we homologize it as the fused gonopods with the basal plate of gonopods) of *T. anomalum* small, nearly quadrangular with a small excision on the apical edge." Clearing, cleaning and examining all specimens from Italy to Arkadia we have not seen any genitalia having ventral profile of the bilobed head similar to the published drawing of Malicky (2004), taking into consideration any possible different personal styles.

The other species hidden under the name of *Thremma anomalum* is a new incipient sibling, *Thremma balcanum* sp. nov. easily distinguished and delineated from the nominal species by the short, upward directed bilobed head of the fused gonopods, by the sloped basement of the fused gonopods as well as by the long apicoventral lip of the phallotheca.

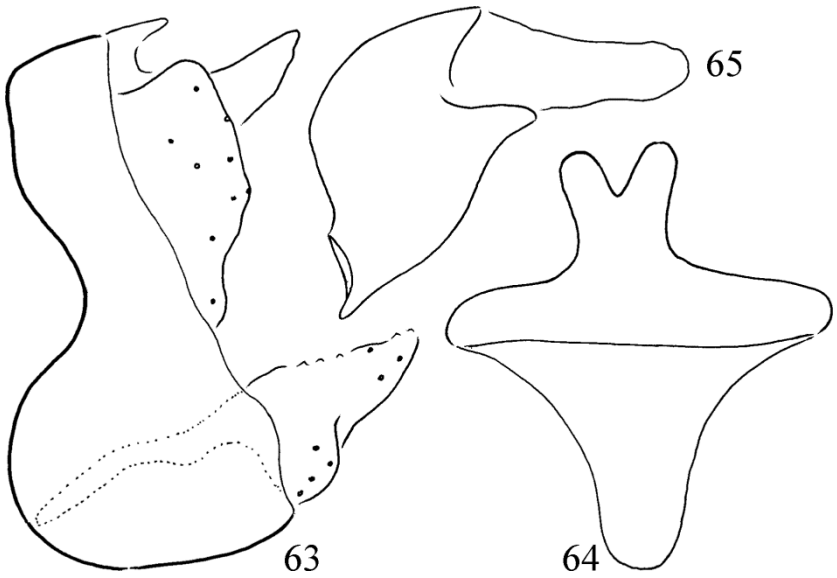
The recently described species, *Thremma artvinicum* Sipahiler, 2020 has large inflated laterad directed bilobed head, larger than the fused gonopod basement. Our new species from Svanetia, Great Caucasus, *Thremma svaneticum* sp. nov. has very small laterad directed bilobed head and large rounded basement of the fused gonopods.

Thremma anomalum McLachlan, 1876

(Figures 63–65, Map 3)

Thremma anomalum McLachlan, 1876:266. "Greece (Parnassus, Krüper, 12th June); one pair in the Vienna Museum."

Material examined. **Albania,** Gjirokastër district, Tsamantas Mts, Sotirë, stream and its plane tree gallery in the village, N39°49.150' E20° 21.612', 500m, 13.X.2013 leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás, (9 males, OPC). Albania, Tiranë district, Gropë Mts, Shëngjergj, forest seep along the road to Elbasan, E of the village, N41°19.875' E20°08.483', 1355 m, 11.X.2012, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás (2 males, OPC). **Bosnia-Herzegovina,** Sutjeska National Park, Klobucarica tributary, 2. IX. 1988, leg J. Oláh (1 male, OPC). **Bulgaria**: Hydropetric biotope near Struma River by station Kresna, 14.VI.1975, leg. K. Kumanski (1 male, OPC; presented by the collector). Bulgaria, Rodopi Mts. Batak-Dospat, 41.890°N 24.174°E, 1500 m, 2.VIII.2007, leg. N. K. Nagy & M. Bálint (1 male, 1 female HNHM). **Greece**: Arkadia county, Aroania Mts. Zarelia, spring brook under Mt Nisi, 1600 m, N37° 56.543' E22° 14.067', 07.IV.2009, leg. L. Dányi, J. Kontschán & D. Murányi (3 males, HNHM). Greece, Rodopi county, Papikio Mts. Karstic spring at Vronti, 4 km N of Kerasia, 445 m, N41° 11.412' E25° 17.752', 4.IV.2007, leg. L. Dányi, Z. Erőss, Z. Fehér, J. Kontschán & D. Murányi (4 males, 3 females, HNHM). **Italy**, Toscana, SE Reggello, < Pratomagno, 1300–1400m, brook and spring, 43.645°N, 11.665°E, 8.VI.2020, leg. Gilles Vinçon (1 male, OPC). **Montenegro:** Sinjajevina Mts. Bratkovicki stream, along the Podgorica-



Figures 63–65. *Thremma anomalum* McLachlan, 1876. Male: 63 = genitalia in left lateral view; 64 = fused gonopods in ventral view; 65 = phallic organ in lateral view.

Bijelo Polje road, 559m, N42° 50.921' E19° 20.069', 10.X.2008, leg. L. Dányi, Z. Fehér, J. Kontschán & D. Murányi (1 male, HNHM). Montenegro: Sinjajevina Mts, Bogomolje, mouth of Ljutica, N43°08'16.6", E19°18'07.7", 645 m, 05.XI.2011, leg. T. Kovács, & G. Magos (1 male, OPC).

Diagnosis. Earlier all the specimens with bilobed apical head of the fused gonopods from the Apennine and Balkan Peninsula and from Turkey have been identified by every trichopterologists as *Thremma anomalum* McLachlan, 1876. However, reflecting their adaptive speciation trait the ventral profile of the fused gonopods and the lateral profile of the phallotheca are clearly diverged forming both a definitely different structure at the new species *Thremma balcanum*. The type species of the genus as well as the nominate species of the new species complex has apical bilobed head of the fused gonopods long and slightly laterad directed, not short and not straight; the basement of the fused gonopods low and parallel-sided not high narrowingly sloping apicad. The ventroapical lip of the phallotheca short and stout, not long and slender. There is difference in the lateral shape of cerci as well; it is quadrangular, not gradually narrowing ventrad.

Remark. *Thremma anomalum* was collected and identified from large area in the Apennine and Balkan Peninsula and in Turkey. According to Sipahiler (2020) northeastern Trabzon province is the northernmost limit of its distribution. However, the real taxonomic status of the Turkish specimens was not confirmed by the fine phenolmics of the speciation traits.

***Thremma artvinicum* Sipahiler, 2020**

(Map 3)

Thremma artvinica Sipahiler, 2020:41. "Holotype male: Turkey, Artvin, Şavşat, Meydancik, Gomvan Yaylasi, 1950 m, 41°28'N, 43°05'E, 1.VIII.1995. Rize, Ayder, Yukari Kavron, 3000 m, 40°50'N, 41°07'E, 8. VIII. 1989, 3 males, 2 females (Paratypes) leg. and coll. Sipahiler).

Remarks. According to the International Code of Zoological Nomenclature if a species-group name is not a noun in apposition the ending of a latinized adjectival species-group name must agree in gender with the generic name. If the

gender ending is incorrect it must be changed accordingly (the author and date of the name remain unchanged).

Thremma is a Greek neuter gender noun with young creature meaning. It originates from the primary Greek verb *threpho* to nourish/support/ feed/give suck/fatten/bring up/nurture. The type species of the genus was named with neuter epithet *Thremma anomalum* by McLachlan, 1876. *Thremma artvinica* Sipahiler, 2020 must be changed accordingly as a justified emendation: *Thremma artvinicum* Sipahiler, 2020.

***Thremma balcanum* sp. nov.**

(Figures 66–68, Map 3)

Material examined. Holotype: **Macedonia**: Polog region, Šar Planina, Bozovce, open brook W of the village, N42°02.759', E20°47.776', 1545 m, 24.VI.2014, P. Juhász, T. Kovács, D. Murányi (1 male, OPC). Paratypes: **Albania,** Tepelenë district, Kurveleshi area, Progonat, Gurrit Stream spring area, E of the village, N40°12.629' E19°58.237', 1045m, 14.X.2013, leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás, (3 males; OPC). Albania, Delvinë district, Gjerë Mts, Bistricë, forest karst spring E of the village, N39°55.125' E20°08.799', 105m, 13.X.2013 leg. P. Juhász, T. Kovács, D. Murányi, G. Puskás, (10 males, OPC). **Greece**, Ioannia county, Klidonia, big sidestream of the Aoos River, S of the village, 460 m, N39°58.376' E20°39.555', 14.III.2008, leg. Sz. Czigány & D. Murányi (7 males, 4 females, 3 larvae HNHM). **Serbia**, Moravica district, Ivanjica, Golija Mts, forest stream and its sidebrook along road No.197, 1500m, N43° 20.289' E20°15.059' leg. P. Juhász, T. Kovács & D. Murányi, 26.VI.2018 (1 male, OPC). Serbia, Zaječar district, Knjaževac municipality, Stara Planina, open brooks on Mt. Midžor, 1885 m, N43.39002°, E22.67431°, 23.IX.2021, leg. P. Juhász, T. Kovács & D. Murányi (3 males, 1 female; OPC).

Diagnosis. Earlier all the specimens from almost the entire Balkan territory have been identified by every trichopterologists as *Thremma anomalum* McLachlan, 1876. However, reflecting their adaptive speciation trait the ventral profile of the fused gonopods and the lateral profile of the phallotheca are clearly diverged forming both a definitely different structure. The apical bilobed head of the fused gonopods is short, straight, not long and slightly, but steadily laterad directed; the basement of the fused gonopods high and narrowing apicad, not low and parallel-sided. The ventroapical lip of the phallotheca long, slender, not short and stout. Moreover there is difference in the lateral shape of cerci, one of the periphallic organ, that is a neutral, non-adaptive trait; it is gradually narrowing ventrad, not quadrangular.

Description. Small sized light brown species with forewing length of 6 mm. Sternite VII without ventral comb.

Male genitalia. Dorsal half of segment IX short, ventral half double long. Segment X reduced. Cerci very high, gradually narrowing downward. Paraproct triangular, slightly upward directed in lateral view. Gonopods fused with elongated basal plate of gonopods; in ventral view the bilobed head of the fused gonopods short, straight; the basement of the fused gonopods gradually narrowing, sloping apicad. Phallic organ is composed of the more sclerotized phallotheca and of the less sclerotized membranous apical half; the proximal ventral lip present on the phallotheca and the ventroapical lip is slender and long.

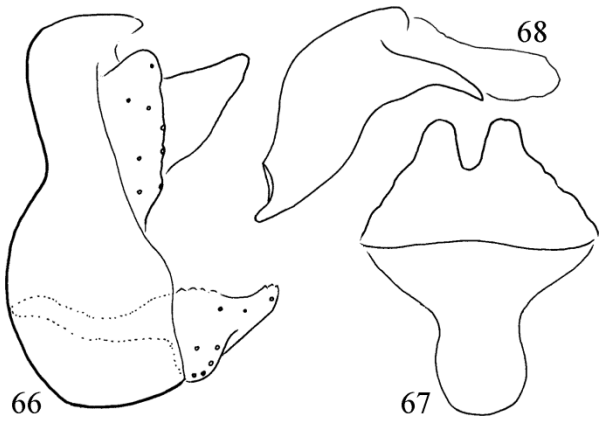
Etymology. Named after the known distributional area of the species.

***Thremma svaneticum* sp. nov.**

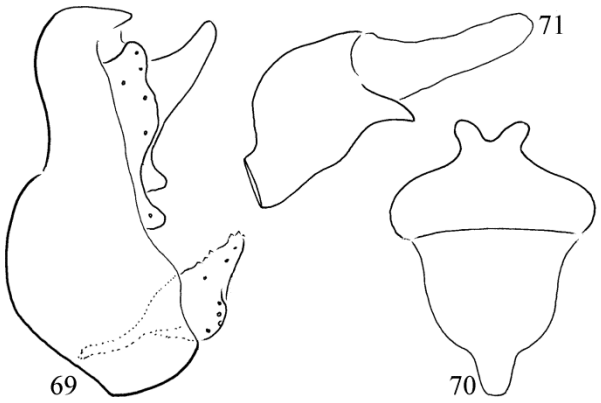
(Figures 69–71, Map 3, Photos 23–24)

Material examined. Holotype: **Georgia**, High Svanetie, brook and spring above Nakra, tributary of Utviri River, 1520m, 43.0781°N, 42.3695°E, 18.V.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This new species from the Great Caucasus has resemblance to *Thremma anomalum*, but differs by the neutral, non-adaptive periphallic organ of cercus having irregular apical margin, not straight margin of the almost regular



Figures 66–68. *Thremma balcanum* sp. nov. Holotype male: 66 = genitalia in left lateral view; 67 = fused gonopods in ventral view; 68 = phallic organ in lateral view.



Figures 69–71. *Thremma svaneticum* sp. nov. Holotype male: 69 = genitalia in left lateral view; 70 = fused gonopods in ventral view; 71 = phallic organ in lateral view.

quadrangular body. Reflecting their adaptive speciation trait the ventral profile of the fused gonopods and the lateral profile of the phallotheca are clearly diverged from *T. anomalum* forming both a definitely different structure. The apical bilobed head of the fused gonopods is short and definitely laterad directed, not long and only slightly laterad directed; the basement of the fused gonopods high and rounded, not low and parallel-sided. The proximal apical lip of the phallotheca lacking.

Description. Small sized light brown species with forewing length of 5 mm. Sternite VII with ventral comb composed by 6 teeth of various length; two teeth bifid.

Male genitalia. Dorsal half of segment IX short, ventral half double long. Segment X reduced. Cerci very high, with irregular apical margin. Paraproct elongated triangular, slightly upward directed in lateral view. Gonopods fused with elongated basal plate of gonopods; in ventral view the bilobed head of the fused gonopods short, laterad directed; the basement of the fused gonopods high with rounded lateral margin. Phallic organ is composed of the more sclerotized phallotheca and of the less sclerotized membranous apical half; the phallotheca is without proximal ventral lip and with short ventroapical lip.

Etymology. Named after the region of the *locus typicus*.

Remark. The genus *Thremma* and family Uenoidae are new for Georgia and High Caucasus.

Lepidostomatidae Ulmer, 1903

Lepidostomatinae Ulmer, 1903

Lepidostoma batumicum Martynov, 1913

Material examined. **Georgia**, Adjaria, first brook, 220m, 41.791°N, 41.956°E and second smaller brook, 220m, 41.791°N, 41.9565°E, tributaries of Kintrishi River, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Lepidostoma chaldyrense (Martynov, 1909)

Material examined. *Georgia*, Kvemo Kartli, Dashbashi cascades and Khrami River, 1400m, 41.5945°N, 44.1238°E, 6.IX.2023, leg. Gilles Vinçon (2 males, OPC).

Lepidostoma iranicum Schmid, 1959

Material examined. **Georgia**, Kakhetia, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring, 1250m, 41.8852°N, 46.2652°

E, 13.V.2023, leg. Gilles Vinçon (2 males, 3 females; OPC).

Remark. New for the fauna of Georgia.

***Lepidostoma longiplicatum* (Martynov, 1913)**

Material examined. **Georgia**, Kakhetie, above Lapankuri, Lopota valley, nice small lateral river, 660m, 42.078°N, 45.611°E, 21.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, above Mestia in direction of Tetnuldi ski station, nice springs and brooks, above the fish farm in construction, 1530m, 43.0477°N, 42.8091°E, 17.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, spring and brook, 630m, 41.8778°N, 46.2425°E, 13.V.2023, leg. Gilles Vinçon (6 males, OPC). Georgia, Kakhetie, road to Abano Pass, above Lechuri, nice brook, 650–680m, 42.177°N, 45.4315°E, 24.V.2023, leg. Gilles Vinçon (3 males, 2 females; OPC). Georgia, Kakhetie, road to Abano, above Lechuri, nice brook, 650m, 42.1643°N, 45.419°E, 24.V.2023, (6 males, OPC). Georgia, High Svanetie, above Lanteli and Ughvali, nice torrent and brook, 1730-1830m, 43.0608°N, 42.5357°E, 11.IX.2023, leg. Gilles Vinçon (3 males, 2 females; OPC). Georgia, Kakhetia, road to Omalo, below first cascade, 1370m, 42.2224°N, 45.4764°E and below second cascade, 42.226°N, 45.4795°E, 1400m, 42.2785° N, 45.4917°E, 3.IX.2023, leg. Gilles Vinçon (3 males 1 female; OPC). Georgia, High Svanetie, above Mestia, brook and spring above the fish farm in construction, 1550m, 43.0477°N, 42.809° E, 11.IX.2023, leg. Gilles Vinçon (23 males, 2 females; OPC). Georgia, Kakhetia, above Almati, nice spring, 1450m, 42.0994°N, 45.7387°E, 4.IX. 2023, leg. Gilles Vinçon (1 male, OPC)

***Lepidostoma mesoplicatum* (Martynov, 1913)**

Material examined. **Georgia**, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, below Tsinamkhari, spring and brooklet, 1200m, 42.327°N, 44.645°E, 19.IX.2022, leg. Gilles Vinçon (2 males, 3 females; OPC).

Theliopsychinae Weaver, 1992

***Martynomyia* Fischer, 1970**

Protomyia Martynov, 1913:73–78.”Venation relates this new genus to Brachycentrinae, but genital structure more similar to *Crunoecia* and *Atomyia* genera. Genus *Protomyia* relates to group of *Crunoecia-Atomyia*.” Type species *Protomyia tripartita* Martynov, 1913.

Martynomyia Fischer, 1970:243 (nom. nov.). „*Protomyia* Martynov, 1913 (type species *Protomyia tripartita* Martynov) wurde 1850 von Heer in der Ordnung Diptera präokkupiert. Als neuen Namen für die Gattung schlage ich vor: *Martynomyia*.”

Martinomyia tripartita (Martynov, 1913) (Sic.): Malicky 1983:145. This misspelling of generic name was followed in the two new species descriptions (Sipahiler 1989, 1995) in spite of the permanent correct spelling of generic name *Martynomyia* in Morse’s Trichoptera World Checklist.

Remarks. The discovery of the small and unique Caucasian genus *Protomyia* Martynov, 1913 replaced by *Martynomyia* due to preoccupation (Fischer 1970) was based on two male specimens collected by Martynov himself during his collecting trip initiated, financed and supported by the Warsaw University and realised from middle June to the beginning of July of 1911. The trip started and concentrated on the Valley of Alazani River (Kakhetia), a left tributary to River Kura and continued in the southern and northern sections along the Georgia Military Road. The first male specimen was collected in Lagodekhi (Kakhetia) in 16.VI.1911 and the second male specimen collected ten days later in Passanauri (Mtskheta-Mtianeti) in 27. VI. 1911. Until now two more species *Martynomyia ayderensis* Sipahiler, 1989 and *Martynomyia martynovi* Sipahiler, 1995 were described from Turkey.

Recently, additional specimens was collected from Mingrelia-High Svanetia region and Mtskheta-Mtianeti region and identified as *Marty-*

nomyia tripartita (Martynov, 1913) (Oláh *et al.* 2020). However, the unique features of three newly collected specimens from Kakhetia region inspired us for a detailed examination of all *Martynomyia tripartita*-like specimens by fine phenomics of the paraproct, paramere and gonopod structures, as well as to re-examine in details the original Russian description and the excellent drawings of Martynov (1913). We have found that *Martynomyia tripartita* is a species complex of closely related, but clearly diverged incipient sibling species. We have discovered that our specimens collected in the Mingrelia-High Svanetia, Mtskheta-Mtianeti and Kakhetia regions represent an independent species.

Question immediately arises, which of the two specimens collected by Martynov in the Mtskheta-Mtianeti and Kakhetia regions and described as the single species represents *Martynomyia tripartite* proper. Martynov usually did not designate types, at least in his papers. His Caucasian material collected during this early trip in 1911 was unfortunately lost.

Examining our specimens collected from the same localities in the Mtskheta-Mtianeti and Kakhetia regions we have recognised that the specimen collected in the Mtskheta-Mtianeti region corresponds to Martynov's drawings 5 and 6 and our specimen collected in Kakhetia region corresponds to Martynov's drawings 9 and 10. Interesting to notice that in the original species description the figures 5 and 6 were placed in table VII and the figures 9 and 10 were placed in table IX. Moreover the figures 5–6 and figures 9–10 represent different drawings types. However, as usual, all his drawings were excellent and very precise, especially if we compare his drawings to the drawings of his contemporary colleagues Navas from Spain and Banks form USA. We have the duty and right to designate a lectotype based on the original description and drawings and on the correspondence we have found by fine phenomics with the newly collected specimens. Here we designate as lectotype the specimen collected by Martynov at Passanauri, Mtskheta-Mtianeti region in 27.VI.1911 and also listed as first specimen in the description. Our lectotype designation is based on the correspondence of his drawing 5–6 with our newly collected specimen from the same region. Since the type species of the genus is *Martynomyia tripartita* it is represented by this lectotype from Passanauri and is now represented only by the original drawings 5–6 by Martynov (1913).

Martynomyia ayderensis Sipahiler, 1989

(Map 4)

Martinomyia ayderensis Sipahiler, 1989:5–7. „Material. – Holotype ♂: **Turkey**: Rize, Ayder, alt. 1100 m, 5.IX.1988, F. Sipahiler leg., in the author's collection."

Martynomyia martynovi Sipahiler, 1995

(Map 4)

Martinomyia martynovi Sipahiler, 1995:219–221. „Holotype ♂: **Turkey**, Haldizan Köyü, direction Uzungöl, 1700 m, 40° 36' N,." 40° 28' E, 24.VIII. 1992 leg. and coll. Sipahiler."

Martynomyia tripartita species complex

This species complex is characterized by the specifically tripartite gonopods composed of ovoid highly setose dorsal, less setose digitiform middle and setose lower lobes. Segment X membranous. Cerci and paraproct fused forming together a pair of highly sclerotized lateral processes. These fused processes surrounding the membranous segment X are the most diverse structure in the species complex or even in the entire genus. They are the speciation trait undergoing rapid diversification in allopatric populations.

The lower arm of the gonopod having a clasping function during copulation has also diverged exhibiting diagnostic value. Two pairs of parameres have potential diagnostic value with their shape divergences, but deeply embedded inside the phallotheca, and can only be seen at higher magnification, making it difficult to examine their fine structure.

Martynomyia svanetia sp. nov.

(Figures 72–76, Map 4, Photos 16, 17, 23, 24)

Material examined. Holotype: **Georgia**, Mingrelia and High Svanetia region, spring, Nakra valley, Utviri tributary, 43°04'41" N, 42°22'13"E, 1510m, 23.IX.2019, leg. Gilles Vinçon (1 male, OPC). Allotype: Georgia, High Svanetia, above Mestia, brook and spring above the fish farm in construction, 1550m, 43.0477°N, 42.8091°E, 11. IX.2023, leg. Gilles Vinçon (1 female, OPC). Paratype: Georgia, Mingrelia and High Svanetia region, Khaishura River tributary, same torrent above Kveda Vedi until its spring, 42°54'47" N, 42°11'05"E, 1300–1500m, 22.IX.2019, leg. G. Vinçon (1 male, OPC).

Diagnosis. Based on paraproct similarity with dentate surface structure *Martynomyia svanetia* sp. nov. is most close to the type species *Martynomyia tripartita* (Martynov, 1913), but the lateral profile of the paraproct more stout with broad base, not slender; in dorsal view the dentate paraproct more curving laterad; the ventral profil of the gonopod with angled mesal margin; the apical pair of parameres more robust, not slender in ventral view and having mesal broadening; the basal pair of parameres with pronounced turning and broadening ventrad.

Description. Small, dark brown animal with forewing length of 5 mm. Apicomesal lobe on sternite VII rounded elongated.

Male genitalia. Segment IX has very short, almost reduced dorsum, ventrum long and anterior margin convex rounded triangular. Segment X membranous with bilobed apex. The fused complex of cerci and paraproct dentate, its surface, particularly its lateral surface covered with stout and short teeth; the pair of these dentated processes arching laterad in dorsal view and with broad basement in lateral view. The tripartite gonopods composed of ovoid highly setose dorsal, less setose digitiform middle and setose lower lobes discernible in lateral view; the digitiform middle process setosed only on its apical region with a few long setae; the highly setosed dorsal ovoid process represents probably the harpago, the second segment of the gonopods but fused with articulation on the very basal region of the coxopodite; the apical digitiform region of the lower lobes regularly curving mesad in ventral view, middle and basal part broadening. Phallic organ with two pairs of parameres embedded inside the phallotheca or endotheca having apical region with dorsal and ventral parts and further subdivided into bilobed endings indiscernible how deep. Both the apical and basal pairs of parameres developed rather complex.

Etymology. Coined from the name of locus typicus, as a noun in apposition.

Martynomyia tripartita (Martynov, 1913)

(Figures 77–81, Map 4)

Protomyia tripartita Martynov, 1913a:73–78. „1♂. Mountain stream below Passanauri, 27.VI.11. 1♂. Lagodechi, 17.VI.11."

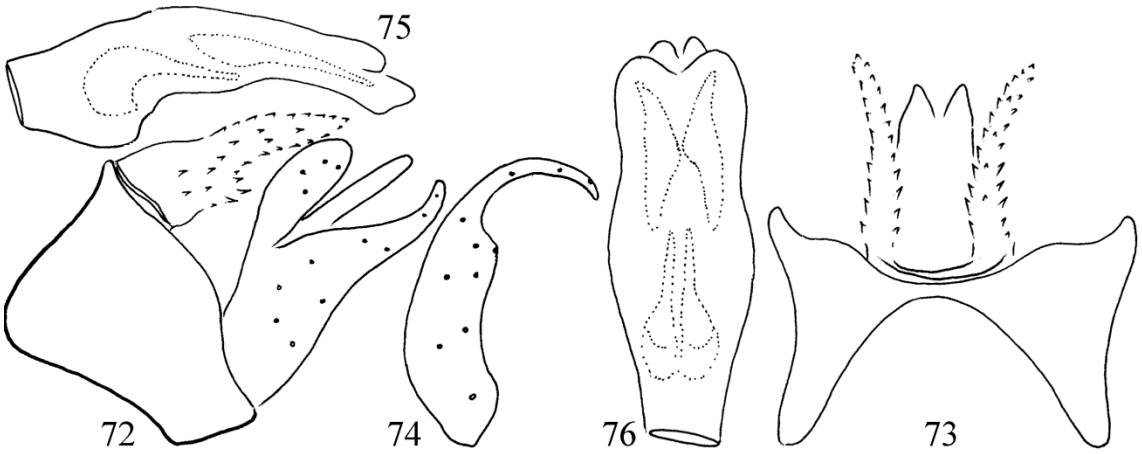
Martynomyia tripartita (Martynov, 1913): Fischer 1970:243. New replacement name given for preoccupation. The type species of the genus.

Martinomyia tripartita (Martynov, 1913): Malicky 1983:145. The drawings are original, but unfortunately the locality of specimen for drawings is not indicated.

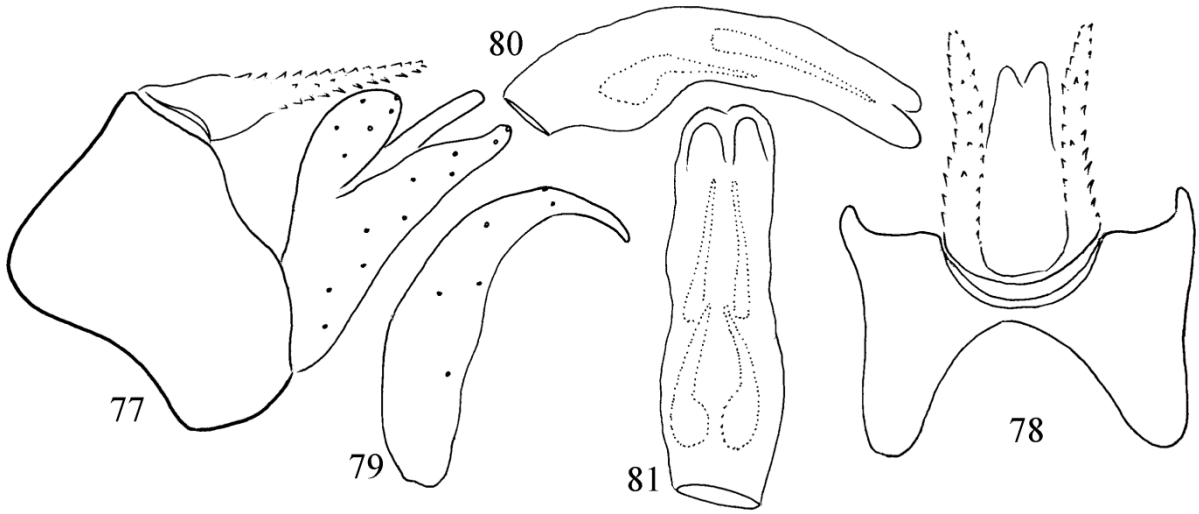
Martynomyia tripartita (Martynov, 1913): Weaver 1993:134. Figure 5. Male genitalia, lateral (after Martynov 1913). However this lateral drawing is highly modified compared to the original Martynov's drawings. It is more related to drawings of the Malicky's atlas (1983).

Material examined. **Georgia,** Mtskheta-Mtianeti region, Mejilaurni, forest and bushy springs and outlets, N42°19.423' E44°38.732', 1270m, 13.VII.2019, leg. T. Kovács, P. Manko, D. Murányi & G. Vinçon (1 male, 2 females; OPC).

Re-diagnosis. Based on paraproct similarity with dentate surface structure the type species *Martynomyia tripartita* (Martynov, 1913) is most close to *Martynomyia svanetia* sp. nov., but the lateral profile of the paraproct slender, not more



Figures 72–76. *Martynomyia svanetia* sp. nov. Holotype male: 72 = genitalia in left lateral view; 73 = genitalia in dorsal view; 74 = left gonopod in ventral view; 75 = phallic organ in lateral view; 76 = phallic organ in ventral view.



Figures 77–81. *Martynomyia tripartita* (Martynov, 1913). Lectotype male: 77 = genitalia in left lateral view; 78 = genitalia in dorsal view; 79 = left gonopod in ventral view; 80 = phallic organ in lateral view; 81 = phallic organ in ventral view.

stout with broad base; in dorsal view the dentate paraproct less curving laterad; the ventral profil of the gonopod without any angle mesad; the apical pair of parameres slender in ventral view, not robust and without any mesal broadening; the basal pair of parameres without pronounced turning and broadening ventrad.

Redescription. Small, dark brown animal with forewing length of 5 mm. Apicomesal lobe on sternite VII small, narrow parallel-sided with rounded apical margin.

Male genitalia. Segment IX has very short dorsum, ventrum long and anterior margin convex rounded triangular. Segment X membranous with bilobed apex. The fused complex of cerci and paraproct is dentate; the pair of these dentated processes slightly directed laterad in dorsal view and without broad basement in lateral view. The tripartite gonopods composed of ovoid highly setose dorsal, less setose digitiform middle and setose lower lobes discernible in lateral view; the digitiform middle process setosed only on its apical region with a few long setae; the highly

setosed dorsal ovoid process represents probably the harpago, the second segment of the gonopods but fused with articulation on the very basal region of the coxopodite; the apical digitiform region of the lower lobes slightly curving mesad and gradually tapering. Phallic organ with two pairs of parameres embedded inside the phallotheca or endotheca having apical region with dorsal and ventral parts and further subdivided into bilobed endings indiscernible how deep. The apical paramere more slender, straight and slightly longer; basal pairs of parameres with broad and downward directed basal region.

Remarks. Our specimens agree completely with the lectotype represented by Martynov (1913) figures 5–6.

Martynomyia zazai sp. nov.

(Figures 82–86, Map 4, Photos 3, 4, 25)

Material examined. Holotype: **Georgia**, Kakhetia, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, brook, 930m, 41.8826°N, 46.2561°E, 13.V.2023, leg. Gilles Vinçon (1 male, OPC). Paratypes: Same as holotype (2 males, OPC). Georgia, Kakhetie, road to Abano, above Lechuri, nice brook, 650m, 42.1643°N, 45.419°E, 24.V.2023, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 1000m, 41.8823°N, 46.2585°E, 13.05.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, spring and brook, 1240m, 41.8853°N, 46.2652°E and 41.8851N, 46.2682E, 1350m, 4.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC).

Diagnosis. Easily distinguished from other species of the complex by the fused cerci and paraproct complex having no dentate surface, supplied only with a few unmodified long setae. Moreover, the ventral profile of the gonopod aviform, not simply having narrowing head. The apical pair of parameres with doubled left paramere distinct both in the holotype and in the two paratypes; the basal pair of parameres bears short spines on its basoanterior margin discernible in lateral view.

Description. Small, dark brown animal with forewing length of 5 mm. Apicomesal lobe on sternite VII rounded elongated.

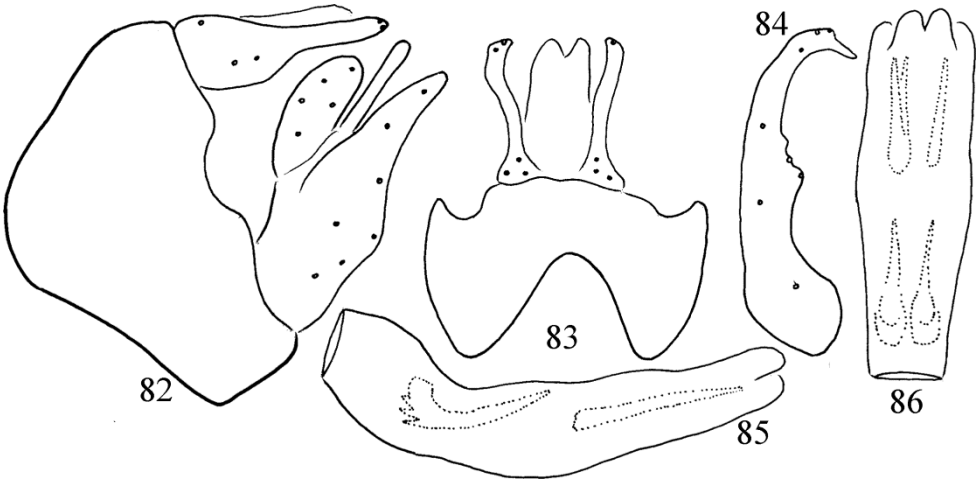
Male genitalia. Segment IX has long dorsum, ventrum slightly longer and anterior margin convex rounded triangular. Segment X membranous with bilobed apex. The fused complex of cerci and paraproct is not dentate, armed only with a few long setae; two at apex and three at the basal region; in lateral view the basal part broad. The tripartite gonopods composed of ovoid highly setose dorsal, less setose digitiform middle and setose lower lobes discernible in lateral view; the digitiform middle process setosed only on its apical region with a few long setae; the highly setosed dorsal ovoid process represents probably the harpago, the second segment of the gonopods but fused with articulation on the very basal region of the coxopodite; the apical digitiform region of the lower lobes slightly curving mesad with aviform head in ventral view, middle and basal part broadening. Phallic organ with two pairs of parameres embedded inside the phallotheca or endotheca having apical region with dorsal and ventral parts and further subdivided into bilobed endings indiscernible how deep. The left apical paramere doubled and basal pairs of parameres developed rather complex with just discernible basodorsal short spines.

Etymology. This magnificent new species is dedicated to one of the rangers of the Lagodekhi National Park, close to the Azerbaijan border, Zaza Tsodolishvili, who was the kindest to help to recover the collector Gilles Vinçon after a bad accident in urgent cross of the raging torrent by swimming, then cross the spiny forest by cold rainy night without lost boot, rucksack and light.

Apataniidae Wallengren, 1886

Apatania subtilis Martynov, 1909

Material examined. **Georgia**, Mtskheta-Mtianeti, SE Juta, Chaukhistskali valley, above Fifth



Figures 82–86. *Martynomyia zazai* sp. nov. Holotype male: 82 = genitalia in left lateral view; 83 = genitalia in dorsal view; 84 = left gonopod in ventral view; 85 = phallic organ in lateral view; 86 = phallic organ in ventral view.

Season guest house, brook and spring, 2550–2600 m, 42.575°N, 44.7614°E, 20.IX.2022, leg. Gilles Vinçon (8 males, 6 females; OPC). Georgia, Mtskheta-Mtianeti, below Tsinamkhari, spring and brooklet, 1200m, 42.327°N, 44.645°E, 19.IX. 2022, leg. Gilles Vinçon (7 females, OPC). Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, cascade, 1560m, 42.436°N, 44.495°E, 19.IX. 2022, leg. Gilles Vinçon (3 males, 3 females; OPC). Georgia, Mingrelia – High Svanetia, Markhi Valley, N Zemo Marghi, nice spring, 1290m, 43.053°N, 42.197°E, 29.IX.2022, leg. Gilles Vinçon (4 males, 3 females; OPC). Georgia, High Svanetie, above Mestia in direction of Tetnuldi ski station, nice springs and brooks, above the fish farm in construction, 1530m, 43.0477°N, 42.8091°E, 17.V.2023, leg. Gilles Vinçon (17 males, 3 females; OPC). Georgia, Mtskheta-Mtianeti, above Juta, Chaukhistskali Valley, nice lateral spring, 2370m, 42.57°N, 44.7583°E, 26.V. 2023, leg. Gilles Vinçon (4 males, OPC). Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, nice spring and small cascades, 1520–1550m, 42.4364°N, 44.4946°E, 25.V.2023, leg. Gilles Vinçon (9 males, 3 females; OPC). Georgia, Gouria, road to Bakhmaro, Chkhakoura River, 630m, 41.9113°N, 42.3974°E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, Tsinamkhari, nice spring and brook, 1210m, 42.3269°N, 44.645°E, 25.V.2023, leg. Gilles Vinçon (3 males, 2 females; OPC). Georgia, Mtskheta-Mtianeti, above Juta, above Fifth season resort, nice springs and brook very steep, 2540–2600m, 42.5749°N, 44.7614°E, 26.V. 2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Mtskheta-Mtianeti, above Ukanamkhari, nice spring and brook, 1680–1730m, 42.324°N, 44.607°E, 25.V.2023, leg. Gilles Vinçon (5 males, 3 females; OPC). Georgia, High Svanetie, above Mestia, nice spring tributary of Mulkhra River, 1480m, 43.0451°N, 42.7849°E, 17.V.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Kvemo Kartli, West Tikilisa, Ktsia River, 1580m, 41.5929°N, 43.9469°E, 6.IX.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Mtskheta-Mtianeti, above Stephantsminda, nice brook, 2150–2200m, 42.6627°N, 44.6103°E, 2.IX.2023, leg. Gilles Vinçon (2 males, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, meeting of 3 nice brooks, 2235m, 42.7581°N, 43.115°E, 13.IX.23, leg. Gilles Vinçon (5 males, OPC). Georgia, Mtskheta-Mtianeti, above Juta, above 5 seasons guest house, springs, 2340m, 42.5727°N, 44.7565°E, 1.IX.2023, leg. Gilles Vinçon (15 males, 8 females; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, below Tsana, brook and spring, 1540m, 42.8518°N, 43.1622°E, 12.IX.2023, leg. Gilles Vinçon (11 males, 5 females; OPC). Georgia, Kvemo Kartli, Dashbashi cascades and Khrami River, 1400m, 41.5945°N, 44.1238°E, 6.IX.2023, leg. Gilles Vinçon (17 males, 6 females; OPC). Georgia, Kakhetia, above

Lagodekhi, 2390–2430m, 41.8766°N, 46.3797°E to 41.8767°N, 46.3807°E, 5.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Stephantsminda, brook and spring, 2200–2240m, 42.661°N, 44.6081°E, 2.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, > Khekordzi, nice spring, 1480m, 41.7821°N, 44.5121°E, 17.IX.2023, leg. Gilles Vinçon (12 males, 2 females; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, nice brook and torrent, 2120m, 42.6928°N, 42.6465°E, 8.IX. 2023, leg. Gilles Vinçon (3 males, 1 female; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, brook and spring, 2210m, 42.6948°N, 42.6432°E, 8.IX.2023, leg. Gilles Vinçon (5 males, 2 females; OPC). Georgia, High Svanetie, above Lanteli and Ughvali, spring, 2010m, 43.0688°N, 42.5434°E, 11.IX. 2023, leg. Gilles Vinçon (2 males, 1 female; OPC).

Apataniana bakhmara sp. nov.

(Figures 87–91, Map 5, Photos 26–27)

Material examined. Holotype: **Georgia**, Gouria, above Bakhmaro, nice brook and spring with snow, 1980m, 41.8386N, 42.331E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. Based on the character combination detailed in Oláh *et al*. (2020), *Apataniana bakhmara* sp. nov. belongs to the *Apataniana borcka* species complex of the *Apataniana hellenica* species group but diverged rather far. The ventral profile of the harpago is very specialized, more complex with three apical spines of various lengths besides the accompanied setae. The fused mesal arm of paraproct not hooked typically, but elongated with small hump ventrad on midway; all the other species of the group has backward turning hooked apex of the fused mesal arm of paraproct, not elongated.

Description. Medium sized darkly pigmented species with forewing length of 8 mm and with almost black thoracic sclerites. The genus character, the closed discoidal cell is present on hindwing as well as the narrow upward curving flap is discernible along about the basal half of the costal vein wrapping very long black androconial setae.

Male genitalia. Segment IX long ventrad, narrowing dorsad to a strap-like tergite. Segment X forms a pair of mesally and membranously fused downward than backward turning structure, slender in lateral view, rounded in dorsal view. The fused mesal arm of the paraproct elongated straight with a small ventral outgrowth visible in lateral view. Lateral (external) arm of the paraproct obliquely curving upward, cerci is fused to its basal part. Harpago, the second segment of gonopod mesad turning with three differently produced spines. Parameres represented by simple setaless pointed spines, shorter than aedeagus.

Etymology. Named after the region of the type locality, a noun in apposition.

Apataniana goderdza Oláh & Kovács, 2020

(Map 5)

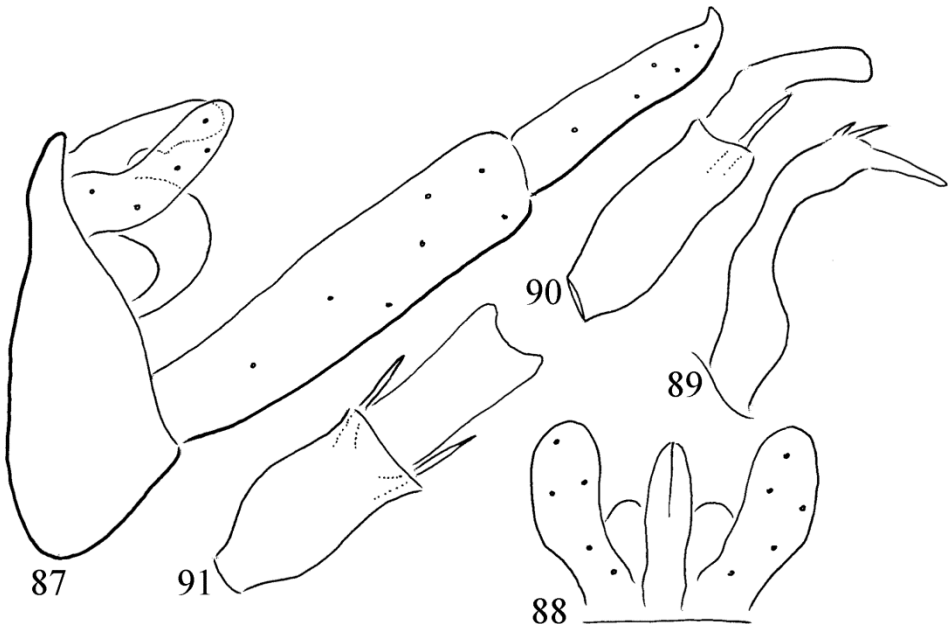
Material examined. **Georgia**, Adjaria, Goderdzi Alpine Garden, nice springs and brook, 1960m, 41.6253°N, 42.5364°E, 24.IX.2022, leg. Gilles Vinçon (8 males, OPC).

Apataniana gouria sp. nov.

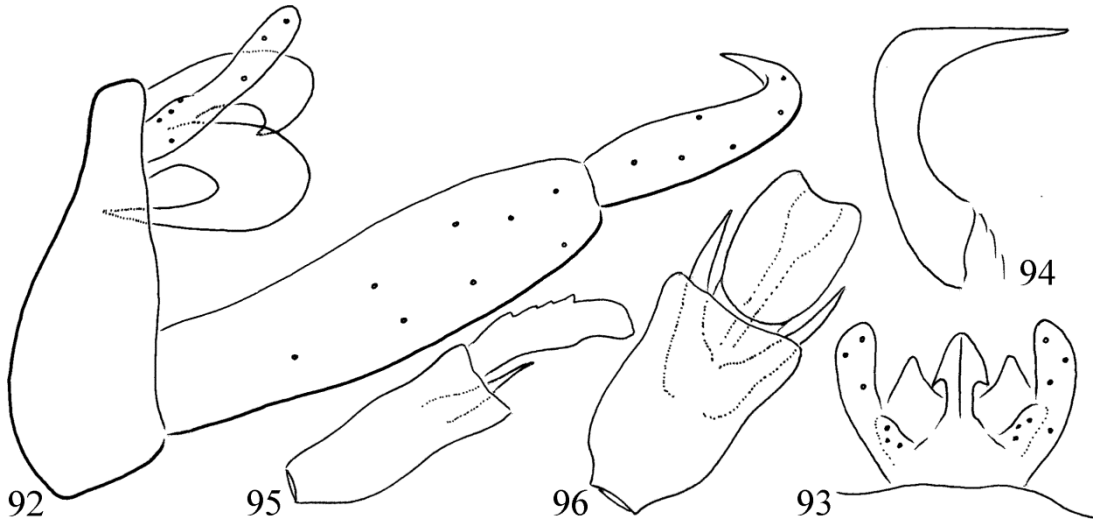
(Figures 92–96, Map 5, Photos 1–2)

Material examined. Holotype: **Georgia**, Gouria, SW Chkhakoura, nice brook tributary of Kalasha River, 1740m, 41.882°N, 42.358°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratype: same as holotype (1 male, OPC). Georgia, Gouria, SW Chkhakoura, nice spring tributery of Kalasha River, 1740m, 41.881°N, 42.3567° E, 27.IX.2022, leg. Gilles Vinçon (8 males, OPC).

Diagnosis. Based on the character combination in Oláh *et al.* (2020), *Apataniana gouria* sp. nov. belongs to the *Apataniana borcka* species complex of the *Apataniana hellenica* species group and has relations both to *A. goderdza* Oláh & Kovács, 2020 and *A. kintrisha* Oláh & Vinçon, 2020. This chimeric species has the cerci fused



Figures 87–91. *Apataniana bakhmara* sp. nov. Holotype male: 87 = genitalia in left lateral view; 88 = genitalia in dorsal view; 89 = left harpago in ventral view; 90 = phallic organ in lateral view; 91 = phallic organ in ventral view.



Figures 92–96. *Apataniana gouria* sp. nov. Holotype male: 92 = genitalia in left lateral view; 93 = genitalia in dorsal view; 94 = left harpago in ventral view; 95 = phallic organ in lateral view; 96 = phallic organ in ventral view.

completely to the lateral arms of the dorsal branch of the paraproct like at *A. kintrisha*, not partially free like at *A. goderdza*. However, the ventral profile of the harpago has straight apical region like at *A. goderdza*, not rounded like at *A. kintrisha*. As a result *Apataniana gouria* sp. nov. is combined by the character states of these two species.

Description. Medium sized darkly pigmented species with forewing length of 9 mm and with almost black thoracic sclerites. The genus cha-

racter, the closed discoidal cell is present on hindwing as well as the narrow upward curving flap is discernible along about the basal half of the costal vein wrapping very long black androconial setae.

Male genitalia. Segment IX long ventrad, only half as long dorsad. Segment X forms a pair of mesally and membranously fused downward than backward turning structure, slender in lateral view, sharp triangular in dorsal view. The fused mesal arm of the paraproct with hooked head in lateral and arrow-like in dorsal view. The lateral (external) arm of the paraproct obliquely directed upward, cerci is fused to its basal part. Harpago, the second segment of gonopod turning mesad in right angle as a straight spine-like pointed structure. Parameres represented by simple setaless pointed spines, shorter than aedeagus.

Etymology. Named after the region of the type locality, a noun in apposition.

Limnephilidae Kolenati, 1848

Drusinae Banks, 1916

***Drusus alapos* Oláh, 2020**

Material examined. **Georgia**, Samtskhé-Djavakhétie, Ktsia-Tabatskuri Managed Reserve, spring and brook, 2380m, 41.6555°N, 43.49°E, 23.IX.2022, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, nice brook and spring, 2300–2350m, 41.6925°N, 43.5161°E, 6.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, nice torrent, 2280m, 42.7485°N, 43.1212°E, 13.IX.23, leg. Gilles Vinçon (1 male, OPC).

Remark. This species was known only by its holotype collected in the Kvemo Kartli region.

***Drusus erdes* Oláh & Vinçon, 2020**

(Map 6)

Material examined. **Georgia**, Mingrelia - High Svanetia, Markhi Valley, nice springs and brooklets near the sheepfold, 2080m, 43.0796°N, 42.2424°E, 29.IX.2022, leg. Gilles Vinçon (1 male, 2 females; OPC). Georgia, Gouria, above Gadrekili, brook and spring, 2220–2240m, 41.8437°N, 42.3615°E, 14.IX.2023, leg. Gilles Vinçon (1 male, 3 females; OPC). Georgia, Gouria, above Bakhmaro, brook and spring, 1980–2000m, 41.8386°N, 42.331°E, 14.IX.2023, leg. Gilles Vinçon (3 males, OPC).

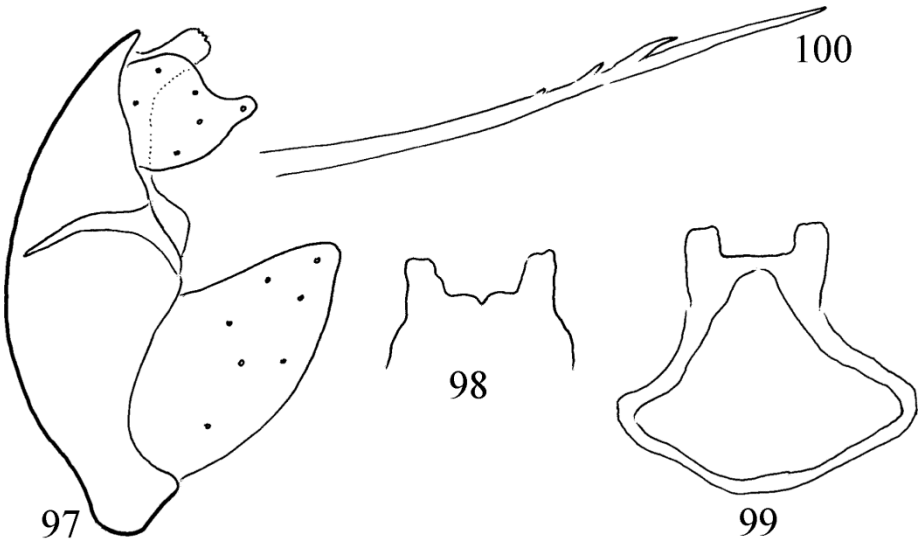
***Drusus stephantsmind* sp. nov.**

(Figures 97–103, Map 6, Photos 28–30)

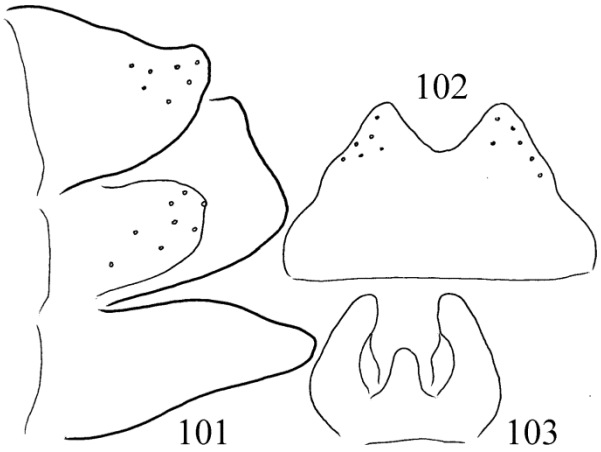
Material examined. Holotype: **Georgia**, Mtskheta-Mtianeti, above Stephantsminda, nice brook, 2150m, 42.6627°N, 44.6103°E, 25.V.2023, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratypes: same as holotype (10 males, 6 females; OPC). Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, spring and small cascades, 1520–1550m, 42.4364°N, 44.4946°E, 25.V.2023, leg. Gilles Vinçon (9 males, 1 female; OPC). Georgia, Mtskheta-Mtianeti, above Stephantsminda, nice brook, 2150–2200m, 42.6627°N, 44.6103°E, 2. IX.2023, leg. Gilles Vinçon (10 males, 5 females; OPC).

Diagnosis. The most easily visible shape divergence distinguishing this species from its sibling *Drusus erdes* Oláh & Vinçon, 2020 is the almost parallel-sided, not divergent and not laterad directed position of the arms of the dorsal branch of the paraproct. This position is distinctly visible both in dorsal and caudal views. *Drusus stephantsmind* sp. nov. populates the same region as its sibling *Drusus erdes* Oláh & Vinçon, 2020. Contact population could be present permitting detailed studies on reinforcement processes to complete speciation by barrier building between populations as a result of character displacement. Sophisticated genital clearing and cleaning process of all the ten paratypes made a detailed comparative study possible and there were found some sign of intermediate paraproct structures between the siblings.

Description. Small brown animal with forewing length of 8 mm.



Figures 97–100. *Drusus stephantsmind* sp. nov. Holotype male: 97 = genitalia in left lateral view; 98 = dorsal arm of paraproct in dorsal view; 99 = paraproct in caudal view; 100 = left paramere in lateral view.



Figures 101–103. *Drusus stephantsmind* sp. nov. Allotype female: 101 = genitalia in left lateral view; 102 = segment X in dorsal view; 103 = vulvar scale (lower vaginal lip).

Male genitalia. Segment IX short, its dorsum reduced into a strap-like narrow structure. Paraproctal arms quadrangular in lateral view; arms of the dorsal branches parallel-sided both in dorsal and caudal views. Cerci rounded foliform with apicoventral finger. Gonopods are tapering to apex. In the paramere spine pattern the anterad located secondary spine less developed; apical shaft of the paramere less robust not dilated and three times longer than the length of the primary spine.

Female genitalia. Tergite of segment IX forming short tube, open ventrally, with V-shaped mesal excision; lateral lobes rounded triangular in dorsal view; the lateral setose lobe of sternite IX elongated with rounded apical margin. Segment X membranous and embedded inside segment IX and encircling anus; supragenital plate of segment X well-developed and regular quadrangular in lateral view. Median lobe of the vulvar scale (lower vaginal lip) present half long as the lateral lobes.

Etymology. Named after the locus typicus, a noun in apposition.

***Drusus sukul* Oláh & Vinçon, 2020**

(Map 6)

Material examined. **Georgia**, Mtskheta-Mtianeti, above Juta, above Fifth season resort, springs and brook very steep, 2540–2600m, 42.5749°N, 44.7614°E, 26.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, High Svanetie, above Lanteli and Ughvali, brook up to its spring, 2400–2480m, 43.0802°N, 42.5482°E, 11.IX.2023, leg. Gilles Vinçon (14 males, 3 females; OPC). Georgia, High Svanetie, above Lanteli and Ughvali, torrent, 2250m, 43.0766°N, 42.549°E, 11.IX.

2023, leg. Gilles Vinçon (4 males, 3 females; OPC). Georgia, High Svanetie, near Zagari Pass, nice brook below cascade, 2570m, 42.9084°N, 43.0926°E, 12.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Juta, above 5 seasons guest house, springs, 2340 m, 42.5727°N, 44.7565°E, 1.IX.2023, leg. Gilles Vinçon (12 males, 9 females; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, brook, 2350m, 42.743°N, 43.1243°E, 13.IX. 2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, road to Omalo, before Abano Pass, spring, 2470m, 42.2681°N, 45.5118°E, 4.IX.2023, leg. Gilles Vinçon (5 males, 3 females; OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, spring, 2320m, 43.0578°N, 42.0684°E, 10.IX.2023, leg. Gilles Vinçon (11 males, 3 females; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, nice brook, 1600 m, 42.6338°N, 42.5746°E, 7.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Stephantsminda, brook and spring, 2200–2240m, 42.661°N, 44.6081°E, 2.IX.2023, leg. Gilles Vinçon (1 female, OPC). Georgia, Mtskheta-Mtianeti, above Juta, 3000–3030m, 42.5613°N, 44.799°E, 1.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, brook and spring, 2600–2640m, 43.0752° N, 42.0668°E, 10.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Drusus teslenkoae Oláh & Vinçon, 2020

(Map 6)

Material examined. **Georgia**, Gouria, SW Chkhakoura, nice springs tributary of Chkhakoura River, 1380m, 41.891°N, 42.372°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, road to Bakhmaro, nice spring 'Tskhratsqaro', tributary of Chkhakoura River, 1380m, 41.8911° N, 42.3718°E, 21.V.2023, leg. Gilles Vinçon (6 males, 2 females; OPC). Georgia, Gouria, road to Bakhmaro, nice spring and brook tributary of Kalasha River, 1750–1790m, 41.8808°N, 42.3567°E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice spring and brook, 1360m, 41.644°N, 41.885°E, 20.V.2023, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Adjaria, above Keda, above Namonastrevi, spring, 1320m, 41.5821°N, 42.0813° E, 15.IX.2023, leg. Gilles Vinçon (1 male, 2 females; OPC). Georgia, Gouria, road to Bakhmaro, brook and spring, 2030m, 41.8586°N, 42.3564°E, 14.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, road to Bakhmaro, spring, 1380m, 41.8911°N, 42.3718° E, 14.IX.2023, leg. Gilles Vinçon (4 males, 2 females; OPC).

Remark. This species was only known from the holotype locality in Adjaria, Mtirala National Park (Oláh *et al*. 2020). Its flight period widely extends from May to September.

Limnephilinae Kolenati, 1848

Limnephilini Kolenati, 1848

Glyphotaelius persicus McLachlan, 1874

Material examined. **Georgia**, Gouria, road to Bakhmaro, 1750–1790m, 41.8808°N, 42.3567°E, 21.V.202, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Gouria, above Bakhmaro, nice brook and spring with snow, 1980m, 41.8386°N, 42.331°E, 21.V.2023, leg. Gilles Vinçon (2 males, 1 female; OPC). Georgia, Gouria, road to Bakhmaro, nice brook and spring, 1990m, 41.8564°N, 42.3255°E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, above Bakhmaro, brook and spring, 1980–2000m, 41.8386°N, 42.331°E, 14.IX.2023, leg. Gilles Vinçon (1 male, 1 female; OPC).

Remark. New for Georgia.

Glyphotaelius selysii McLachlan, 1869

Material examined. **Georgia**, Imerethie, above Sairme, brook and cascade, 1230m, 41.8858°N, 42.7524°E, 22.V.2023, leg. Gilles Vinçon (1 female, OPC).

Grammotaulius nigropunctatus (Retzius, 1783)

Material examined. **Georgia**, Kakhetia, above Khizabavra, Ninoskhevi valley, brook, 1000m,

41.8823°N, 46.2585°E, 13.05.2023, leg. Gilles Vinçon (1 female, OPC).

Remark. It is new for Georgia.

Limnephilus affinis Curtis, 1834

Material examined. **Georgia**, Gouria, road to Bakhmaro, 1750-1790m, 41.8808°N, 42.3567°E, 21.V.202, leg. Gilles Vinçon (2 females, OPC).

Limnephilus hirsutus Pictet, 1834

Material examined. **Georgia**, Mtskheta-Mtianeti, below Chokhi, spring, 1360m, 42.442°N, 44.722°E, 2.IX.2023, leg. Gilles Vinçon (1 male, 1 female in copula; OPC).

Limnephilus lunatus Curtis, 1834

Material examined. **Georgia**, High Svanetia, above Mestia, brook and spring above the fish farm in construction, 1550m, 43.0477°N, 42.809° E, 11.IX.2023, leg. Gilles Vinçon (1 female, OPC).

Limnephilus microdentatus Martynov, 1913

Material examined. **Georgia**, Adjaria, below Green Lake, nice brook below the swamp, 2045m, 41.682°N, 42.5°E, 24.IX.2022, leg. Gilles Vinçon (5 females, OPC). Georgia, Adjaria, below Green Lake, nice spring and brook above the swamp, 2050m, 41.6784°N, 42.499°E, 24.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, road to Bakhmaro, 1750–1790m, 41.8808°N, 42.3567°E, 21.V.202, leg. Gilles Vinçon (3 males, 1 female; OPC). Georgia, Gouria, road to Bakhmaro, nice brook and spring, 1990m, 41.8564°N, 42.3255°E, 21.V.2023, leg. Gilles Vinçon (1 female, OPC).

Limnephilus sparsus Curtis, 1834

Material examined. **Georgia**, Adjaria, Tbeti, nice spring and brook, 1190m, 41.568°N, 42.1526°E, 24.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Limnephilus vittatus (Fabricius, 1798)

Material examined. **Georgia**, Adjaria, below Green Lake, nice brook below the swamp, 2045m, 41.682°N, 42.5°E, 24.IX.2022, leg. Gilles Vinçon (4 females, OPC).

Chaetopterygini Hagen, 1858

Badukiella kinula Oláh & Vinçon, 2020

(Map 7)

Material examined. **Georgia**, Mtskheta-Mtianeti, Chaukhistskali valley, big lateral spring flowing from the morraine, 2600m, 42.554°N, 44.773°E, 20.IX.2022, leg. Gilles Vinçon (1 female, OPC).

Badukiella kurta Oláh & Vinçon, 2020

(Map 7)

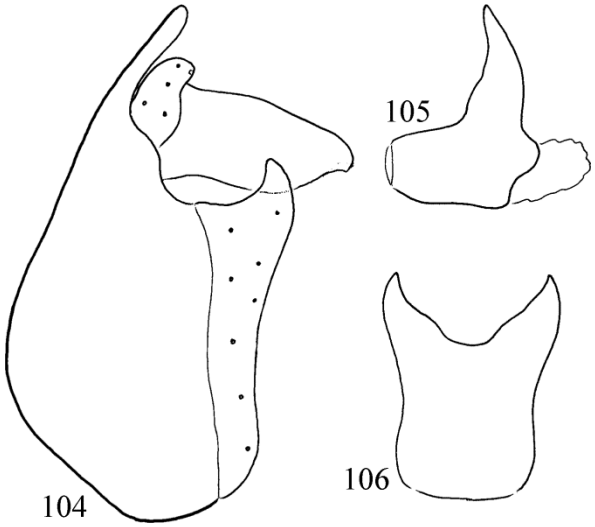
Material examined. **Georgia**, Samtskhé-Djavakhétie, above Bakuriani, before Tskhratskaro Pass, spring and brook, from 2380m, 41.693°N, 43.516°E, up to 2410m, 41.6935°N, 43.519°E, 23.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Badukiella markha sp. nov.

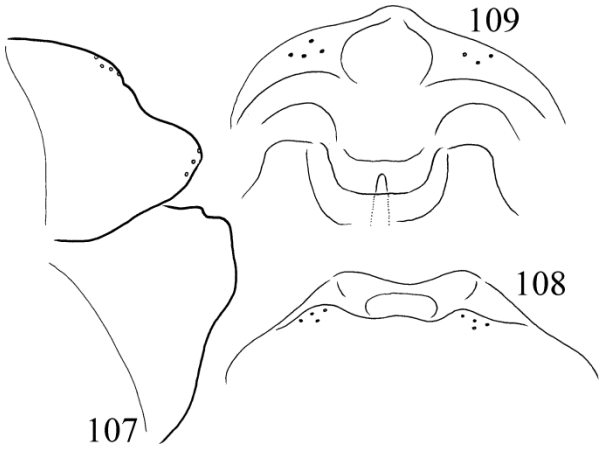
(Figures 104–109, Map 7, Photos 31–34)

Material examined. Holotype: **Georgia**, Mingrelia - High Svanetia, Markhi Valley, nice springs and brooklets near the sheepfold, 2080m, 43.0796°N, 42.2424°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratypes: Georgia, Mingrelia - High Svanetia, Tetnuldi ski resort, nice torrent, from 2680m, 43.0214°N, 42.9166°E, to 2800m, 43.023°N, 42.9206°E, 28.IX.2022, leg. Gilles Vinçon (12 males, 7 females; OPC). Georgia, Mingrelia - High Svanetia, Markhi Valley, nice torrent, from 1430m, 43.069°N, 42.196°E, to 1480m, 43.073°N, 42.199°E, 29.IX.2022, leg. Gilles Vinçon (2 males, OPC).

Diagnosis. This new species is close to *Badukiella kinula* Oláh & Vinçon, 2020, but differs by



Figures 104–106. *Badukiella markha* sp. nov. Holotype male: 104 = genitalia in left lateral view; 105 = phallic organ in lateral view; 106 = phallic organ in caudal view.



Figures 107–109. *Badukiella markha* sp. nov. Allotype female: 107 = genitalia in left lateral view; 108 = female genitalia in dorsal view; 109 = female genitalia in ventral view.

having longer cerci, apex of gonopod anterad turning, not upward and differently shaped sclerotized phallic structure. The dorsoapical horns broad-based, anterad turning and almost double long than the phallic tube as well as the paraproct with tiny pointed tip. Divergences in the female genitalia are more pronounced. Dorsal excision of the anal tube with mesal lobe, this one lacking in *B. kinula* and the setose sternite IX rounded tapering, not quadrangular in lateral view.

Description. Male (in alcohol). Very dark small species with dark brown body sclerites and with brownish-testaceous wings. Forewing with moderately rounded apex very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 022 at male and 122 at female. Forewing length 7 mm of male and 9 mm of female.

Male genitalia. Protuberance of spinate area of vestitural noncellular microtrichia lacking. Segment IX long, longer ventrally than dorsally; tergite IX very short strap or bridle-like. Segment X partly fused to basal region of cerci. Cerci small, elongated. Paraproct forms a pair of heavily sclerotized, black, elongated horizontal plates with small pointed downward turning apex broadening on the ventrum. Gonopods abbreviated triangular in lateral view with anterad turning tip in lateral view. Phallic organ is rather specialised composed of a fused, short, heavily sclerotized tube with a pair of dorsoapical horns and with membranous endophallus protruding from a ventroapical circular opening.

Female genitalia. There is a closed "anal tube" formed by the complex of the variously fused tergite IX and segment X. Setose sternite IX connected by less glabrous mesal plate, this ventral surface is heavily sclerotized black, the supragenital plate functions as the upper vaginal lip. Segment X forms a closed tube; its apical dorsum shallowly excised with mesal shallow triangular lobe. The lower vaginal lip, the vulvar scale is membranous badly visible.

Etymology. Name was coined from the name of the type locality of Markhi Valley.

Remark. Two paratypes from the lower elevation, 1430–1480 m have phallic organ with less robust tube compared to the dorsoapical horns, but with pointed paraproct that could be a sign of standing variation due to an incomplete lineage sorting. A hemiplasy, deep coalescence, retention of ancestral polymorphism, when ancestral traits fail to coalesce into a common ancestral copy until deeper than previous speciation events.

***Chaetopteryx abchazica* (Martynov, 1916)**

Material examined. **Georgia**, Samtskhé-Djavakhétie, SE Tsaghveri, nice brook, 1210m, 41.791°N, 43.489°E, 23.IX.2022, leg. Gilles Vinçon (4 males, 3 females; OPC). Georgia, Mingrelia - High Svanetia, Markhi Valley, nice springs and brooklets near the sheepfold, 2080m, 43.0796°N, 42.2424°E, 29.IX.2022, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Samtskhé-Djavakhétie, above Bakuriani, before Tskhratskaro Pass, spring and brook, from 2380m, 41.693°N, 43.516°E, up to 2410m, 41.6935°N, 43.519°E, 23.IX.2022, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Kakhetie, above Khizabavra, Ninoskhevi valley, spring and brook, 1180m, 41.8852°N, 46.2625°E, 22.IX.2022, leg. Gilles Vinçon (7 males, 7 females; OPC). Georgia, Gouria, NE Bakhmaro, nice brook tributary of Sashualo River, 1990–2000m, 41.859°N, 42.357°E, 27.IX.2022, leg. Gilles Vinçon (23 males, 2 females in copula; OPC). Georgia, Kakhetie, above Khizabavra, Ninoskhevi valley, spring and brook, 770m, 41.8846°N, 46.25°E, 22.IX.2022, leg. Gilles Vinçon (14 males, 4 females; OPC). Georgia, Adjaria, below Green Lake, nice brook below the swamp, 2045m, 41.682°N, 42.5°E, 24.IX.2022, leg. Gilles Vinçon (4 males, OPC). Georgia, Mingrelia - High Svanetia, Tetnuldi ski resort, nice torrent, from 2680m, 43.0214°N, 42.9166°E, to 2800m, 43.023°N, 42.9206°E, 28.IX.2022, leg. Gilles Vinçon (1 female, OPC). Georgia, Mingrelia - High Svanetia, Markhi Valley, spring, 1480m, 43.0738°N, 42.198°E, 29.IX.2022, leg. Gilles Vinçon (1 female, OPC). Georgia, High Svanetie, above Lanteli and Ughvali, nice torrent and brook, 1730-1830m, 43.0608°N, 42.5357°E, 11.IX.2023, leg. Gilles Vinçon (14 males, 5 females; OPC).). Georgia, Kakhetia, road to Omalo, below first cascade, 1370m, 42.2224°N, 45.4764°E and below second cascade, 42.226°N, 45.4795°E, 1400m, 42.2785°N, 45.4917°E, 3.IX.2023, leg. Gilles Vinçon (1 female, OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, nice brook and spring, 2300–2350m, 41.6925°N, 43.5161°E, 6.IX.2023, leg. Gilles Vinçon (5 males, 6 females; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, nice brook, 2350m, 42.743°N, 43.1243°E, 13.IX.23, leg. Gilles Vinçon (2 males, OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, spring, 1980m, 43.0458°N, 42.0772°E, 10.IX.2023, leg. Gilles Vinçon (4 males, 6 females; OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, nice spring, 2320m, 43.0578°N, 42.0684°E, 10.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kvemo Kartli, Dashbashi cascades and Khrami River, 1400m, 41.5945°N, 44.1238°E, 6.IX.2023, leg. Gilles Vinçon (1 female, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, nice torrent, 1990–2050m, 42.6881° N, 42.6455°E, 8.IX.2023, leg. Gilles Vinçon (2 females, OPC). Georgia, Kakhetia, above Lagodekhi, 2390–2430m, 41.8766°N, 46.3797°E to 41.8767°N, 46.3807°E, 5.IX.2023, leg. Gilles Vinçon (2 males, 3 females; OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, nice brook, 2200–2250m, 41.692°N, 43.5137°E, 7.IX. 2023, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Mtskheta-Mtianeti, above Stephantsminda, brook and spring, 2200–2240m, 42.661° N, 44.6081°E, 2.IX.2023, leg. Gilles Vinçon (1 female, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, nice brook and torrent, 2120m, 42.6928°N, 42.6465°E, 8.IX.2023, leg. Gilles Vinçon (3 males, 1 female; OPC). Georgia, Gouria, above Bakhmaro, spring, 2030m, 41.8609°N, 42.3287°E, 14.IX.2023, leg. Gilles Vinçon (2 females, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, brook and spring, 2210m, 42.6948° N, 42.6432°E, 8.IX.2023, leg. Gilles Vinçon (2 females, OPC). Georgia, Mtskheta-Mtianeti, N. Pakhviji, spring and cascade, 1500–1550m, 42.4423°N, 44.7805°E, 2.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC).

***Kelgena adjarica* Oláh & Kovács, 2020**

(Map 9)

Material examined. **Georgia**, Adjaria, Goderdzi Alpine Garden, nice springs and brook, 1960m, 41.6253°N, 42.5364°E, 24.IX.2022, leg. Gilles Vinçon (26 males, OPC). Georgia, Adjaria,

below Green Lake, nice spring and brook above the swamp, 2050m, 41.6784°N, 42.499°E, 24.IX. 2022, leg. Gilles Vinçon (6 males, OPC).

Kelgena bakhmara sp. nov.

(Figures 110–112, Map 9, Photos 26–27)

Material examined. Holotype: **Georgia**, Gouria, NE Bakhmaro, nice brook tributary of Sashualo River, 1990–2000m, 41.859°N, 42.357°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratype: same as holotype (1 male, OPC).

Diagnosis. This new species has resemblance to *Kelgena bunka* Oláh & Vinçon, 2020, but differs by the lateral shape of segment IX traingular, not semicircular, paraproct without pointed tip in lateral view, the mesal U-shaped excision on the dorsal plate of the aedeagus deeper; the lateral shape of the dorsal plate is more slender; the apicomesally sclerotized processes on the aedeagus small, not large.

Description. Male (in alcohol). Pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing equal or variously shorter or slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033. Forewing length 8 mm.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX subtriangular in lateral view; dorsum very short strap or bridle-like, ventrum longer. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci large, subquadrangular. Paraproct forms a pair of heavily sclerotized elongated plates with tapering and upward arching apex. Gonopods abbreviated rounded in lateral view. Phallic organ composed of a dorsal plate heavily sclerotized, deeply U-shaped excised apically with straight and robust lateral arms and a pair of shorter apicomesally sclerotized processes with laterad directed pointed apices.

Etymology. Name was coined from the name of the type locality near Bakhmaro.

Kelgena bakurianica Oláh & Vinçon, 2020

(Map 9)

Material examined. **Georgia**, Samtskhé-Djavakhétie, above Bakuriani, before Tskhratskaro Pass, spring and brook, from 2380m, 41.693°N, 43.516°E, up to 2410m, 41.6935°N, 43.519°E, 23.IX.2022, leg. Gilles Vinçon (26 males, 4 females; OPC). Georgia, Samtskhe-Djavakhetie, above Bakuriani, nice brook and spring, 2300–2350m, 41.6925°N, 43.5161°E, 6.IX.2023, leg. Gilles Vinçon (2 males, OPC).

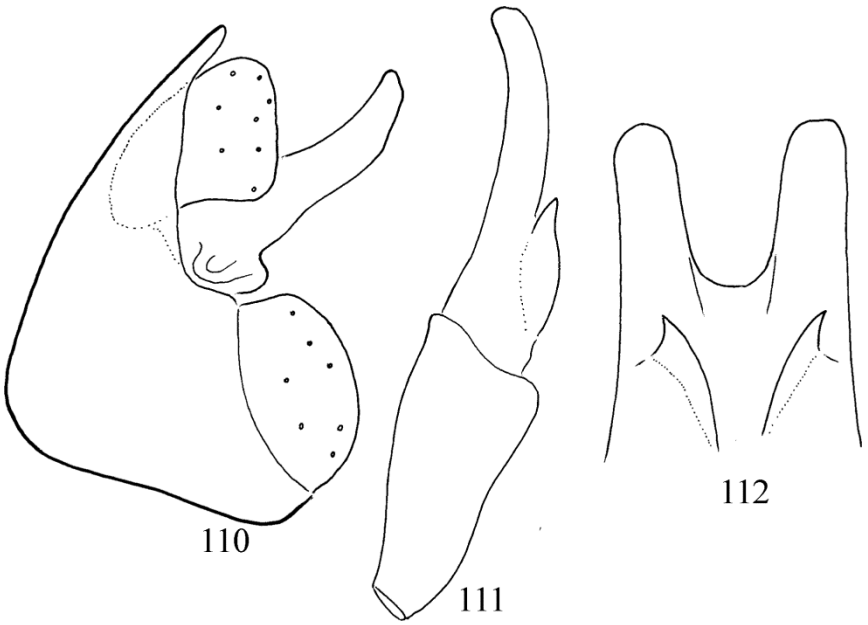
Kelgena bellae sp. nov.

(Figures 113–115, Map 9, Photos 26–27)

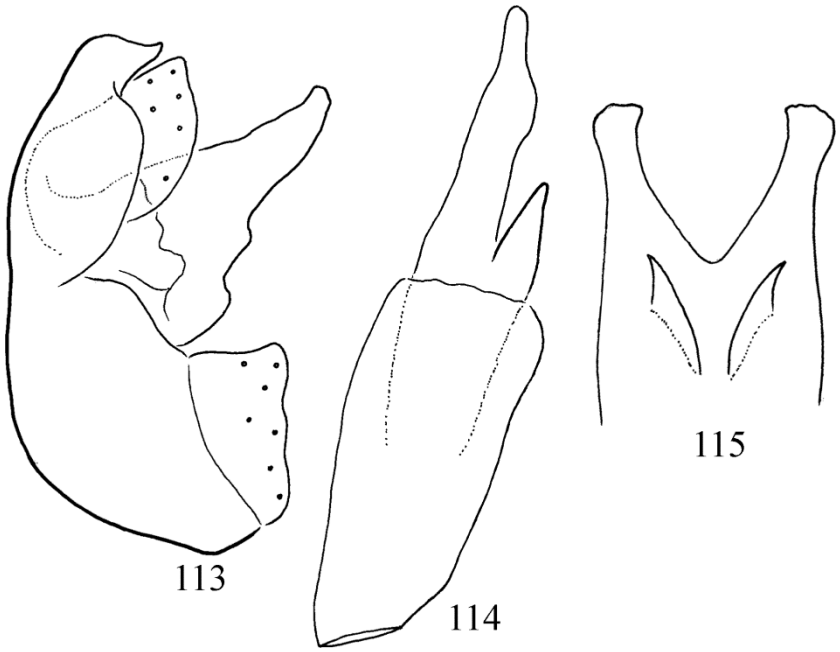
Material examined. Holotype: **Georgia**, Gouria, NE Bakhmaro, nice brook tributary of Sashualo River, 1990–2000m, 41.859°N, 42.357°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This new species is distinguished from all the known species in the genus by the unique lateral profile of the paraproct having stepwise ventral margin, very high basement as well as its ventral branch modified into upward directed plate, somehow triplicating the unique lateral lobe of segment IX and the cercus.

Description. Male (in alcohol). Pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing equal or variously shorter or slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033. Forewing length 8 mm.



Figures 110–112. *Kelgena bakhmara* sp. nov. Holotype male: 110 = genitalia in left lateral view; 111 = phallic organ in lateral view; 112 = phallic organ in ventral view.



Figures 113–115. *Kelgena bellae* sp. nov. Holotype male: 113 = genitalia in left lateral view; 114 = phallic organ in lateral view; 115 = phallic organ in ventral view.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX uniquely short, abbreviated and subdivided; dorsum and ventrum with almost

equal length; in lateral view tripartite due to the uniquely elongated tergite, a large mesal lobe and the largest ventral body. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci large, short and high. Paraproct forms a pair of heavily sclerotized elongated plates with tapering and upward arching apex as well as with stepwise ventral margin forming a high basal part. Gonopods abbreviated rounded in lateral view with dorsoapical corner. Phallic organ composed of a dorsal plate heavily sclerotized, deeply V-shaped excised apically and a pair of shorter apicomesally sclerotized processes with laterad directed pointed apices.

Etymology. We named this species in honour to Bella Japoshvili who was one of the local counterparts in Georgia participating and supporting our International Visegrad Found research project on the Caucasian aquatic insects.

***Kelgena goderdza* sp. nov.**

(Figures 116–120), Map 9, Photos 35–36)

Material examined. Holotype: **Georgia**, Adjaria, Goderdzi Alpine Garden, nice springs and brook, 1960m, 41.6253°N, 42.5364°E, 24.IX. 2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratypes: (3 females, OPC) same as of Holotype.

Diagnosis. This new species having very short and stout ventral profile of the dorsal plate of the phallic organ is most close to *K. bunka* Oláh & Vinçon, 2020, but differs by having lateral profile of the paraproct differently shaped; it is with basodorsal broadening and obliquely truncated apical ending. Moreover the apicomesally sclerotized pair of spine-like processes located far from the basement of the U-shaped excision. The lateral profile of the females' anal tube differs from all the known females of the genus.

Description. Male (in alcohol). Yellowish pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing equal or variously shorter or slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033 at male. Forewing length 7 mm.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX rounded anterad, slightly longer ventrally; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci are high subquadrangular. Paraproct forms a pair of heavily sclerotized broad based plates with obliquely truncated and slightly upward turning ending. Gonopods abbreviated subquadrangular in lateral view. Phallic organ composed of a dorsal plate heavily sclerotized, with U-formed excision shaped by straight and stout lateral processes; apicomesally sclerotized processes with laterad directed pointed apices and located far from the basement of the U-shaped excision.

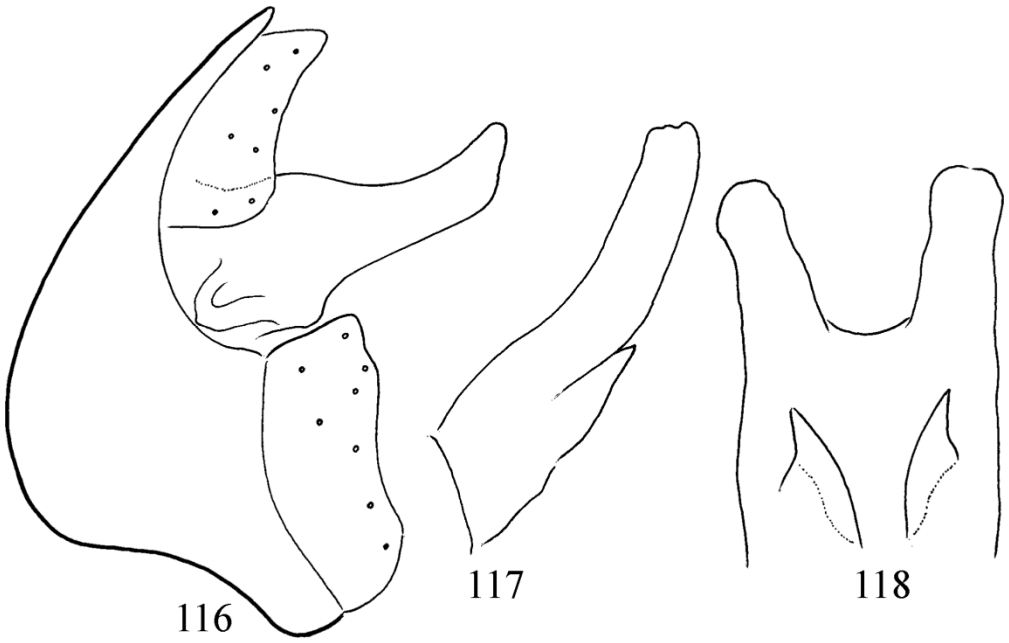
Female genitalia. There is a closed "anal tube" formed by the complex of the variously fused tergite IX and segment X. Tergite IX forms a basal concavity strapped to the partially setose sternite IX. Setose sternite IX connected by less glabrous mesal plate, this ventral surface, the supragenital plate functions like the upper vaginal lip. Segment X forms a closed tube; its apical dorsum with V-shaped excision; its apical ventrum with a small mesal excision. The lower vaginal lip, the vulvar scale is membranous, badly visible.

Etymology. Name was coined from the name of the type locality.

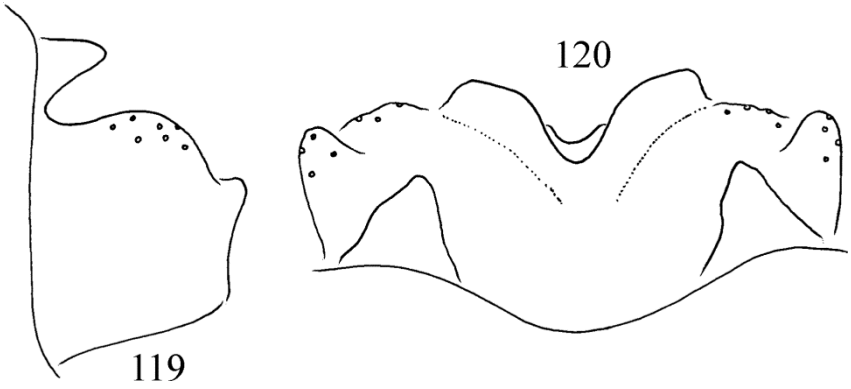
***Kelgena kelensis* (Martynov, 1926)**

(Map 10)

Material examined. **Georgia,** Mtskheta-Mtianeti, above Ukanamkhari, nice spring, 1680m, 42.325°N, 44.607°E, 19.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-



Figures 116–118. *Kelgena goderdza* sp. nov. Holotype male: 116 = genitalia in left lateral view; 117 = phallic organ in lateral view; 118 = phallic organ in ventral view.



Figures 119–120. *Kelgena goderdza* sp. nov. Allotype female: 119 = female genitalia in left lateral view; 120 = female genitalia in dorsal view.

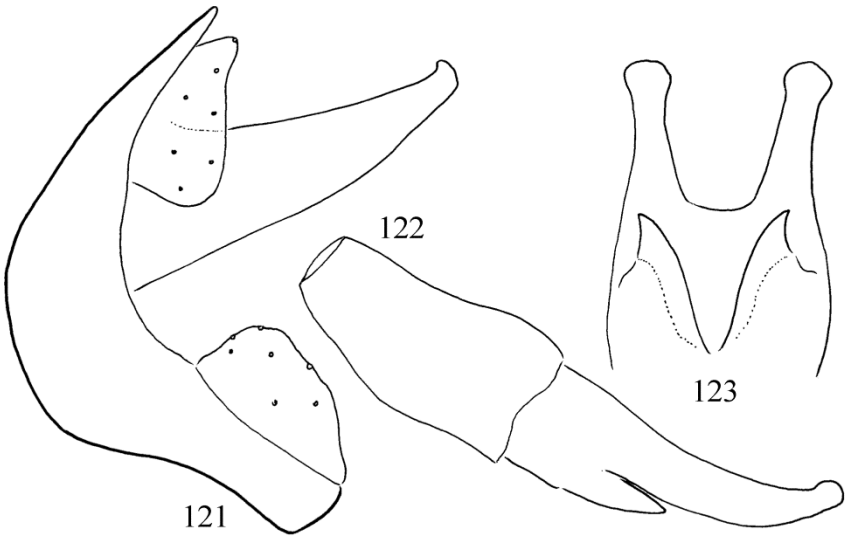
Mtianeti, above Kvemo Mleta, nice springs and cascades, 1560m, 42.4364°N, 44.4946°E, 31.VIII. 2023, leg. Gilles Vinçon (1 male, OPC).

Kelgena lapankura sp. nov.

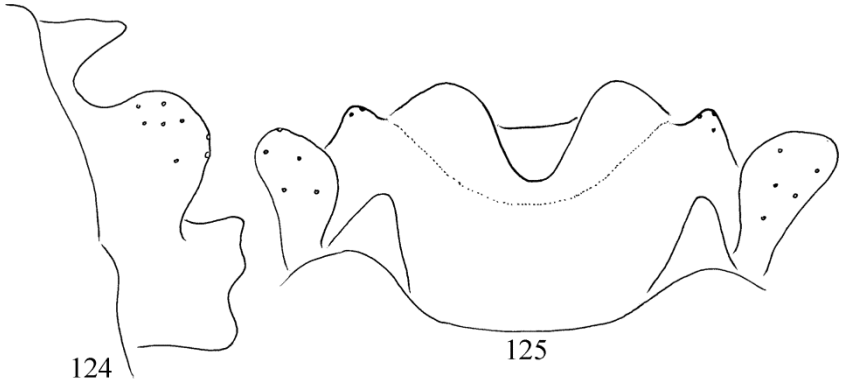
(Figures 121–125, Map 10, Photos 8–-9)

Material examined. Holotype: **Georgia**, Kakhetie, above Lapankuri, Lopota valley, torrent and nice lateral spring and brooklet, 1580m – 1620m, 42.15°N, 45.6668°E, 21.IX.2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratypes: same as holotype (4 males, 2 females; OPC).

Diagnosis. This new species is most close to *K. topora* Oláh & Vinçon, 2020 described from High Svanetia, Georgia. Differs by having paraproct longer; gonopod rounded, not subquadran



Figures 121–123. *Kelgena lapankura* sp. nov. Holotype male: 121 = genitalia in left lateral view; 122 = phallic organ in lateral view; 123 = phallic organ in ventral view.



Figures 124–125. *Kelgena lapankura* sp. nov. Allotype female: 124 = female genitalia in left lateral view; 125 = female genitalia in dorsal view.

gular in lateral view; dorsal sclerite of aedeagus not tapering apicad, rather parallel-sided; the lateral profile of the anal tube with less produce mesal lobe; dorsal view of the apicodorsal excision on anal tube wide V-shaped; there is no apicoventral mesal excision.

Description. Male (in alcohol). Yellowish pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing equal or variously shorter or slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033 at male. Forewing length 8 mm. Female colour pattern is similar to the male. Length of forewing 9 mm. Tibial spur 133. Brachyptery tendency even more pronounced than at male. Forewing shorter than the enlarged abdomen, unable to fly.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small

and short but elongated spicule-like structures. Segment IX uniquely short, abbreviated, longer ventrally; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci large short and high. Paraproct forms a pair of heavily sclerotized elongated and slender plates with tapering and upward arching apex. Gonopods abbreviated rounded in lateral view. Phallic organ composed of a dorsal plate heavily sclerotized, deeply U-shaped excised apically and a pair of shorter apicomesally sclerotized processes with laterad directed pointed apices.

Female genitalia. There is a closed "anal tube" formed by the complex of the variously fused tergite IX and segment X. Tergite IX forms a basal concavity strapped to the partially setose sternite IX. Setose sternite IX connected by less glabrous mesal plate, this ventral surface, the supragenital plate functions like the upper vaginal lip. Segment X forms a closed tube; its apical dorsum deeply excised in V-shaped excision; its apical ventrum with a deep and wide mesal excision. The lower vaginal lip, the vulvar scale is membranous, badly visible. Vaginal sclerite complex visible subquadrangular in dorsal view.

Etymology. Name was coined from the name of Lapankuri village below the type locality.

***Kelgena levani* sp. nov.**

(Figures 126–128, Map 9, Photos 26–27)

Material examined. Holotype: **Georgia**, Gouria, NE Bakhmaro, nice brook tributary of Sashualo River, 1990–2000m, 41.859°N, 42.357° E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratype: same as holotype (1 male, OPC).

Diagnosis. This new species has resemblance to *Kelgena adjarica* Oláh & Vinçon, 2020, but differs by the enlarged ventromesal lobe of the paraproct in lateral view, by the lateral shape of the heavily sclerotized dorsal plate of the aedeagus with its narrow apical region, by the V-shaped mesal excision of this dorsal plate in ventral view, not deep, not reaching the pair of apicomesally sclerotized processes of the aedeagus as well as by the more produced pair of apicomesally sclerotized processes on the aedeagus.

Description. Male (in alcohol). Yellowish pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing equal or variously shorter or slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033. Forewing length 8 mm.

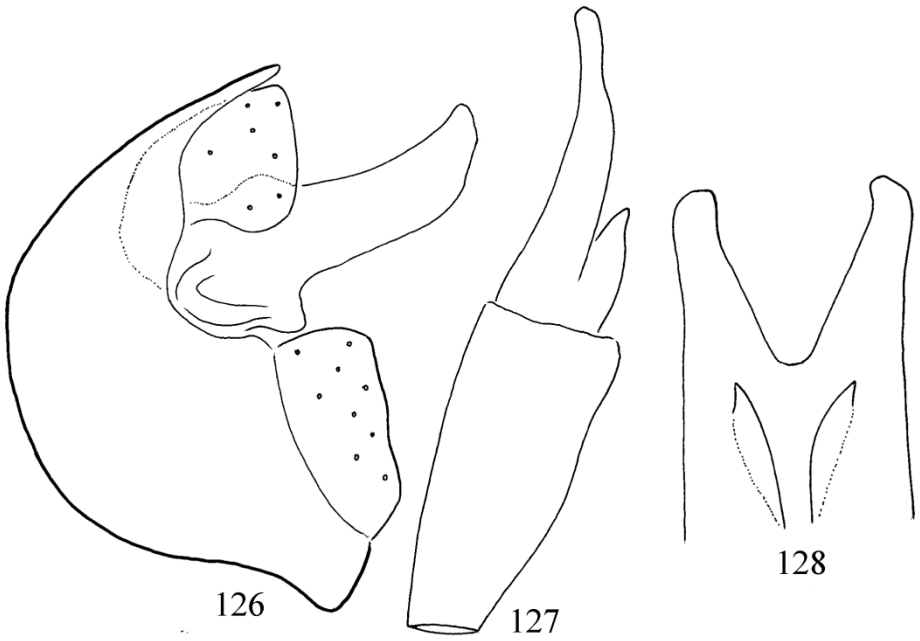
Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX long with rounded, almost semicircular anterior margin; very short strap or bridle-like dorsally, longer ventrally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci large subquadrangular. Paraproct forms a pair of heavily sclerotized elongated and slender plates rather broad and parallel-sided in lateral view with tapering and upward directed apical region. Gonopods abbreviated rounded in lateral view. Phallic organ composed of a dorsal plate heavily sclerotized, with V-shaped excision apically; its lateral profile is characterized by slender apical region; the pair of apicomesally sclerotized processes with laterad directed pointed apices.

Etymology. We named this species in honour to Levan Mumladze who was one of the local counterparts in Georgia participating and supporting our International Visegrad Found research project on the Caucasian aquatic insects.

***Kelgena macahelensis* Sipahiler, 1999**

(Map 8–9)

Material examined. **Georgia**, Adjaria, Goderdzi Alpine Garden, nice springs and brook, 1960m, 41.6253°N, 42.5364°E, 24.IX.2022, leg. Gilles Vinçon (1 male, OPC).



Figures 126–128. *Kelgena levani* sp. nov. Holotype male: 126 = genitalia in left lateral view; 127 = phallic organ in lateral view; 128 = phallic organ in ventral view.

***Kelgena samtskha* sp. nov.**

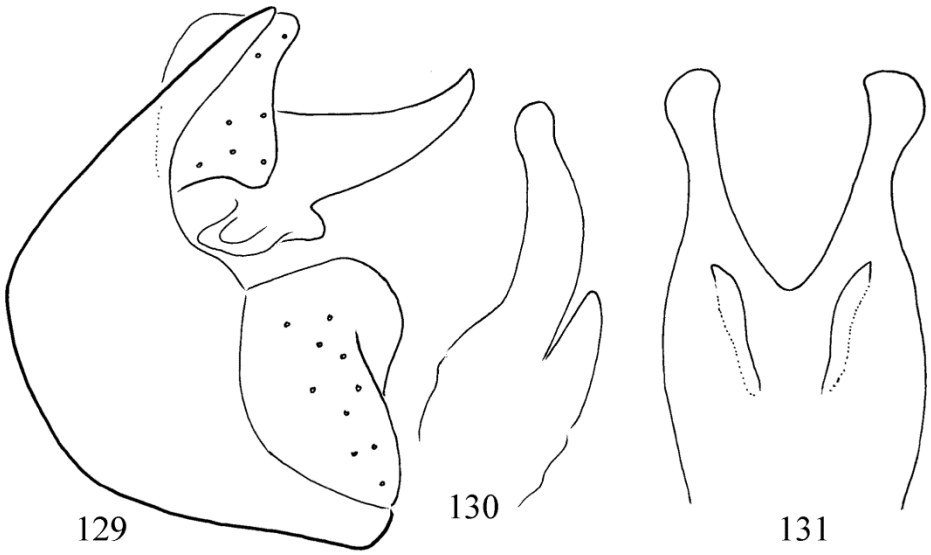
(Figures 129–131, Map 9, Photos 37–38)

Material examined. Holotype: **Georgia**, Samtskhé-Djavakhétie, Ktsia-Tabatskuri Managed Reserve, spring and brook, 2380m, 41.6555°N, 43.49°E, 23.IX.2022, leg. Gilles Vinçon (1 male, OPC). Paratype: Georgia, Shida Kartli, below Shikhan Mount, brooklet very steep up to its spring, 1730–1820m, 41.748°N, 44.3934°E to 41.7476°N, 44.3934°E, 17.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. According to the lateral profile of the paraproct this new species has resemblance to *Kelgena imeretica* Oláh & Vinçon, 2020, but differs by the more produced gonopod, by the upward arching lateral shape of the dorsal plate of the phallic organ as well as by the wide apical excision and by the capitate head of the lateral arms of the dorsal plate.

Description. Male (in alcohol). Pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033. Forewing length 7 mm.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX rounded subtriangular in lateral view; dorsum very short strap or bridle-like, ventrum slightly longer. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci large, high and subquadrangular. Paraproct forms a pair of heavily sclerotized elongated plates with tapering and upward arching apex. Gonopods with more produced, rounded setaless apicodorsal lobe in lateral view. Phallic organ composed of a dorsal plate heavily sclerotized, deeply V-shaped excised apically with capitate lateral arms and a pair of narrow apicomesally sclerotized processes with slightly laterad directed pointed apices.



Figures 129–131. *Kelgena samtskha* sp. nov. Holotype male: 129 = genitalia in left lateral view; 130 = phallic organ in lateral view; 131 = phallic organ in ventral view.

Etymology. Name was coined from the name of type locality in the Samtskhé-Djavakhétie region.

Kelgena svanetica Oláh & Vinçon, 2020

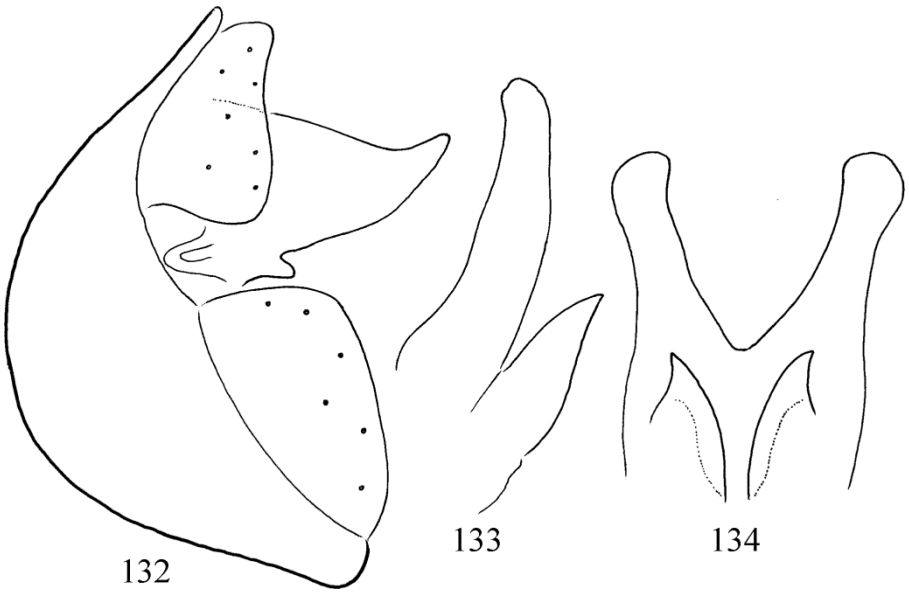
(Map 10)

Material examined. **Georgia**, Mingrelia - High Svanetia, Markhi Valley, brooklet, 1980m, 43.0796°N, 42.231°E, and spring, 2030m, 43.081°N, 42.231°E, 29.09.2022, leg. Gilles Vinçon (11 males, 6 females; OPC). Georgia, Mingrelia - High Svanetia, Markhi Valley, nice springs and brooklets near the sheepfold, 2080m, 43.0796°N, 42.2424°E, 29.IX.2022, leg. Gilles Vinçon (8 males, 2 females; OPC). Georgia, Mingrelia - High Svanetia, Markhi Valley, nice torrent, from 1430m, 43.069°N, 42.196°E, to 1480m, 43.073°N, 42.199°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia - High Svanetia, NE Koko, nice brook tributary of the Khobitskhali River, very steep, 1920m, 42.7153°N, 42.274°E, and 1880m, 42.714°N, 42.2756°E, 30.IX.2022, leg. Gilles Vinçon (2 males, 1 female; OPC). Georgia, Mingrelia - High Svanetia, Nenskra Valley, NE Kvemo Marghi, big torrent, 1130m, 43.036°N, 42.213°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia - High Svanetia, Markhi Valley, nice spring, 1480m, 43.0738°N, 42.198°E, 29.IX.2022, leg. Gilles Vinçon (5 males, OPC). Georgia, High Svanetie, N. Tobari, tributary of Lakhami River, spring, 1980m, 43.0458°N, 42.0772°E, 10.IX. 2023, leg. Gilles Vinçon (2 males, OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, spring, 1980m, 43.0458°N, 42.0772°E, 10.IX. 2023, leg. Gilles Vinçon (2 males, OPC). Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, nice torrent, 2440–2540m, 43.0669°N, 42.0623° E to 43.0713°N, 42.0657°E, 10.IX.2023, leg. Gilles Vinçon (1 male, OPC).

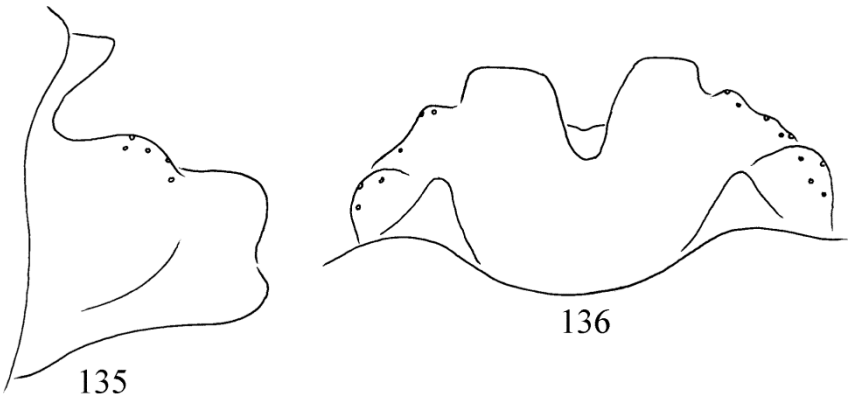
Kelgena tetnulda sp. nov.

(Figures 132–136, Map 10, Photos 33–34, 39–40)

Material examined. Holotype: **Georgia**, Mingrelia - High Svanetia, Tetnuldi ski resort, nice torrent, from 2680m, 43.0214°N, 42.9166°E, to 2800m, 43.023°N, 42.9206°E, 28.IX.2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratypes: same as holotype (3 males, 4 females; OPC). Georgia, Mingrelia - High Svanetia, Tetnuldi ski resort, brook and spring, 2890–2920m, 43.0249°N, 42.9248°E, 28.IX.2022, leg. Gilles Vinçon, (9 males, 8 females, 1 copula; OPC). Georgia,



Figures 132–134. *Kelgena tetnulda* sp. nov. Holotype male: 132 = genitalia in left lateral view; 133 = phallic organ in lateral view; 134 = phallic organ in ventral view.



Figures 135–136. *Kelgena tetnulda* sp. nov. Allotype female: 135 = female genitalia in left lateral view; 136 = female genitalia in dorsal view.

Mingrelia - High Svanetia, Tetnuldi ski resort, brook, 2680m, 43.023°N, 42.904°E, 28.IX.2022, leg. Gilles Vinçon, (15 males, 6 females; OPC). Georgia, Mingrelia - High Svanetia, Tetnuldi ski resort, spring and brook, 2470m, 43.025°N, 42.888°E, 28.IX.2022, leg. Gilles Vinçon, (11 males, 16 females; OPC). Georgia, High Svanetie, near Zagari Pass, springs, 2650–2720m, 42.9048°N, 43.0916°E, 12.IX.2023, leg. Gilles Vinçon, (2 males, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, nice brook, 2350m, 42.743°N, 43.1243°E, 13.IX.23, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, nice spring 2230m, 42.7559°N, 43.1173°E, 13.IX.23, leg. Gilles Vinçon, (11 males, 1 female; OPC). Georgia, High Svanetia, brooklet tributary of Ingouri River, 1830m, 42.9281°N, 42.9449°E, 12.IX.2023, leg. Gilles Vinçon (2 males, OPC).

Diagnosis. This new species having very short and very high lateral profile of the paraproct is most close to *K. tolaka* Oláh & Kovács, 2020, but differs by having lateral profile of the paraproct shorter and higher forming a triangular plate with the three sides almost equal. This is a unique species having the shortest paraproct. The lateral profile of the *K. tetnulda* female anal tube differs very significantly from *K. tolaka*.

Description. Male (in alcohol). Yellowish pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing equal or variously shorter or slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033 at male. Forewing length 6 mm.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX rounded anterad, slightly longer ventrally; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci are high and short. Paraproct forms a pair of heavily sclerotized very high and short triangular plates with upward turning ending. Gonopods abbreviated rounded in lateral view. Phallic organ composed of a dorsal plate heavily sclerotized, with V-formed excision shaped by stout and capitate lateral processes; apicomesally sclerotized processes with laterad directed long pointed apices.

Female genitalia. There is a closed "anal tube" formed by the complex of the variously fused tergite IX and segment X. Tergite IX forms a basal concavity strapped to the partially setose sternite IX. Setose sternite IX connected by less glabrous mesal plate, this ventral surface, the supragenital plate functions like the upper vaginal lip. Segment X forms a closed tube; its apical dorsum with deep narrow excision; its apical ventrum with a small mesal excision. The lower vaginal lip, the vulvar scale is membranous, badly visible.

Etymology. Name was coined from the name of the type locality close to the Tetnuldi peak (4858m), one of the highest summits in the central part of the High Caucasus (Svanetia).

Remark. The single male paratype specimen from Racha-Lechkumi and Lower-Svanetia, above Shkedi has remarkable divergence detectable in the lateral profile of the dorsal plate of phallic organ characterized by a small, but definite dorsoapical excision. Similarly there is variability in the lateral profile of the dorsal plate of phallic organ in the 11 male paratypes specimens from Racha-Lechkumi and Lower-Svanetia, above Shkedi. These populations exhibit some features of contact population processes at least in this character state. However their paraproct lateral profiles seem stable.

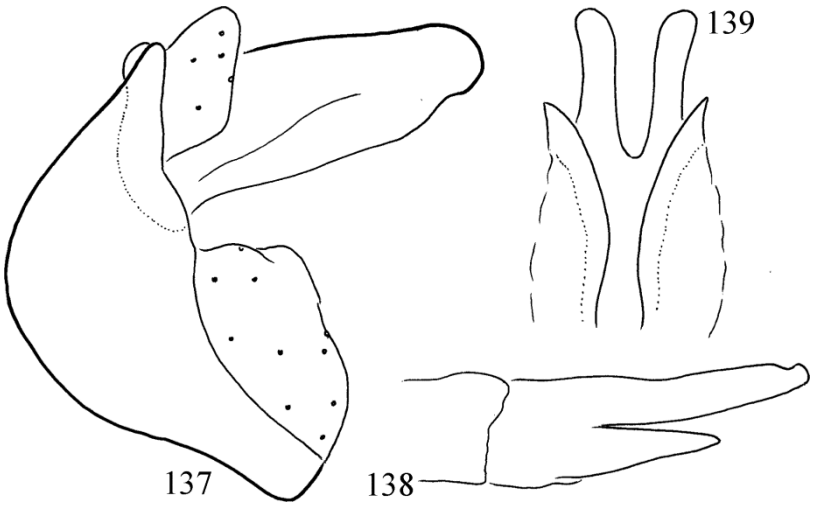
***Kelgena tobara* sp. nov.**

(Figures 137–139, Map 10, Photos 41–-42)

Material examined. Holotype: **Georgia**, High Svanetie, N. Tobari, trib. of Lakhami River, nice spring, 2320m, 43.0578N, 42.0684E, 10.IX.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This new species is a sibling of *Kelgena svanetica* Oláh & Vinçon, 2020, a recently described species widely distributed in Svanetia. The single male of *Kelgena tobara* sp. nov. was collected among its sibling's habitats, but diverted distinctly by the speciation trait that is by the character state of the lateral and ventral shapes of the dorsal plate on the phallic organ. The U-shaped excision on the dorsal plate of phallic organ is very narrow and long, not wide and short; its narrow apex short and upward turning not double long and not straight.

Description. Male (in alcohol). Yellowish pale brownish small species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with



Figures 137–139. *Kelgena tobara* sp. nov. Holotype male: 137 = genitalia in left lateral view; 138 = phallic organ in lateral view; 139 = phallic organ in ventral view.

brachyptery; forewing slightly shorter than abdomen, very long erect spine-like setae present both on the membrane and on the veins; setae on the veins usually stronger. Tibial spur number 033. Forewing length 6 mm.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII; the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX longer ventrally; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a dorsal concavity. Cerci large trapezoid. Paraproct forms a pair of heavily sclerotized horizontally elongated broad plates with blunt apex and characterizes with small subapical ventral constriction. Gonopods abbreviated subquadrangular in lateral view. Phallic organ composed of a dorsal heavily sclerotized plate very deeply and narrowly excised apically forming U-shaped biarmed structure, and of a pair of shorter apically sclerotized processes with laterad directed pointed apices; the dorsal plate of the phallic organ excised dorsoapicad forming an upward produced rounded apical head in lateral view.

Etymology. Name was coined from the name of the type locality, a noun in apposition.

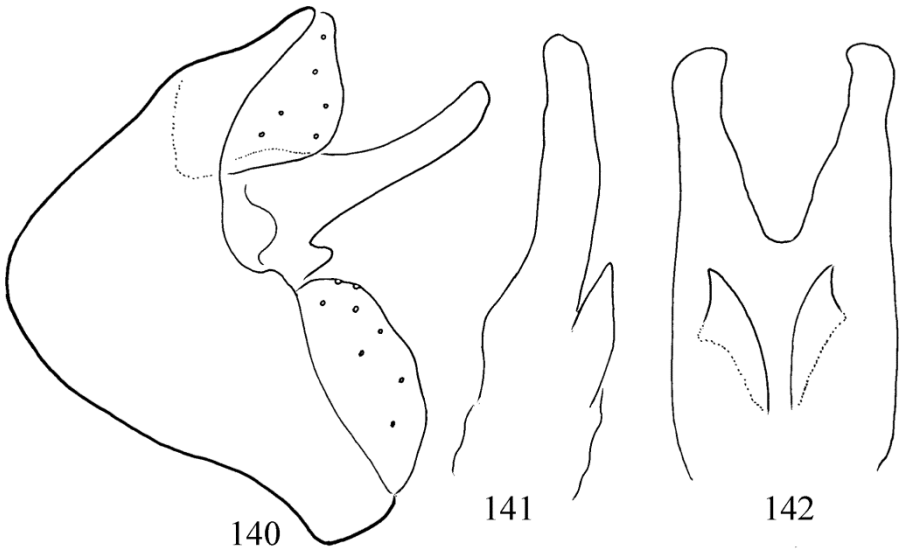
***Kelgena vekona* sp. nov.**

(Figures 140–144, Map 9, Photos 43–44)

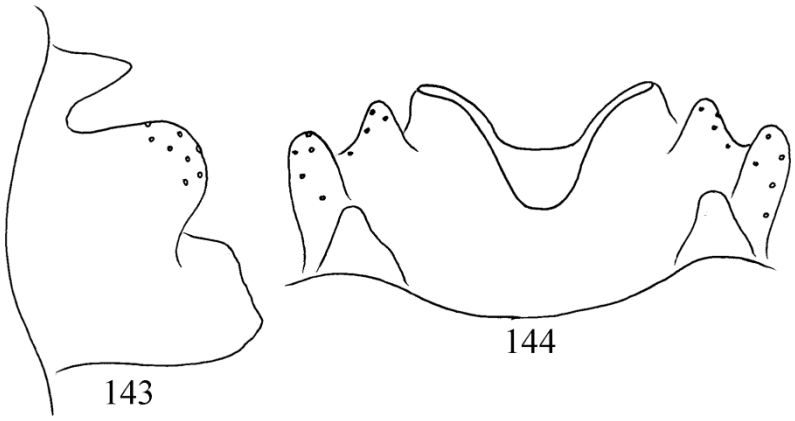
Material examined. Holotype: **Georgia**, Adjaria, below Green Lake, nice spring and brook above the swamp, 2050m, 41.6784°N, 42.499°E, 24.IX.2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC).

Diagnosis. This new species having very slim, digitiform lateral profile of the paraproct is most close to *K. parhuza* Oláh & Vinçon, 2020, described from Mingrelia and High Svanetia, but differs by having lateral profile of the paraproct even more digitiform with different basal pattern, the dorsal plate of the phallic organ straight not arching in lateral view and the apicomesally sclerotized processes of the phallic organ double sized. The divergence of the female anal tube more pronounced both in the dorsal and lateral views.

Description. Male (in alcohol). Yellowish pale brownish medium-sized species with pale testaceous body appendages and with pale yellowish-testaceous wings. Forewing with rounded apex and with tendency to brachyptery; forewing equal or variously shorter or slightly longer than abdomen, very long erect spine-like setae present both on the membrane and on the



Figures 140–142. *Kelgena vekona* sp. nov. Holotype male: 140 = genitalia in left lateral view; 141 = phallic organ in lateral view; 142 = phallic organ in ventral view.



Figures 143–144. *Kelgena vekona* sp. nov. Allotype female: 143 = female genitalia in left lateral view; 144 = female genitalia in dorsal view.

veins; setae on the veins usually stronger. Tibial spur number 033 at male. Forewing length 6 mm.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia very enlarged, highly inflated mesad, like a ball with lateroventral wings on tergite VIII, the lateroventral wings are more densely covered with small and short but elongated spicule-like structures. Segment IX rounded triangular anterad, slightly longer ventrally; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci are subtriangular. Paraproct forms a pair of heavily sclerotized very low digitiform processes in lateral view. Gonopods abbreviated rounded in lateral view. Phallic organ composed of a dorsal plate heavily sclerotized almost straight in lateral view, with V-formed excision shaped by slender lateral processes with mesad turning apex apicomesally sclerotized processes long with laterad directed pointed apices.

Female genitalia. There is a closed “anal tube” formed by the complex of the variously fused

tergite IX and segment X. Tergite IX forms a basal concavity strapped to the partially setose sternite IX. Setose sternite IX connected by less glabrous mesal plate, this ventral surface, the supragenital plate functions like the upper vaginal lip. Segment X forms a closed tube; both the dorsal and ventral margins with rounded and wide excisions. The lower vaginal lip, the vulvar scale is membranous, badly visible.

Etymology. *vekona*, coined from "vékony" thin in Hungarian, refers to the lateral profile of the paraproct.

***Rizeiella keda* sp. nov.**

(Figures 145–151, Map 11, Photos 21–22)

Material examined. Holotype: **Georgia**, Adjaria, above Keda, above Namonastrevi, brook and nice spring, 1720m, 41.555°N, 42.0853°E, 16.IX. 2023, leg. Gilles Vinçon (1 male, OPC). Allotype: Georgia, Adjaria, above Keda, above Namonastrevi, brook and spring, 1730–1770m, 41.551°N, 42.0919°E, 16.IX.2023, leg. Gilles Vinçon (1 female, OPC).

Diagnosis. This new species is most close to *R. tbetia* sp. nov., but distinguished by the following character combination: by the different, more slender caudal profile of the terminal mesal process of the gonopod, the possible titillating structure; the reduced, almost indiscernible filament-like paramere; the more pointed lateral apices of the sclerotized processes of the aedeagus.

Description. Male (in alcohol). Yellowish pale brownish large-sized species with pale testaceous body appendages and with yellowish-testaceous wings. Forewing with less rounded apices, long erect spine-like setae present on the membrane and on the veins; there is no pubescence present on the forewing membrane, not discernible even between costal and subcostal veins. Tibial spur number is 033. Forewing length is 13 mm.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia on tergite VIII present, not subdivided by median bare line. Segment IX longer ventrally; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci sclerotized, elongated in lateral view. Paraproct with rounded apical margin in lateral view and partially fused to cerci but the vestigial ventral branch of the paraproct discernible as a small basoventral loop-formation. Gonopods with bilobed apex with slender mesal terminal process. Phallic organ is of typically *Rizeiella* type with a single strongly sclerotized dorsal pair of aedeagal processes with laterad pointed apex. The paramere is reduced, just visible by careful search. However the stability of these less sclerotized parameres of the genus is not examined yet.

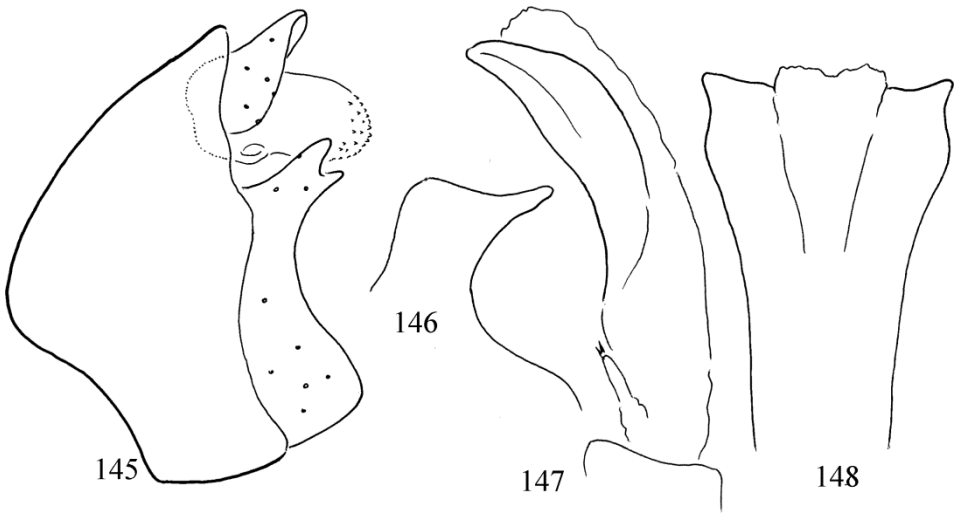
Female genitalia. There is a closed "anal tube" formed by the complex of the variously fused tergite IX and segment X. The ventral lobe of the tube is shorter than the dorsal in lateral view; the dorsum shallowly and widely excised. Setose sternite IX connected by glabrous mesal plate, this ventral surface, the supragenital plate functions like the upper vaginal lip. The lower vaginal lip, the vulvar scale is membranous badly visible. Vaginal sclerite complex visible subquadrangular with apicolateral lobes in dorsal view.

Etymology. Name was coined from the name of type locality, nearby Keda in Adjaria.

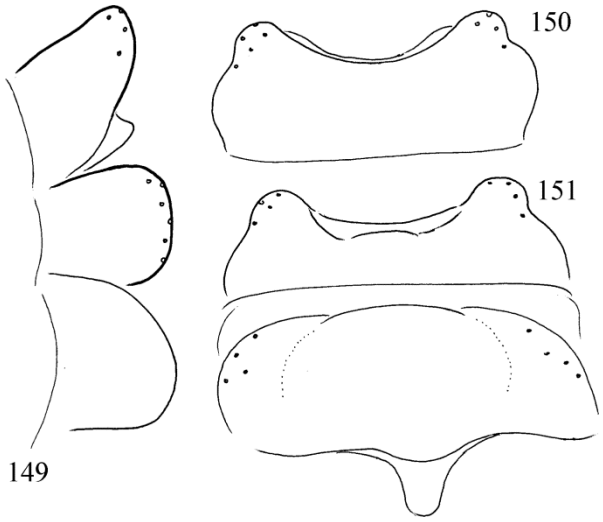
***Rizeiella sashuala* sp. nov.**

(Figures 152–159, Map 11, Photos 1–2, 26–27)

Material examined. Holotype: **Georgia**, Gouria, NE Bakhmaro, brook, tributary of Sashuala River, 1990–2000m, 41.859°N, 42.357° E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratypes: same as holotype (4 males, 3 females; OPC). Georgia, Gouria, SW Chkhakoura, brook tributary of Kalasha River, 1740m, 41.882°N, 42.358°E, 27.IX.2022, leg. Gilles Vinçon (2 males, 2 females; OPC). Georgia, Gouria, SW Chkhakoura, spring tributary of Kalasha River, 1740m, 41.881°N, 42.3567°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, road to Bakhmaro, brook and spring, 2030m, 41.8586°N, 42.3564°E, 14.IX.2023, leg. Gilles Vinçon (8 males, 3 females; OPC).



Figures 145–148. *Rizeiella keda* sp. nov. Holotype male: 145 = genitalia in left lateral view; 146 = left gonopod in ventral view; 147 = phallic organ in lateral view; 148 = phallic organ in ventral view.

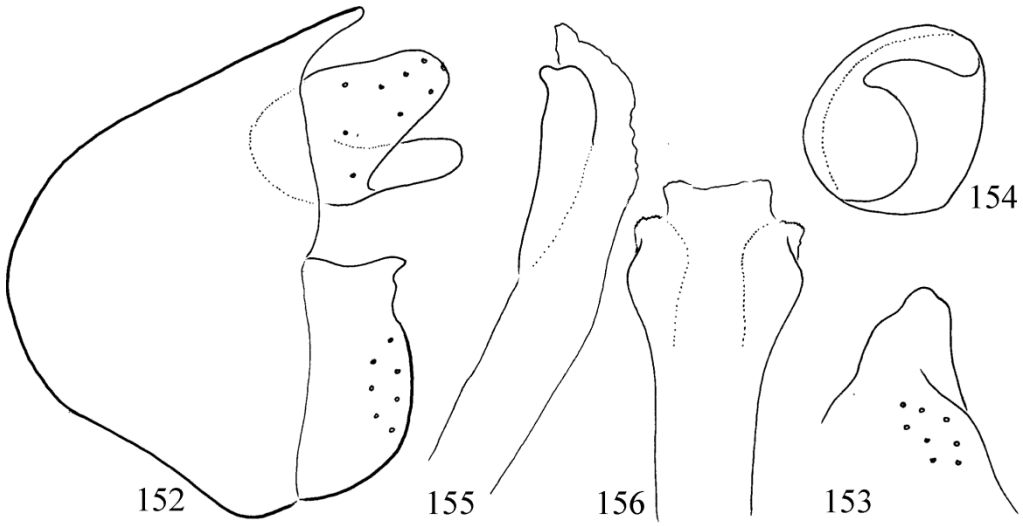


Figures 149–151. *Rizeiella keda* sp. nov. Allotype female: 149 = female genitalia in left lateral view; 150 = female genitalia in dorsal view; 151 = female genitalia in ventral view.

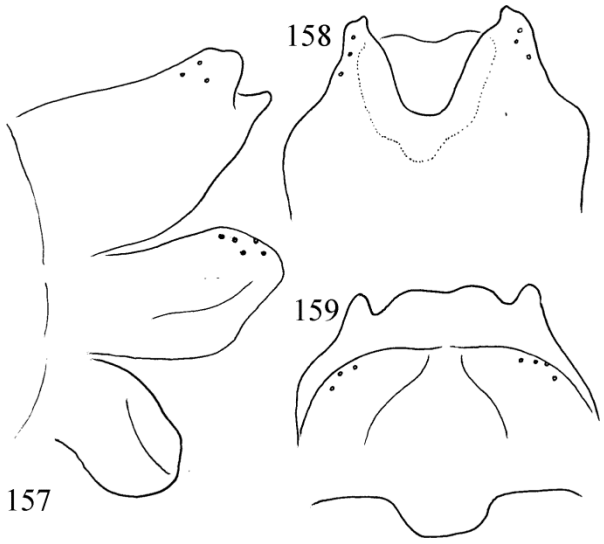
Diagnosis. This new species with very vestigial paramere has resemblance to *Rizeiella camiliensis* Sipahiler, 1999 described from Northeast Turkey, Karchal Mountains, but differs by the convex, not concave lateral profile of the gonopod; the upward, not mesad directed tip of the gonopod in apicoventral view; by the laterad, not mesad directed tip of the paraproct in apical view as well as by the completely different lateral and ventral shape of the heavily sclerotized apicodorsal pair of sclerites on the aedeagus. It differs also by the more vestigial paramere discernible only on the holotype as a just visible short membranous process without even any reduced setae.

Description. Male and female (in alcohol). Yellowish pale brownish medium-sized species with pale testaceous body appendages and with yellowish-testaceous wings. Forewing with less rounded apices, very long erect spine-like setae present on the membrane and on the veins; around every second setae on the veins stronger; there is some few pubescence present between costal and subcostal veins. Tibial spur number is 033 at male and 133 at female. Forewing length is 9 mm both at male and female with variation.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia on tergite VIII present and enlarged. Segment IX longer middle; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci heavily and entirely sclerotized, subtriangular in lateral and almost circular in caudal view. Paraproct finger-like in lateral view and completely fused to the equally strongly sclerotized cerci forming together a circular cup-like structure with the caudad directed process of vestigial ventral branch of the paraproct. Gonopod convex apicad with a short process apicodorsad. Phallic



Figures 152–156. *Rizeiella sashuala* sp. nov. Holotype male: 152 = genitalia in left lateral view; 153 = left gonopod in ventral view; 154 = left cercus and paraproct in caudal view; 155 = phallic organ in lateral view; 156 = phallic organ in ventral view.



Figures 157–159. *Rizeiella sashuala* sp. nov. Allotype female: 157 = female genitalia in left lateral view; 158 = female genitalia in dorsal view; 159 = female genitalia in ventral view.

organ is of *Rizeiella* type with a single strongly sclerotized pair of aedeagal apicodorsal processes with pegged apex and specific lateral and ventral views.

Female genitalia. There is a closed "anal tube" formed by the complex of the variously fused tergite IX and segment X. The dorsal and ventral lobes of the tube is almost with equal length in lateral view; the dorsum deeply excised and ventrum just excised apicomesad. Setose sternite IX connected by less glabrous mesal plate, this ventral surface, the supragenital plate functions like the upper vaginal lip. The lower vaginal lip, the vulvar scale is membranous badly visible. Vaginal sclerite complex visible subquadrangular in dorsal view.

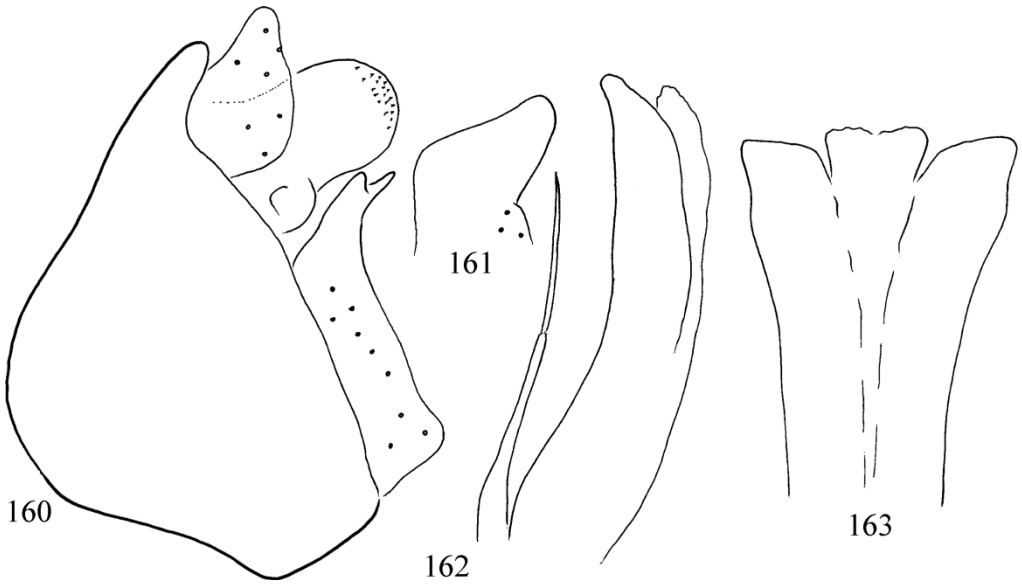
Etymology. Name was coined from the name of type locality, a tributary of Sashuala River.

Remarks. There are inter- and intra-population differences in the head shapes of paraproct and aedeagal apicodorsal processes as well as in the apical ending of the female anal tube. Studies on more samples from more populations could indicate and confirm the real taxonomic status of the different specimens whether they represent pure or contact populations with intermediate hybrids.

***Rizeiella tbetia* sp. nov.**

(Figures 160–163, Map 11, Photo 45)

Material examined. Holotype: **Georgia**, Adjaria, Tbeti, nice spring and brook, 1190m, 41.568° N, 42.1526°E, 24.IX.2022, leg. Gilles Vinçon (1



Figures 160–163. *Rizeiella tbetia* sp. nov. Holotype male: 160 = genitalia in left lateral view; 161 = left gonopod in ventral view; 162 = phallic organ in lateral view; 163 = phallic organ in ventral view.

male, OPC). Paratype: same as holotype (1 male, OPC).

Diagnosis. This new species is most close *R. keda* sp. nov. and to *R. ereda* Oláh & Vinçon, 2020, but distinguished from both by the following character combination: by the longer and rounded paraproct; by the different, more robust caudal profile of the gonopods; by the reduced filament-like paramere; by the less pointed lateral apices of the sclerotized processes of the aedeagus.

Description. Male (in alcohol). Yellowish pale brownish large-sized species with pale testaceous body appendages and with yellowish-testaceous wings. Forewing with less rounded apices, long erect spine-like setae present on the membrane and on the veins; there is no pubescence present on the forewing membrane, not discernible even between costal and subcostal veins. Tibial spur number is 033. Forewing length is 13 mm.

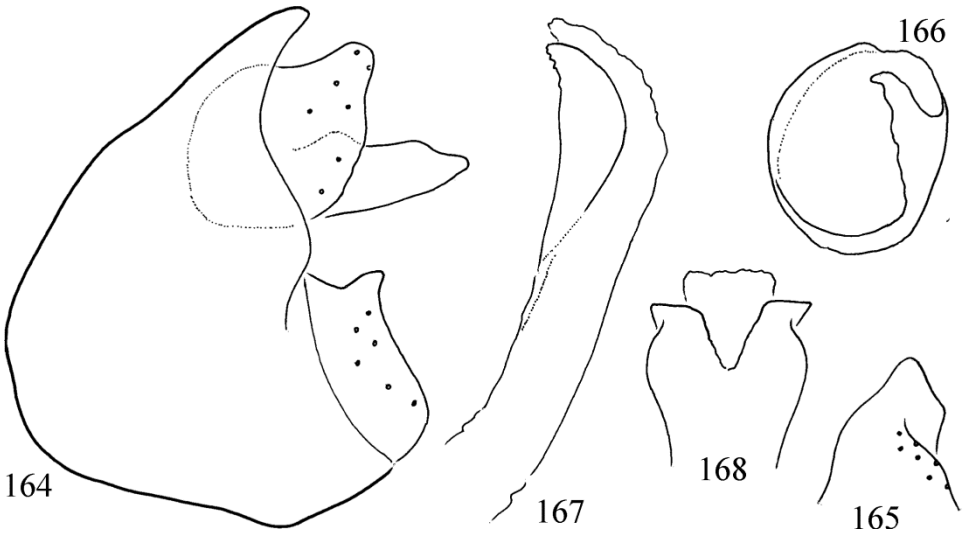
Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia on tergite VIII present, not subdivided by median bare line. Segment IX longer ventrally; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci sclerotized, subquadrangular in lateral view. Paraproct quadrangular with rounded apical margin in lateral view and partially fused to cerci but the ventral branch of the paraproct produced downward. Gonopods with bilobed apex. Phallic organ of typically *Rizeiella* type with a single strongly sclerotized dorsal pair of aedeagal processes with laterad pointed apex. The paramere reduced to a less sclerotized two partite filament, easily detachable. A single left side filament in holotype and both detached in paratype.

Etymology. Name was coined from the name of type locality, nearby Tbeti in Adjaria.

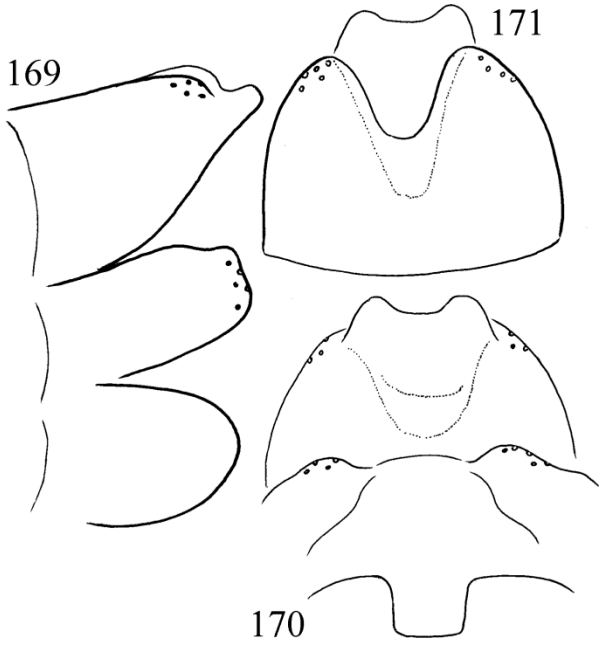
***Rizeiella varjana* sp. nov.**

(Figures 164–171, Map 11, Photo 10)

Material examined. Holotype: **Georgia**, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740 m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (1 male, OPC). Allotype: same as holotype (1 female, OPC). Paratypes: same as holotype (2 males, 1 female; OPC).



Figures 164–168. *Rizeiella varjana* sp. nov. Holotype male: 164 = genitalia in left lateral view; 165 = left gonopod in ventral view 166 = left cercus and paraproct in caudal view; 167 = phallic organ in lateral view; 168 = phallic organ in ventral view.



Figures 169–171. *Rizeiella varjana* sp. nov. Allotype female: 169 = female genitalia in left lateral view; 170 = female genitalia in dorsal view; 171 = female genitalia in ventral view.

Diagnosis. This new species without paramere has resemblance to *Rizeiella sashuala* sp. nov, but differs by the tapering paraproct in lateral view by the longer truncated head of the gonopods in perpendicular view. It differs also by both the lateral and dorsal patterns of the head of the strongly sclerotized pair of the aedeagal apico-dorsal processes. The ventral lobe on the anal tube of the female is longer than the dorsal lobe in lateral view, not equal. The dorsal profile of segment IX is entirely different.

Description. Male and female (in alcohol). Yellowish pale brownish medium-sized species with pale testaceous body appendages and with yellowish-testaceous wings. Forewing with less rounded apices, very long erect spine-like setae present on the membrane and on the veins; around every second setae on the veins stronger; there is some few pubescence present between costal and subcostal veins. Tibial spur number is 033 at male and 133 at female. Forewing length is 8 mm both at male and female with variation.

Male genitalia. Protuberance of spinulose area of vestitural noncellular microtrichia on tergite VIII present and enlarged. Segment IX longer middle; very short strap or bridle-like dorsally. Segment X partly fused to basal region of cerci forming together a short dorsal concavity. Cerci heavily and entirely sclerotized, subtriangular in lateral and almost circular in caudal view. Paraproct finger-like with tapering apex in lateral view and completely fused to the equally strongly sclerotized cerci forming together a circular cup-like structure with the caudad directed process of

vestigial ventral branch of the paraproct. Gonopod slightly concave apicad with a short process apicodorsad. Phallic organ is of *Rizeiella* type with a single strongly sclerotized pair of aedeagal apicodorsal processes with pegged apex and specific lateral and ventral views.

Female genitalia. There is a closed "anal tube" formed by the complex of the variously fused tergite IX and segment X. The ventral lobe of the tube is longer than the dorsal in lateral view; the dorsum deeply excised and ventrum just excised apicomesad. Setose sternite IX connected by less glabrous mesal plate, this ventral surface, the supragenital plate functions like the upper vaginal lip. The lower vaginal lip, the vulvar scale is membranous badly visible. Vaginal sclerite complex visible subquadrangular with apicolateral lobes in dorsal view.

Etymology. Name was coined from the name of type locality, above Varjanauli, a noun in apposition.

Stenophylacini Schmid, 1955

Halesus caucasicus Oláh, 1985

Material examined. **Georgia**, Samtskhé-Djavakhétie, Ktsia-Tabatskuri Managed Reserve, spring and brook, 2380m, 41.6555°N, 43.49°E, 23.IX.2022, leg. Gilles Vinçon (14 males, 5 females; OPC).

Remarks. This representative sample of *Halesus caucasicus* Oláh, 1985 made it possible to re-examine the stability of the lateral profiles of the paraproct and the paramere as well as the dorsal profile of the aedeagus. All these character states and even the most pronounced divergence integrated in the particular development of the endotheca producing two distinct lobes covering entirely the aedeagal sclerites were very stable without detectable variations in all of the 14 males. Our previous findings that the paraproct, paramere and aedeagus shape divergences are stable on the examined entire distributional area: Armenia, Azerbaijan, Georgia, and Pakistan are re-confirmed.

Stenophylax clavatus (Martynov, 1916)

Material examined. **Georgia**, Kakhetie, above Lapankuri, Lopota valley, nice small lateral river, 660m, 42.078°N, 45.611°E, 21.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Mingrelia - High Svanetia, Nenskra Valley, NE Kvemo Marghi, big torrent, 1130m, 43.036°N, 42.213°E, 29.IX.2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Gouria, road to Bakhmaro, nice brook, 850m, 41.9134°N, 42.3913°E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, meeting of 3 nice brooks, 2235m, 42.7581°N, 43.115°E, 13.IX.23, leg. Gilles Vinçon (1 male, OPC). Georgia, Mtskheta-Mtianeti, above Juta, above 5 seasons guest house, springs, 2340m, 42.5727°N, 44.7565°E, 1.IX.2023, leg. Gilles Vinçon (1 male, 1 female; OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, spring 1380m, 42.6341°N, 42.5821°E, 7.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Kakhetia, above Khizabavra, Ninoskhevi valley, spring and brook, 1240m, 41.8853°N, 46.2652°E and 41.8851°N, 46.2682°E, 1350m, 4.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC). Georgia, Kakhetia, above Lagodekhi, Shromis-Khevi valley, brook and spring, 1500m, 41.8525°N, 46.3394°E, 5.IX.2023, leg. Gilles Vinçon (1 male, OPC). Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, nice spring 2230m, 42.7559°N, 43.1173°E, 13.IX.23, leg. Gilles Vinçon (1 male, OPC).

Stenophylax solotarewi species complex

(Map 12)

This unique species complex was established recently by Oláh *et al*. (2020). Species in the complex has extremely short segment IX like *S. fissus*, *S. malaspinus*, *S. malatestus*, but characterized additionally by the speciation trait that is the very peculiarly cut, truncated and mesally lobulated or fingered head of the gonopod. This character state of the apical ending of the gonopod is best visible in caudal view; however it is very difficult to draw its exact three dimensional structures. The mesal corner more finger-like digiti-

form and variously connected to the lateral more lobulated corner by differently shaped concavity. Here we present just the caudal profile of the gonopod head without this three dimensional concavity. The six known species are distinguishable by this caudal view of the gonopod head (Figures 176–181), but the character combination of the caudal view of cerci and the paraproct as well as the lateral view of the upward directed curvature of the phallic organ may help to delineate among species.

Stenophylax almat sp. nov.

(Figures 172–176, Map 12, Photos 46–47)

Material examined. Holotype: **Georgia**, Kakhetia, above Almati, nice spring, 1450m, 42.0994° N, 45.7387°E, 4.IX.2023, leg. Gilles Vinçon (1 male, OPC). Paratypes: same as holotype (3 males, OPC). Georgia, Kakhetia, above Lagodekhi, Shromis-Khevi valley, brook, 1860m, 41.8634N, 46.3418E, 5.IX.2023, leg. Gilles Vinçon (2 females, OPC).

Diagnosis. Comparison with the sibling species is based on the phallic organ and on the periphallic organs drawn mostly in caudal view. In lateral view the gonopod head tapering triangular. In caudal view cerci band-like and mesad curving; paraprocts without triangular lateral process, but with digitate apical region and broadening basad; gonopod with rounded lobulated lateral and digitate mesal processes. Aedeagus is obtuse-angled almost parallel-sided along its upward curving apical half in lateral view. This character combination delineates this new species from the siblings of the *Stenophylax solotarewi* species complex.

Description (In alcohol). Small-sized light faded animal with brownish, stramineous body and wing colour. Its forewing length is 8 mm with light-spotted marbled membrane.

Male genitalia.Segment IX extremely short and high, parallel-sided with gradual narrowing dorsad resulted in a very short band-like dorsum; its ventrum discernible as fully fused to gonopod. Cerci elongated dorsad in lateral view; narrow band-like turning mesad in caudal view. Paraproct thin, apical half of the dorsal branch regular tapering digitate; basal region double broad without pronounced lateral triangle; ventral branch of the paraproct triangular horizontally and produced laterad. Gonopods almost vertically directed, enlarged shorter than segment IX, with tapering triangular apex in lateral view; bi-processed in caudal view, lateral process rounded lobulated, mesal process almost straight digitate. Phallic organ composed of the obtuse-angled upward directed aedeagus and spine-like paramere with vertically flat, plate-like, broad-based basal half; upward-curving apical half of the aedeagus almost parallel-sided in ventral view.

Etymology. Name was coined from the name of type locality, a noun in apposition.

Stenophylax caspicus (Schmid, 1959)

(Figure 177, Map 12)

Micropterna caspica Schmid, 1959:784–785. Described from the Northern coast of Iran (Holotype male: Ardehjan, near the western corner of the Iranian Caspian cost. Allotype female: Khozlok, near the eastern corner of the Iranian Caspian cost).

Micropterna caspica Schmid, 1959: Malicky 2005: 578. Based on Grigorenko suggestion (i. l.) synonymised with *Micropterna solotarewi* Martynov, 1913 without any documentation or explanations.

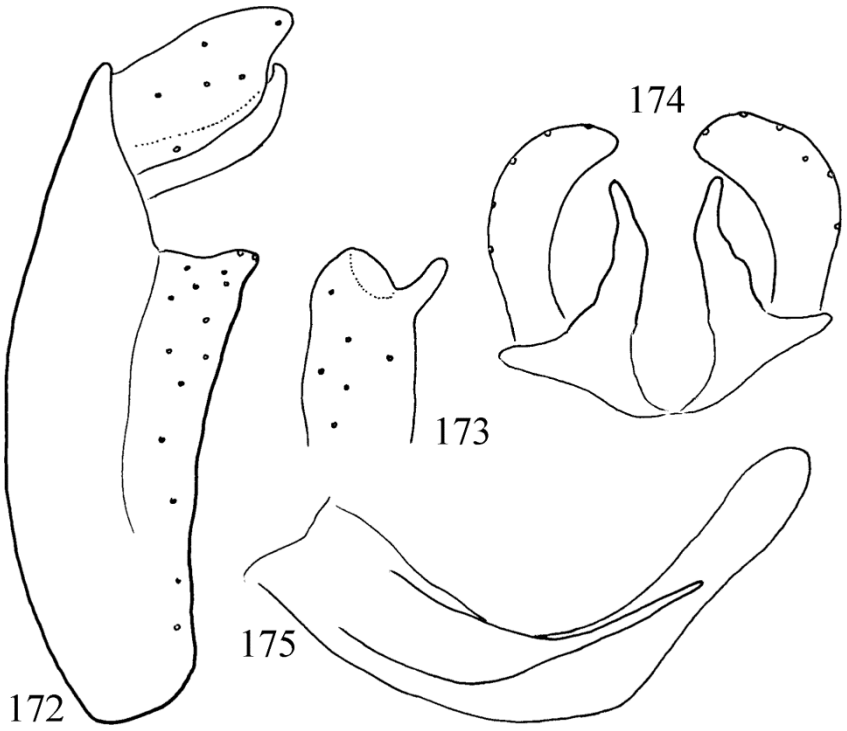
Stenophylax caspicus (Schmid, 1959): Oláh *et al.* 2020:132. stat. restit.

Stenophylax kulbak sp. nov.

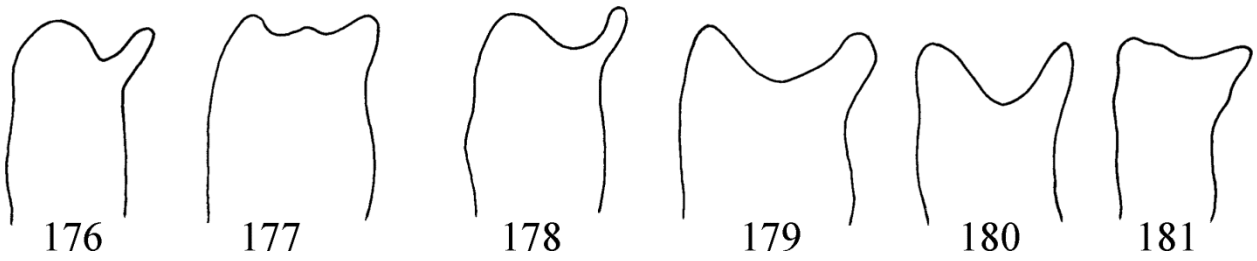
(Figures 178, 182–185, Map 12, Photo 7)

Material examined. Holotype: **Georgia**, Racha -Lechkumi and Lower-Svanetie, above Kulbaki, nice spring, 1540m, 42.6311°N, 42.5764°E, 7.IX. 2023, leg. Gilles Vinçon (1 male, OPC). Paratypes (6 males, 4 females; OPC) same as of the Holotype.

Diagnosis. In lateral view the gonopod head tapering triangular. In caudal view cerci band-like with mesad curving apical region; paraprocts with triangular lateral process, but with digitate apical



Figures 172–175. *Stenophylax almat* sp. nov. Holotype male: 172 = genitalia in left lateral view; 173 = left gonopod in ventral view; 174 = cerci and paraproct in caudal view; 175 = phallic organ in lateral view.



Figures 176-181. Ventral view of left gonopod in the *Stenophylax solotarewi* species complex: 176 = *Stenophylax almat* sp. nov.; 177 = *Stenophylax caspicus* (Schmid, 1959); 178 = *Stenophylax kulbak* sp. nov.; 179 = *Stenophylax lasareus* (Oláh, 1985); 180 = *Stenophylax solotarewi* (Martynov, 1913); 181 = *Stenophylax ujjas* Oláh & Kovács 2020.

region and broadening basad; gonopod with rounded lobulated lateral and laterad curving digitate mesal processes. Aedeagus is right-angled almost parallel-sided along its upward curving apical half in lateral view. This character combination delineates this new species from the siblings of the *Stenophylax solotarewi* species complex.

Description. Small-sized light faded animal with brownish, stramineous body and wing colour. Its forewing length is 8 mm with light-spotted marbled membrane.

Male genitalia. Segment IX extremely short and high, parallel-sided with gradual narrowing dorsad resulted in a very short band-like dorsum; its ventrum discernible as fully fused to gonopod. Cerci elongated in lateral view; narrow band-like its apical region turning mesad in caudal view. Paraproct thin, apical half of the dorsal branch regular tapering digitate, basal region double broad with pronounced lateral triangle; ventral

branch of the paraproct triangular horizontally and produced laterad. Gonopods almost vertically directed, enlarged its dorsal region longer than segment IX, with tapering triangular apex in lateral view; bi-processed in caudal view, lateral process rounded lobulated, mesal process laterad curving digitate. Phallic organ composed of the almost right-angled upward directed aedeagus and spine-like paramere with vertically flat, plate-like, broad-based basal half; upward-curving apical half of the aedeagus almost parallel-sided in ventral view.

Etymology. Name was coined from the name of type locality, a noun in apposition.

***Stenophylax lasareus* (Oláh, 1985)**

(Figure 179, Map 12)

Micropterna lasarea Oláh, 1985: 147. Northern slope of the Caucasus, low altitude, the very foothill at Goryatskiy Klyuts, Krasnodar District.

Micropterna lasarea Oláh, 1985: Malicky 2005:578. Based on Grigorenko suggestion (i.l.) synonymised with *Micropterna solotarewi* Martynov, 1913 without any documentation or explanations.

Stenophylax lasareus (Oláh, 1959): Oláh *et al.* 2020:132. stat. restit.

***Stenophylax solotarewi* (Martynov, 1913)**

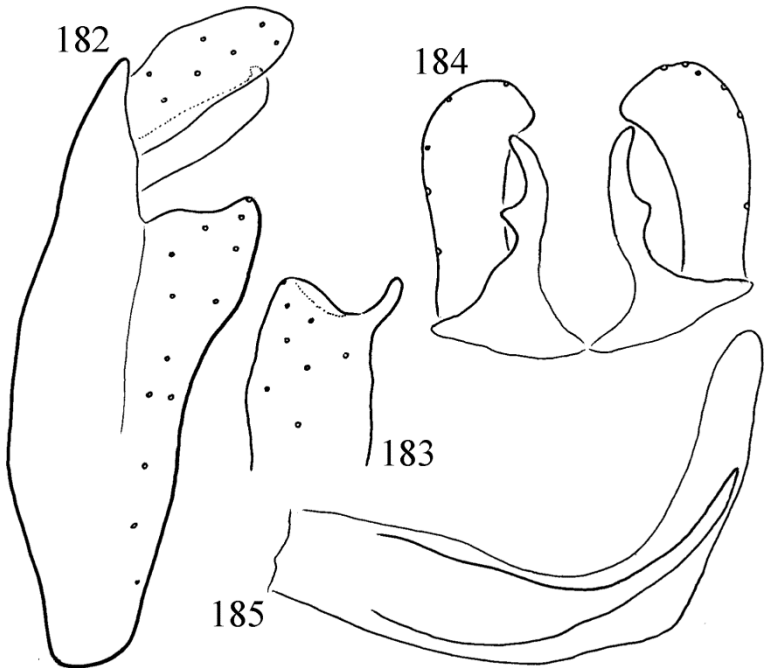
(Figure 180, Map 12)

Micropterna solotarewi Martynov, 1913a:97–98. "1♂ 1♀. Russia: Teberda, Kuban Oblast."

***Stenophylax ujjas* Oláh & Kovács, 2020**

(Figure 181, Map 12)

Stenophylax ujjas Oláh & Kovács, 2020:134–136. Holotype**: Georgia,** Adjara, Khabelashvilebi, Bird Spring, above (N of) the village, N41°45.063' E42°11.313', 2010m, 28.IX.2019, leg. T. Kovács, D. Murányi, (1 male, OPC).



Figures 182–185. *Stenophylax kulbak* sp. nov. Holotype male: 182 = genitalia in left lateral view; 183 = left gonopod in ventral view; 184 = cerci and paraproct in caudal view; 185 = phallic organ in lateral view.

Beraeidae Wallengren, 1891

***Ernodes bakhmarensis* sp. nov.**

(Figures 186–188, Map 13)

Material examined. Holotype: **Georgia**, Gouria, road to Bakhmaro, brook and cascade, 450m, 41.927°N, 42.3834°E, 21.V.2023, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. With the apomorphic apicomesal spine-like process of *Ernodes saltans* Martynov, 1913 and its relatives, *Ernodes macahelensis* Sipahiler, 1997 and *Ernodes ordubadensis* Oláh & Kerimova, 2020, this new species is a member of the *Ernodes saltans* species complex. This Caucasian species complex diverged from all the other species of the genus forming a new lineage by the organisation of an apicomesal spine-like process on sternum IX. This apomorphic structure is the speciation trait in this lineage. The new species is most similar to *Ernodes macahelensis*, but differs primarily by the special lateral profile of this structure. This structure clearly diverged and differs in all of the four species of the genus. However the divergence produced by the S-shaped lateral profile in *Ernodes bakhmarensis* sp. nov. is the most pronounced divergence in the complex.

Description. Sclerites on body and legs castanean brown. Forewing length 5 mm.

Male genitalia. Segment IX rather complex, rounded triangular convex anterad, its dorsum very elongated and more sclerotized, its ventrum very short. Segment X less sclerotized, almost membranous, its apex just discernible; a pair of small sclerotized structure visible subapicad in lateral view. Cerci are very small, elongated. Paraproct slender arching and narrowing upward with broad basement and filiform apical region. Gonopods with three additional mesal fingers as characteristic for the complex.

Etymology. Named after the region of *locus typicus*.

***Ernodes mingreliensis* sp. nov.**

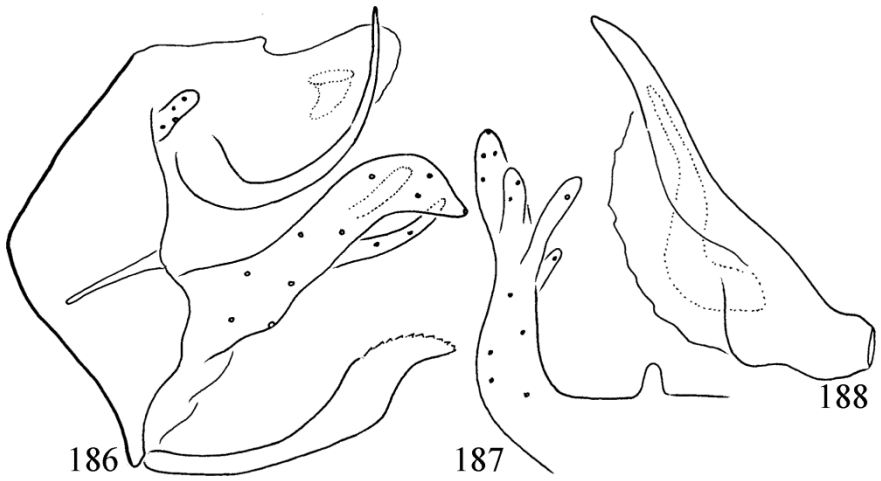
(Figures 189–191, Map 13, Photos 5–6, 48, 50)

Material examined. Holotype: **Georgia**, Mingrelie, below Jvari Pass, nice brook and lateral springs, 300–340m, 42.6956°N, 42.0757°E, 19.V. 2023, leg. Gilles Vinçon (1 male, OPC). Paratypes: same as holotype (23 males, 3 females; OPC). Georgia, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (11 males, OPC). Georgia, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (2 males, 6 females; OPC). Georgia, Imerethie, E Ghvedi, spring with mosses, on limestone substratum, very steep, tributary of the Tskhenistskali River, 340m, 42.51°N, 42.6378°E, 16.V.2023, leg. Gilles Vinçon (16 males, 3 females; OPC). Georgia, Mingrelie, above Koko, spring on limestone substratum, 310m, 42.6467°N, 42.2028° E, brook and spring, 430m, 42.6573°N, 42.2297°E, 19.V.2023, leg. Gilles Vinçon (6 males, 2 females; OPC).

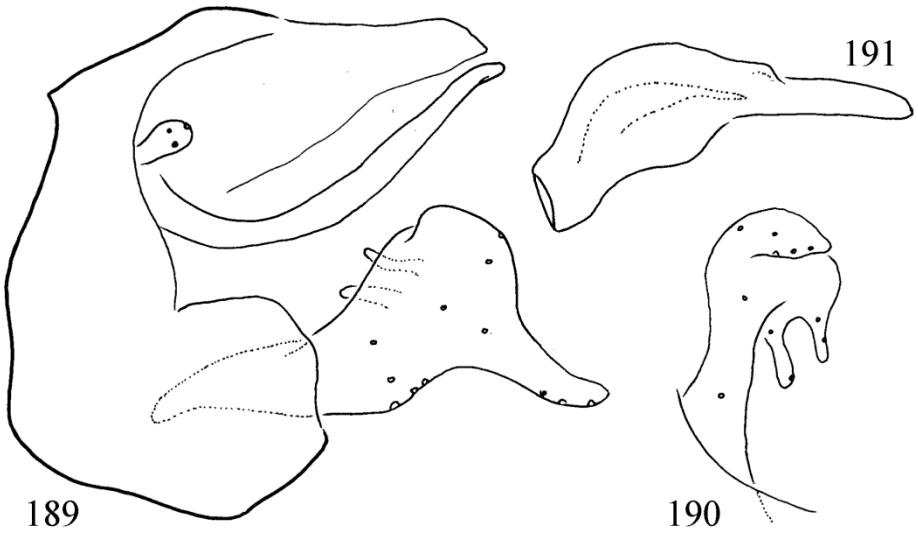
Diagnosis. Without the apomorphic apicomesal spine-like process of *Ernodes saltans* Martynov, 1913 and its relatives, *Ernodes macahelensis* Sipahiler, 1997 and *Ernodes ordubadensis* Oláh & Kerimova, 2020, this new species has relation and form a small species complex together with *Ernodes palpatus* (Martynov, 1909), *Ernodes digitatus* Martynov, 1918 and *Ernodes wolfgangjoosti* Mey, 2004, described from the Caucasus. All the four species have slender, spine-like paraproct, but *Ernodes mingreliensis* sp. nov. has very peculiar gonopods distinguishing from all the known species of the genus.

Description. Sclerites on body and legs castanean brown. Forewing length 5 mm.

Male genitalia. Segment IX rather complex, rounded convex anterad, its very dorsum elongated and more sclerotized, its ventrum rounded bulky. Segment X less sclerotized, almost mem-



Figures 186–188. *Ernodes bakhmarensis* sp. nov. Holotype male: 186 = genitalia in left lateral view; 187 = left gonopod in ventral view; 188 = phallic organ in lateral view.



Figures 189–191. *Ernodes mingreliensis* sp. nov. Holotype male: 189 = genitalia in left lateral view; 190 = left gonopod in ventral view; 191 = phallic organ in lateral view.

branous, its apex just discernible. Cerci are very small, ovoid. Paraproct slender arching shallow. Gonopods broad in lateral view, rounded with very distinct ventral thumb-like ventral lobe armed mesad with two small finger-like processes.

Etymology. Named after the region of locus typicus.

Ernodes ordubadensis Oláh & Kerimova, 2020

(Map 13)

Ernodes ordubadensis Oláh & Kerimova, in Oláh *et al.* 2020:136. ”**Azerbaijan**, Nakhchivan AR, Ordubad District, Tivi village, river Tivi, sweep netting, N39°8'0.24" E 45°55'47.07", 25.VI. 2019, leg. I. Kerimova (1 male, OPC). Paratype: same as holotype (1 male, OPC).”

Material examined. **Georgia**, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC).

Remark. This species was only known from 2 males collected in the type locality (Azerbaijan). New for Georgia.

Ernodes palpatus (Martynov, 1909)

(Map 13)

Beraea palpata Martynov,1909:536–538. „*B. articularis* nahestehend." „1 ♂. Schlucht des Flusses Kur beim Dorfe Tumurdó, in der Nähe von Achalkalaki, Gouverment Tiflis, 15. VI. 1907 (Martynov) [**Georgia**, Koura Canyon, Kumurdo Village, near Akhalkalaki, 41.4°N, 43.324°E]."

Material examined. **Georgia**, Adjaria, below Green Lake, nice spring and brook above the swamp, 2050m, 41.6784°N, 42.499°E, 24.IX. 2022, leg. Gilles Vinçon (1 male, OPC). Georgia, Imerethie, E Ghvedi, Gelaveri Police Station, big brook tributary of the Tskhenistskali River, 330m, 42.462°N, 42.6°E, 16.V.2023, leg. Gilles Vinçon (19 males, OPC). Georgia, Kakhetie, road to Abano, above Lechuri, nice brook, 650m, 42.1643°N, 45.419°E, 24.V.2023, (14 males, 3 females; OPC).

Sericostomatidae Stephens, 1836

Schizopelex McLachlan, 1876

This small genus of the family Sericostomatidae is originally described as having a closed discoidal cell on the hindwing; maxillary palp of the male not prominent, pressed against the front, very hairy; elevated plate on the head of male pronounced; inferior appendages notched. The divergences among the species are based mostly on the lateral profile of the gonopods and on the ventral profile of the ventral process. Other structures, the segment IX, segment X, cerci, paraproct and phallic organ of the genitalia have less divergence, exhibiting no real diagnostic value to delineate species.

Gonopod has a variously developed notch dividing this clasping organ into a dorsal more extended heavily setose sagittaly flat more or less rounded or further subdivided lobe and a ventral setaless spine-like process; there is another small or rather tiny spine on the very base of the gonopod.

Another highly diverging structure is the so called ventral process (McLachlan 1876). This process was considered by Martynov (1913) as part of the sternite IX. However, Schmid (1964) relates this ventral process to the gonopod as its fused ventral branches. Examining in more details at higher magnification, this ventral process seems to be the continuation of the basal plate of gonopods; it really belongs to the gonopods, but has two layers, that is duplicated and the ventral, outer layer is represented by the elongated mesal process of segment IX. Such an individuation of basal plate of gonopods occurs in other Trichoptera, for example in the genus *Tinodes* of the family Psychomyiidae.

Our present grouping of related taxa is based on the most apomorphic character that is the specialized development of the basal plate of the gonopods. We have differentiated three well-defined developments: (1) *Schizopelex anatolica* species group of fused ventral process with bare surface; (2) *Schizopelex cachetica* species group of fused ventral process with granulosed surface; (3) *Schizopelex festiva* species group of subdivided ventral process; this European species group is not detailed here.

Schizopelex anatolica species group

(Map 14)

This species group has unified fused ventral process of the basal plate of gonopods with bare surface. Distributed in Turkey and Caucasus: *Schizopelex akhalchala* sp. nov., *S. anatolica* Schmid, 1964 (Turkey, Akshehir, 1700 m); *S. boluensis* Sipahiler, 2012 (Turkey, Bolu, Yedigöller, 750m, 40°52'N, 31°41'E); *S. mingrelia* sp. nov.; *S. pontica* Martynov, 1913

(Georgia, Batumi); *S. rhamnes* Malicky, 1975 (Asia minor, Abant-See, 1400m); *S. sinopica* Sipahiler (Turkey, Sinop, Dikmen, Duragan direction, 1015m, 41°31'N, 35°08'E); *S. yenicensis* Sipahiler & Pauls, 2012 (Turkey, Karabük, Bolkus, Yenice direction, 230m, 41°09'N, 32°27'E).

***Schizopelex akhalchala* sp. nov.**

(Figures 192–194, Map 14, Photos 7, 49)

Material examined. Holotype: **Georgia**, Racha -Lechkumi and Lower-Svanetie, above Kulbaki, Akhalchala, 1880m, brook, 42.6726°N, 42.6586° E, 8.IX.2023, leg. Gilles Vinçon (1 male, OPC). Paratypes: Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, spring 1380m, 42.6341° N, 42.5821°E, 7.IX.2023, leg. Gilles Vinçon (2 males, OPC).

Diagnosis. This new species having fused ventral process without dentate or granulosed surface belongs to the *Schizopelex anatolica* species group as a sibling species of *Schizopelex mingrelia* sp. nov. but differs by the large dorsal lobe of gonopod with some small vestigial notch formation, by the deeply stepwise dorsum of segment X and by the truncate, not bilobed apex of the ventral process constituted by the basal plate of gonopods and by the ventral process of segment IX.

Description. Male (in alcohol). Small sized brown animal. Sclerites medium brown, setal warts both on head, thorax and legs brown. Forewing length 8 mm.

Male genitalia. Segment IX with subtriangular anterior and almost straight posterior margins in lateral view. Segment X elongated, its apex deeply excised and merged basally with the paraproct forming a pair of elongated upward arching broad processes. The dorsum of segment X is deeply stepwise in lateral view, subdivided by four steps. Cerci short. The great dorsal lobe of the gonopod forming a circular intact lobe with a tiny vestigial notch represented by short setose outgrowth; the ventral process of McLachlan that is the apicoventral mesal lobe of the basal plate of gonopods not dentate or granulosed forming a long mesal lobe slightly widening apicad with truncated apex. Phallic organ elongated slightly sclerotized tube apical half broadening ventrad and membranous dorsad.

Etymology. Name was coined from the name of type locality, a noun in apposition.

Remarks. There is a low, very shallow and short very narrow middle excision on the apical margin of the ventral process, but not bilobed like at *S. mingrelia*. This tiny excision is lacking on the holotype with genuine truncated apical margin collected at higher elevation.

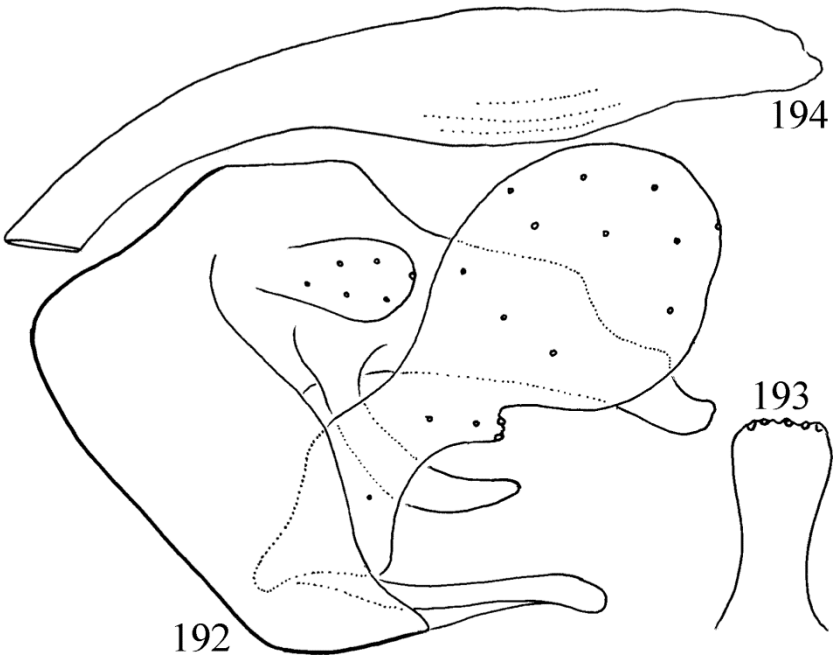
***Schizopelex mingrelia* sp. nov.**

(Figures 195–197, Map 14, Photos 5–6, 50)

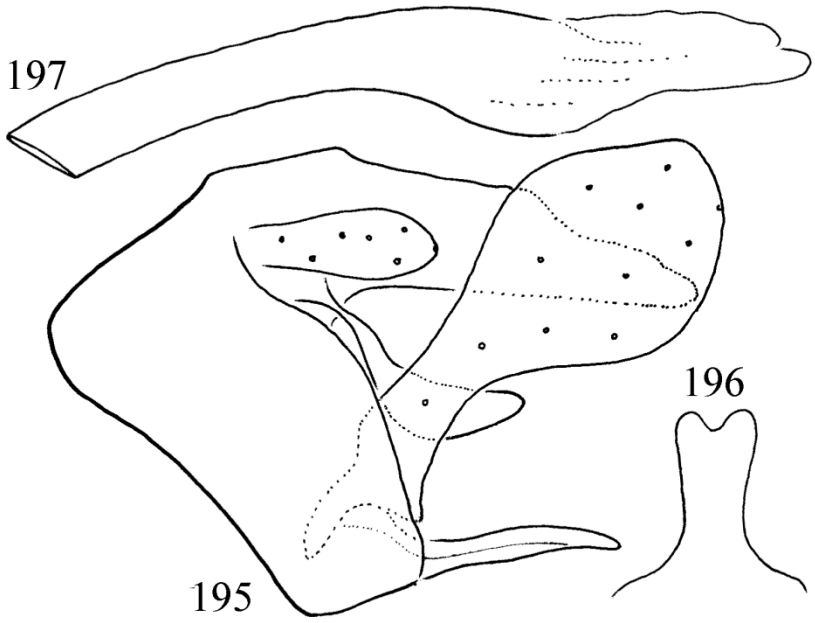
Material examined. Holotype: **Georgia**, Mingrelia, above Koko, below water capture, nice springs and swampy brook, 330m, 42.648°N, 42.2033°E, 19.V.2023, leg. Gilles Vinçon (1 male, OPC). Paratypes: same as holotype (3 males, OPC). Georgia, Mingrelia, above Koko, nice springs on limestone substratum, 330m, 42.648°N, 42.2023°E, 9.IX.2023, leg. Gilles Vinçon (2 males, 1 female; OPC). Georgia, Mingrelia, above Koko, nice brook and spring on limestone substratum below water capture, 310m, 42.6467°N, 42.2028°E, 9.IX.2023, leg. Gilles Vinçon (2 males, OPC).

Diagnosis. This new species having fused ventral process without dentate or granulosed surface belongs to the *Schizopelex anatolica* species group but differs from all the known members of the species group having the gonopods intact, without any notch and ventral subbasal process. The ventral process of McLachlan that is the apicoventral mesal lobe of the basal plate of gonopods has some resemblance to *S. rhamnes* Malicky, 1975.

Description. Medium sized castanean brown animal. Sclerites medium brown, setal warts both on head, thorax and legs brown. Forewing length 10 mm.



Figures 192–194. *Schizopelex akhalchala* sp. nov. Holotype male: 192 = genitalia in left lateral view; 193 = fused apicomesal process of basal plate of the gonopods and the sternite IX in ventral view; 194 = phallic organ in lateral view.



Figures 195–197. *Schizopelex mingrelia* sp. nov. Holotype male: 195 = genitalia in left lateral view; 196 = fused apicomesal process of basal plate of the gonopods and the sternite IX in ventral view; 197 = phallic organ in lateral view.

Male genitalia. Segment IX with subtriangular anterior and almost straight posterior margins in lateral view. Segment X elongated, its apex deeply excised and merged basally with the paraproct representing a pair of elongated upward arching middle broadening processes. Cerci elongated. The great dorsal lobe of the gonopod forming an intact lobe without any notch. The ventral process of McLachlan that is the apicoventral mesal lobe of the basal plate of gonopods not dentate or granulosed forming a long mesal lobe slightly widening apicad with bilobed apex. Phallic organ elongated slightly sclerotized tube apical half broadening ventrad and membranous dorsad.

Etymology. Name was coined from the name of type locality, a noun in apposition.

Schizopelex pontica Martynov, 1913

(Map 14)

Material examined. **Georgia**, Adjaria, above Varjanauli, brook tributary of Kintrishi River, from 630m, 41.7841°N, 41.955°E, to 740m, 41.777°N, 41.943°E, 27.IX.2022, leg. Gilles Vinçon (2 males, OPC). Georgia, Adjaria, Tbeti, nice spring and brook, 1190m, 41.568°N, 42.1526°E, 24.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Schizopelex cachetica species group

(Map 15)

This species group has unified fused ventral process of the basal plate of gonopods with granulosed surface. Distributed in Turkey, Caucasus and Iran: *Schizopelex cachetica* Martynov, 1913 (between Akhal-Sopel and Kvareli); *Schizopelex jvaria* sp. nov.; *S. masula* sp. nov.; *S. nazhala* sp. nov.; *S. persica* Schmid, 1964 (Iran, Ijdalam, near Javaher Deh, south west Ramsar).

Schizopelex cachetica Martynov, 1913

(Map 15)

Material examined. **Georgia,** Imereti region, brooks, Tsablarastskali tributaries, above Kur Sairmi, N41°56'50" E42°45'33", 1300m, 17.VII. 2019, leg. G. Vinçon (1 male, OPC). Georgia, Adjaria, Mtirala National Park, nice torrent, 330m, 41.6762°N, 41.8707°E, 20.V.2023, leg. Gilles Vinçon (1 male, 1 female in copula; OPC). **Turkey,** vil. Artvin, Col Cancurtalan, 800m, 1–2.VII.1996, leg. leg. A. Podlussány (1 male, HNHM). Turkey, vil. Erzincan Ganiefendi, Ciflik Köyü, 1200m, 27–28.VI.1996, leg. A. Podlussány (1 male, HNHM, 1 male, OPC).

Schizopelex jvaria sp. nov.

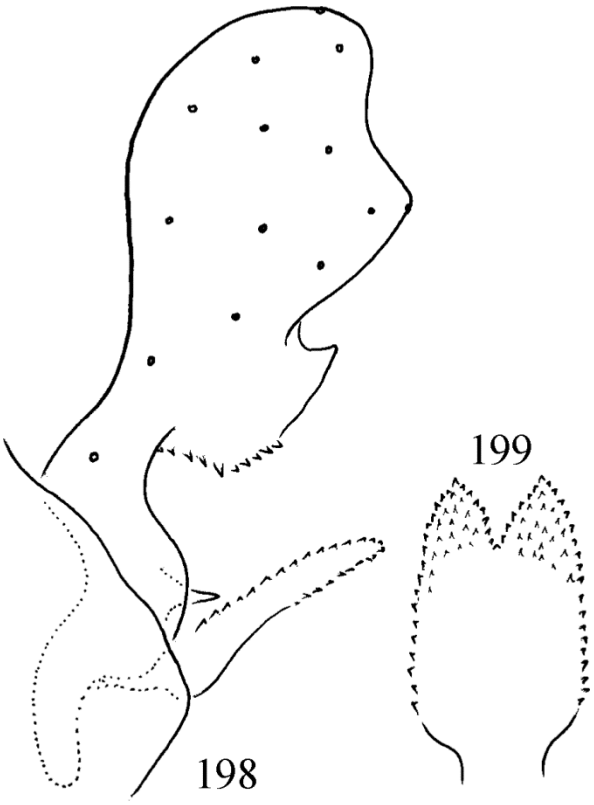
(Figures 198–199, Map 15, Photo 48)

Material examined. Holotype: **Georgia**, Mingrelia, below Jvari Pass, nice brook and lateral springs, 300–340m, 42.6956°N, 42.0757°E, 19.V. 2023, leg. Gilles Vinçon (1 male, OPC).

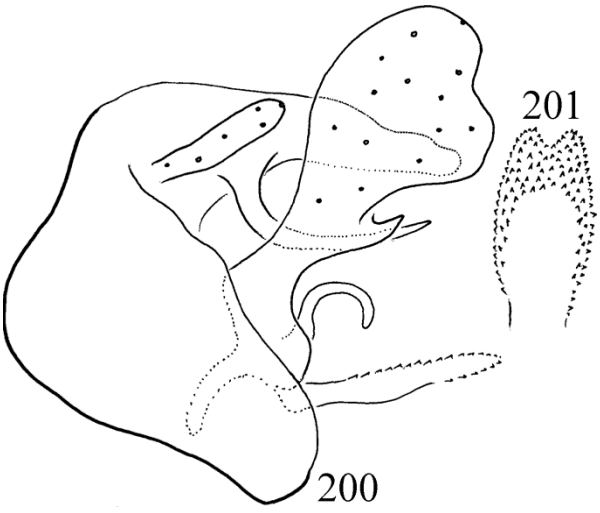
Diagnosis. This new species having fused ventral process with dentate or granulosed surface belongs to the *Schizopelex cachetica* species group and is close to *Schizopelex nazhala* sp. nov. but differs by the two speciation traits. The lateral profiles of the gonopods, regarding both the shape of the large setose apical lobe and the ventral subbasal smaller unsetose lobe are different; the setose large lobe subdivided into two lobes, but the ventral lobe triangular, not rounded like in *S. nazhala* sp. nov.; the fully dentate ventral subbasal process is high and short in *S. jvaria* and low and long in *S. nazhala* sp. nov. The other speciation trait, the apicoventral mesal process of the basal plate of gonopods is differently shaped in ventral view; it is with deep and triangular, not with shallow apical excision.

Description. Medium sized castanean brown animal. Sclerites medium brown, setal warts both on head, thorax and legs brown. Forewing length 10 mm.

Male genitalia. Segment IX with subtriangular anterior and almost straight posterior margins in lateral view; a pronounced suture present subdorsad; Segment X elongated, its apex deeply excised and merged basally with the paraproct representing a pair of elongated upward arching digitiform processes. Cerci elongated. The great



Figures 198–199. *Schizopelex jvaria* sp. nov. Holotype male: 198 = gonopods and the fused ventral process in left lateral view; 199 = fused apicomesal process of basal plate of the gonopods and the sternite IX in ventral view.



Figures 200–201. *Schizopelex masula* sp. nov. Holotype male: 200 = genitalia in left lateral view; 201 = fused apicomesal process of basal plate of the gonopods and the sternite IX in ventral view.

dorsal lobe of the gonopod slightly bilobed, the shape of lobes unequal, the ventral lobe is triangular, not rounded; the dentate ventral subbasal process high and short; the ventral process of McLachlan heavily dentate, covered with short black teeth; the shape of the lobe is with deep, triangularly excised apical margin and with constricted basal region. Phallic organ elongated slightly sclerotized tube apical half broadening ventrad and membranous dorsad.

Etymology. Name was coined from the name of type locality, a noun in apposition.

***Schizopelex masula* sp. nov.**

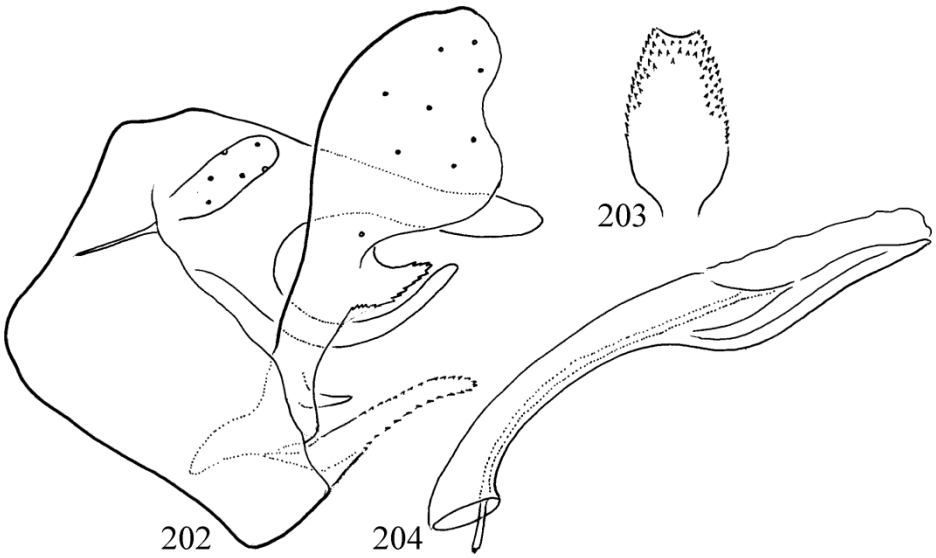
(Figures 200–201, Map 15)

Material examined. Holotype: **Irán**, Gilan Province, Elburz Mts., Talysh Mt., Masula [Masuleh] River, small left side tributary, Southwest of Bandar Anzali, 27.VI.1990, light leg. J. Oláh (1 male, OPC).

Diagnosis. This new species having fused ventral process with dentate or granulosed surface belongs to the *Schizopelex cachetica* species group and is close to *Schizopelex persica* Schmid, 1964 but differs by the two speciation traits. The lateral profile of the gonopods regarding both the shape of the large setose apical lobe and the ventral subbasal smaller unsetose lobe are different; the setose large lobe subdivided into two almost similar lobes, less distinct in *S. persica*; the ventral subbasal process is present, but lacking in *S. persica*. The other speciation trait, the apicoventral mesal process of the basal plate of gonopods is excised triangularly, not roundly. Moreover besides the two speciation traits there are divergences also in the shape of cerci, very long in *S. masula* sp. nov. and short in *S. persica*.

Description. Medium sized castanean brown animal. Sclerites medium brown, setal warts both on head, thorax and legs brown. Forewing length 10 mm.

Male genitalia. Segment IX with subtriangular anterior and almost straight posterior margins in



Figures 202–204. *Schizopelex nazhala* sp. nov. Holotype male: 202 = genitalia in left lateral view; 203 = fused apicomesal process of basal plate of the gonopods and the sternite IX in ventral view; 204 = phallic organ in lateral view.

lateral view. Segment X elongated, its apex deeply excised and merged basally with the paraproct representing a pair of elongated upward arching digitiform processes. Cerci elongated, very long. The great dorsal lobe of the gonopod bilobed, the shape of lobes almost similar, the ventral lobe slightly smaller; the ventral subbasal process present, well defined pointing lobe; the ventral process of McLachlan heavily dentate, covered with short black teeth; the shape of the lobe is with shallow triangularly excised apical margin and with constricted basal region. Phallic organ elongated slightly sclerotized tube apical half broadening ventrad and membranous dorsad.

Etymology. Name was coined from the name of type locality, a noun in apposition.

***Schizopelex nazhala* sp. nov.**

(Figures 202–204, Map 15, Photo 48)

Material examined. Holotype: **Georgia**, Mingrelia - High Svanetia, SE Jvari, brook tributary of Nazhala River, from 290m, 42.693°N, 42.072° E, to 340 m, 42.6956°N, 42.0757°E, 30.IX.2022, leg. Gilles Vinçon (1 male, OPC).

Diagnosis. This new species having fused ventral process with dentate or granulosed surface belongs to the *Schizopelex cachetica* species group and is close to *Schizopelex jvaria* sp. nov. but differs by the two speciation traits. The lateral profile of the gonopods regarding both the shape of the large setose apical lobe and the ventral subbasal smaller unsetose lobe; the setose large lobe subdivided into two similar rounded lobes, the ventral lobe triangular in *S. jvaria* sp. nov.; the fully dentate ventral subbasal process is low and long in *S. nazhala* and high and short in *S. jvaria* sp. nov. The other speciation trait, the apico-ventral mesal process of the basal plate of gonopods is differently shaped in ventral view; it is with shallow, not with deep and triangular apical excision.

Description. Medium sized castanean brown animal. Sclerites medium brown, setal warts both on head, thorax and legs brown. Forewing length 10 mm.

Male genitalia. Segment IX with subtriangular anterior and almost straight posterior margins in lateral view; a pronounced suture present subdorsad; Segment X elongated, its apex deeply excised and merged basally with the paraproct

representing a pair of elongated upward arching digitiform processes. Cerci elongated. The great dorsal lobe of the gonopod slightly bilobed, the shape of lobes similar; the dentate ventral subbasal process low, and long; the ventral process of McLachlan heavily dentate, covered with short black teeth; the shape of the lobe is with shallowly excised apical margin and with constricted basal region. Phallic organ elongated slightly sclerotized tube apical half broadening ventrad and membranous dorsad.

Etymology. Name was coined from the name of type locality, along the Nazhala River, a noun in apposition.

Remark. Both siblings *Schizopelex jvaria* sp. nov. and *S. nazhala* sp. nov. occur in the same locality near the Jvari Pass, the first one flying in spring (V) and the second one flying in autumn (IX).

REFERENCES

FISCHER, F.C.J. (1970): Änderung einiger präokkupierten Namen in der Ordnung Trichoptera. *Entomologische Berichten,* 30: 242–243.

MALICKY, H. (1983): *Atlas of European Trichoptera*. Dr. W. Junk Publishers, The Hague-Boston-London. 298 pp.

MALICKY, H. (2004): *Atlas of European Trichoptera*. Second Edition. Dr W. Junk Publisher, The Hauge-Boston-London. 359 pp.

MARTYNOV, A. (1909): Die Trichopteren des Kaukasus. *Zoologische Jahrbücher Abteilung für Systematik, Geographie und Biologie der Tiere,* 27: 509–558.

MARTYNOV, A. (1913a): Contribution to the knowledge of the Trichopterous Fauna of the Caucasus. *Studies of the Laboratory of the Zoological Cabinet of Warsaw University,* p. 1–111. [In Russian]

MARTYNOV, A. (1913b): Contributions à la faune des Trichptères du Caucase. Trichptères de la province Batoum et des environs du Novyj Afon. *Horae Societatis Entomologicae Rossicae,* 40(7): 1–30.

MARTYNOV, A. (1918): Note sur quelques nouveaux Trichoptères du Musée du Caucase. *Bulletin du Musée du Caucase*, 11(3-4): 174–191.

MCLACHLAN, R. (1874–1880): *A monographic revision and synopsis of the Trichoptera of the European fauna*. Reprinted 1968. E.W.Classey Ltd. Hampton, Middlesex. https://doi.org/10.5962/bhl.title.28556

MEY, W. (2004): Beitrag zur Trichoptera-Fauna Armeniens und des Iran (Trichoptera). *Entomologische Nachrichten und Berichte,* 48(2): 81–87.

OLÁH, J., CHVOJKA, T.P., COPPA, G., GODUNKO, R.J., LODOVICI, O., MAJECKA, K., MAJECKI, J., SZCZESNY, B., URBANIC, G. & VALLE, M. (2015): Limnephilid taxa revised by speciation traits: *Rhadicoleptus*, *Isogamus*, *Melampophylax* genera, *Chaetopteryx rugulosa*, *Psilopteryx psorosa* species groups, *Drusus bolivari*, *Annitella kosciuszkii* species complexes (Trichoptera, Limnephilidae). *Opuscula Zoologica, Budapest*, 46(1): 3–117. https://doi.org/10.18348/opzool.2015.1.3

OLÁH, J., BESHKOV, S., CHVOJKA, T.P., CIUBUC, C., COPPA, G., IBRAHIMI, H., KOVÁCS, T., MEY, W. & OLÁH J. jr. (2017): Revision of Drusinae subfamily (Trichoptera, Limnephilidae): divergence by paraproct and paramere, speciation in isolation by integration. *Opuscula Zoologica, Budapest,* 48 (Supplementum 1): 3–228. https://doi.org/10.18348/opzool.2017.S1.3

OLÁH, J. & OLÁH, J. jr. (2017): Fine phenomics applied to the *Nectopyche* genus (Trichoptera). Species delineation by speciation traits. *Opuscula Zoologica, Budapest,* 48(2): 117–184. https://doi.org/10.18348/opzool.2017.2.117

OLÁH, J., ANDERSEN, T., BESHKOV, S., COPPA, G., RUIZ GARCIA A. & JOHANSON K.A. (2019a): Revision of European *Wormaldia* species (Trichoptera, Philopotamidae): Incongruent chimeric taxa of integrative organization. *Opuscula Zoologica, Budapest*, 50(1): 31–85 https://doi.org/10.18348/opzool.2019.1.31

OLÁH, J., ANDERSEN, T., BESHKOV, S., BILLALI, A., COPPA, G., IBRAHIMI, H., JOHANSON, K.A., KOVÁCS, T., MEY, W., MUSLIU, M., OLÁH, J. Jr., & RUIZ-GARCIA, A. (2019b): Lineage sorting by paramere in Limnephilinae subfamily (Trichoptera): with description of a new tribe, new genera and new species. *Opuscula Zoologica, Budapest*, 50 (Supplementum 1): 3–98. https://doi.org/10.18348/opzool.2019.S1.3

OLÁH, J., VINÇON, G., ANDERSEN, T., BESHKOV, S., CIUBUC, C., COPPA, G., HENDRICH, L., JOHANSON, K.A., SALOKANNEL, J. & SZCZĘSNY, B. (2020a): Revision of the European *Rhyacophila fasciata*

species complex by fine phenomics of the paramere (Trichoptera, Rhyacophilidae). *Opuscula Zoologica, Budapest,* 51 (1): 21–54. https://doi.org/10.18348/opzool.2020.1.21

OLÁH, J., VINÇON, G., KERIMOVA, I., KOVÁCS, T. & MANKO, P. (2020b): On the Trichoptera of the Caucasus with western and eastern relatives. *Opuscula Zoologica, Budapest,* 51 (Supplementum 1): 3–174. https://doi.org/10.18348/opzool.2020.S1.3

SIPAHILER, F. (1989): Four new species of Trichoptera from Turkey (Glossosomatodae, Ecnomidae, Lepidostomatidae). *Opuscula Zoologica Fluminensia,* 39: 1–7.

SIPAHILER, F. (1995): Three new species of Trichoptera from Anatolia. *Aquatic Insects,* 17: 215–222. https://doi.org/10.1080/01650429509361590

SIPAHILER, F. (1997): New species of caddisflies from Turkey (Trichoptera: Rhyacophilidae, Hydroptilidae, Beraeidae) *Braueria* (*Lunz am See, Austria*), 24: 15–17.

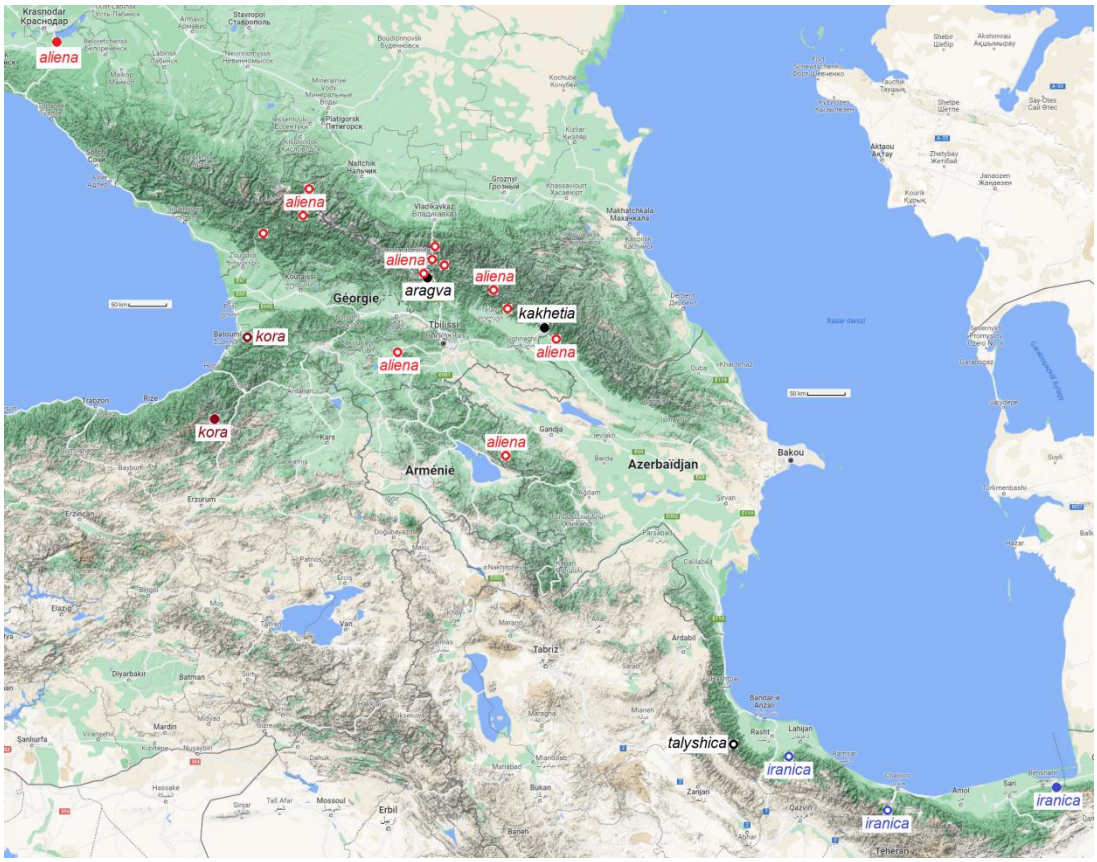
SIPAHILER, F. (2001): Three new species and new records of Tricoptera from Turkey and Spain (Philopotamidae, Beraeidae, Leptoceridae) *Braueria (Lunz am See, Austria)*, 28: 21–23.

SIPAHILER, F. (2020): A new species of the genus *Thremma* McLachlan, 1876 from northeast Turkey (Trichoptera, Uenoidae). *Braueria* (*Lunz am See, Austria*), 47: 41–42.

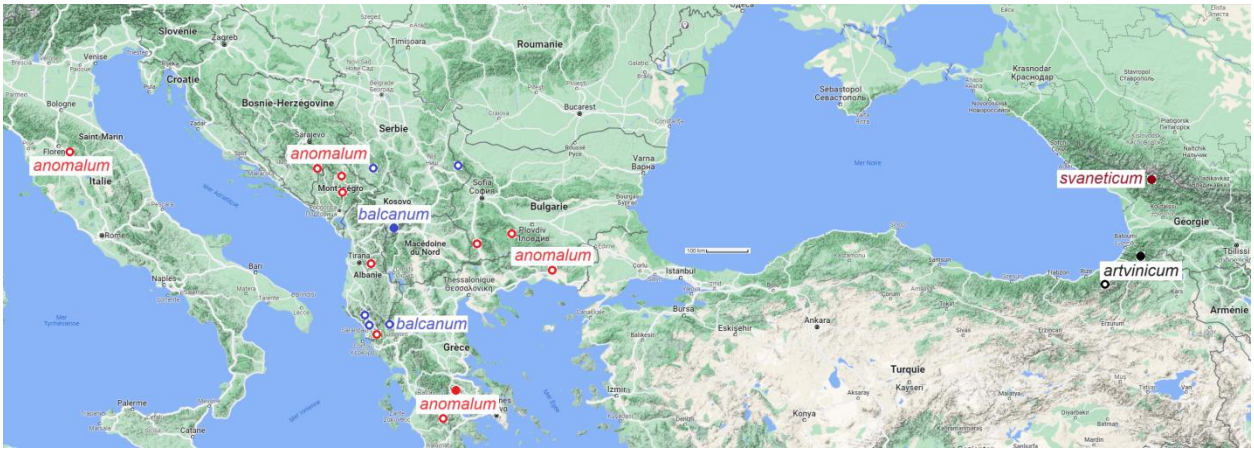
WEAVER, J.S. (1993): *Theliopsychinae, a new subfamily, and Zephyropsyche, a new genus of Lepidostomatidae (Trichoptera)*. In: OTTO, C. (Ed.) Proceedings of the seventh international symposium on Trichoptera (1992, Umeå, Sweden), Backhuys Publishers Leiden, the Netherlands. p. 133–138.

Appendix 1. Maps

Map 1. New Georgian *Wormaldia*: *W. kala* sp. nov., *W. khizabavra* sp. nov., *W. kokoa* sp. nov., *W. kulbaka* sp. nov., *W. lopota* sp. nov., *W. varjanulia* sp. nov., *W. hoska* Oláh, 2020, *W. obola* Oláh, 2020, *W. sakaorum* Oláh, 2020. (Filled circles represent the type localities)



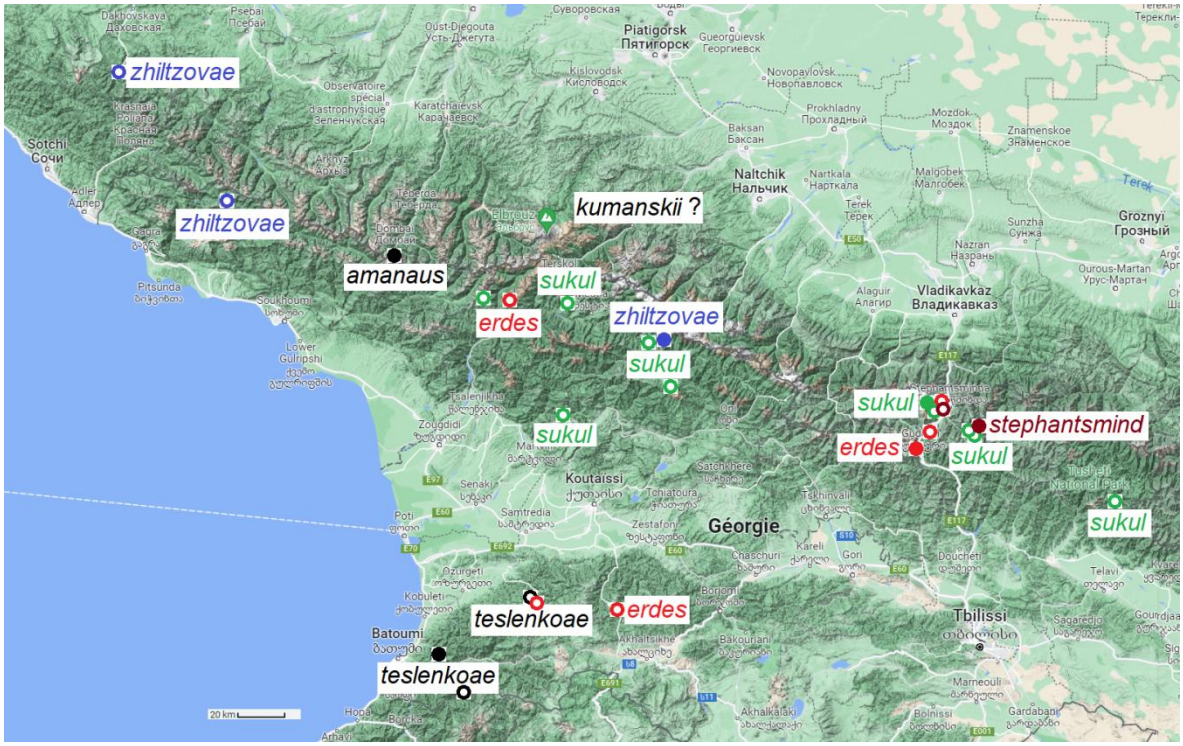
Map 2. *Rhyacophila aliena* lineage: *R. aliena* Martynov, 1916, *R. aragva* sp. nov., *R. iranica* Oláh, 2020, *R. kakhetia* sp. nov., *R. kora* Oláh, 2020, *R. talyshica* Martynov, 1938



Map 3. *Thremma anomalum* species complex: *T. anomalum* McLachlan, 1876, *T. artvinicum* Sipahiler, 2020, *T. balcanum* sp. nov., *T. svaneticum* sp. nov.

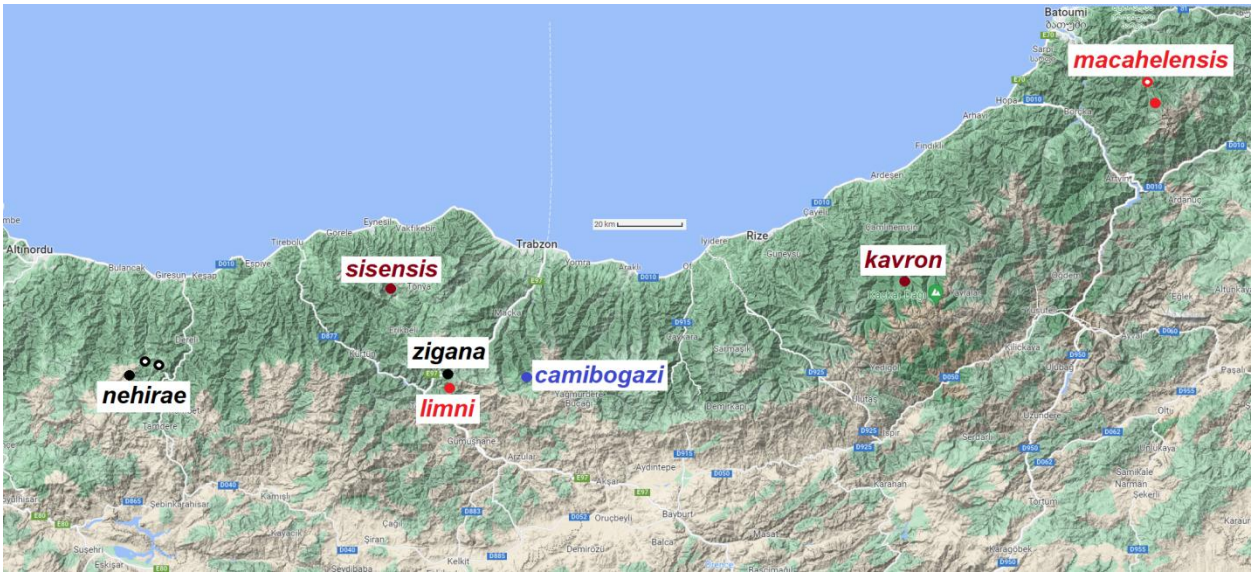
Map 4. *Martynomyia* genus: *M. ayderensis* Sipahiler, 1989, *M. martynovi* Sipahiler, 1995, *M. svanetia* sp. nov., *M. tripartita* (Martynov, 1913), *M. zazai* sp. nov.

Map 5. *Apataniana borcka* species complex: *A. bacurianica* Oláh & Vinçon, 2020, *A. bakhmara* sp. nov., *A. borcka* Sipahiler, 1996, *A. goderdza* Oláh & Kovács, 2020, *A. gouria* sp. nov., *A. kintrisha* Oláh & Vinçon, 2020.



Map 6. *Drusus amanaus* species complex: *D. amanaus* Mey & Müller, 1979, *D. erdes* Oláh & Vinçon, 2020, *D. kumanskii* Oláh, 2017, *D. stephantsmind* sp. nov., *D. sukul* Oláh & Vinçon, 2020, *D. teslenkoae* Oláh & Vinçon, 2020, *D. zhiltzovae*, Oláh & Malicky, 1979.

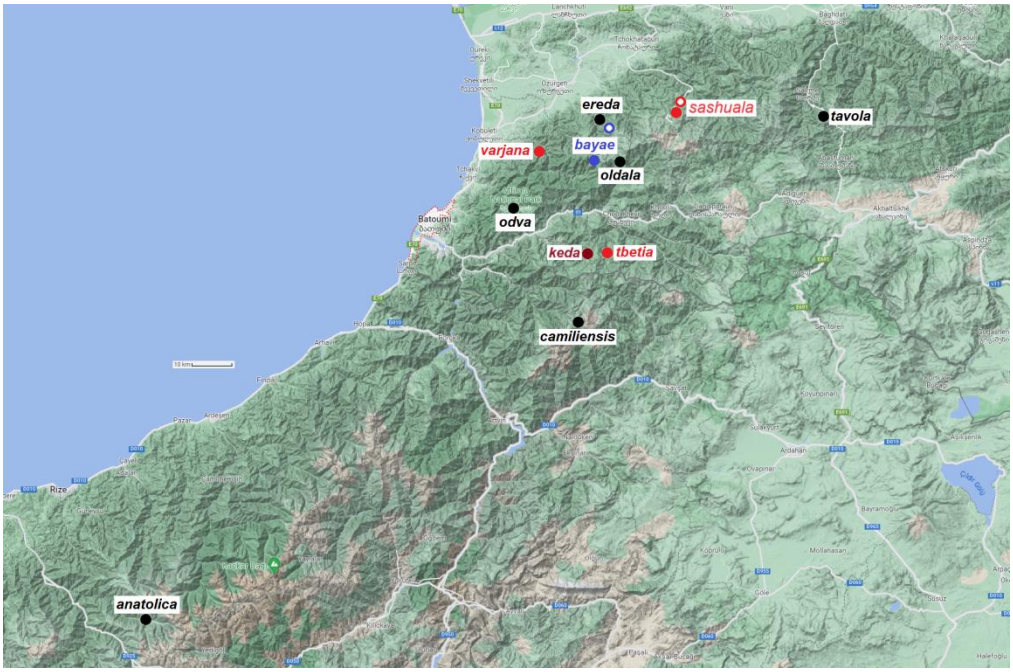
Map 7. *Badukiella* genus: *B. kinula* Oláh & Vinçon, 2020, *B. kurta* Oláh & Vinçon, 2020, *B. markha* sp. nov., *B. prohibita* Mey & Müller, 1979, *B. subnigra* Oláh, 1985.



Map 8. *Kelgena* genus in the Turkish eastern Pontus: *K. camibogazi* Sipahiler, 2017 *K. kavron*, Sipahiler, 2017, *K. limni* Sipahiler, 2017, *K. macahelensis* Sipahiler, 1999. 1999, *K. nehirae* Sipahiler, 2009, *K. sisensis* Sipahiler, 2009, *K. zigana*, Sipahiler, 2017.

Map 9. *Kelgena* genus in the Lesser Caucasus (12 species): *K. adjarica* Oláh & Kovács, 2020, *K. bakhmara* sp. nov., *K. bakurianica* Oláh & Vinçon, 2020, *K. bellae* sp. nov., *K. bunka* Oláh & Vinçon, 2020, *K. goderdza* sp. nov., *K. imeretica* Oláh & Vinçon, 2020, *K. levani* sp. nov., *K. macahelensis* Sipahiler, 1999, *K. samtskha* sp. nov., *K. tolaka* Oláh & Vinçon, 2020, *K. vekona* sp. nov.

Map 10. *Kelgena* genus in the High Caucasus (9 species): *K. kelensis* (Martynov, 1926), *K. meyi* Oláh, 2020, *K. lapankura* sp. nov., *K. minima* Mey, 1979, *K. parhuza* Oláh & Vinçon, 2020, *K. svanetica* Oláh & Vinçon, 2020, *K. tetnulda* sp. nov., *K. tobara* sp. nov., *K. topora* Oláh & Vinçon, 2020.



Map 11. *Rizeiella* genus (11 species): *R. anatolica* Sipahiler, 1986, *R. bayae* Vinçon & Oláh, 2020, *R. camiliensis*, Sipahiler, 1999, *R. ereda* Oláh & Vinçon, 2020, *R. keda* sp. nov., *R. odva* Oláh & Vinçon, 2020, *R. oldala* Oláh & Kovács, 2020, *R. sashuala* sp. nov., *R. tavola* Oláh & Vinçon, 2020, *R. tbetia* sp. nov., *R. varjana* sp. nov.

Map 12. *Stenophylax solotarewi* species complex: *S. almat* sp. nov., *S. caspicus* (Schmid, 1959), *S. kulbak* sp. nov., *S. lasareus* (Oláh, 1985), *S. solotarewi* (Martynov, 1913), *S. ujjas* Oláh & Kovács, 2020.

Map 13. Caucasian species in the *Ernodes* genus: *E. bakhmarensis* sp. nov., *E. digitatus* Martynov, 1918, *E. macahelensis* Sipahiler, 1997, *E. mingreliensis* sp. nov., *E. ordubadensis* Oláh & Kerimova, 2020, *E. palpatus* (Martynov, 1909), *E. saltans* Martynov, 1913, *E. wolfgangjoosti* Mey, 2004.

Map 14. *Schizopelex anatolica* species group: *S. akhalchala* sp. nov., *S. anatolica* Schmid, 1964, *S. boluensis* Sipahiler, 2012, *S. mingrelia* sp. nov., *S. pontica* Martynov, 1913, *S. rhamnes* Malicky, 1975, *S. sinopica* Sipahiler, 2012, *S. yenicensis* Sipahiler & Pauls, 2012.

Map 15. *Schizopelex cachetica* species group: *S. cachetica* Martynov, 1913, *S. jvaria* sp. nov., *S. masula* sp. nov., *S. nazhala* sp. nov., *S. persica* Schmid, 1964.

Appendix 2. Habitat photos of the collecting localities

Photo 1. Georgia, Gouria, SW Chkhakoura, nice spring tributary of Kalasha River, 1740m, 41.881°N, 42.3567°E (G. Vinçon) (*Wormaldia kala* sp. nov., *Apataniana gouria* sp. nov., *Rizeiella sashuala* sp. nov.)

Photo 2. Georgia, Gouria, SW Chkhakoura, nice spring tributary of Kalasha River, 1740m, 41.881°N, 42.3567°E (G. Vinçon) (*Wormaldia kala* sp. nov., *Apataniana gouria* sp. nov., *Rizeiella sashuala* sp. nov.)

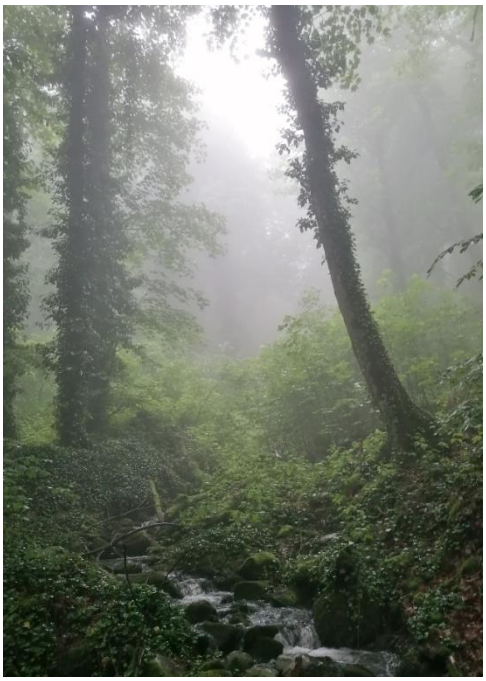


Photo 3–4. Georgia, Kakhetie, Lagodekhi National Park, above Khizabavra, Ninoskhevi valley, spring and brook, 770m, 41.8846°N, 46.25°E (G. Vinçon) (*Wormaldia khizabavra* sp. nov., *Rhycophila kakhetia* sp. nov., *Martynomyia zazai* sp. nov.)

Photo 5. Georgia, Mingrelie, above Koko, nice spring on limestone substratum, 310m, 42.6467N, 42.2028E (G. Vinçon) (*Wormaldia kokoa* sp. nov., *Rhyacophila kokoa* sp. nov., *Ernodes mingreliensis* sp. nov., *Schizopelex mingrelia* sp. nov.)

Photo 6. Georgia, Mingrelie, above Koko, nice spring on limestone substratum, 310m, 42.6467N, 42.2028E (G. Vinçon) (*Wormaldia kokoa* sp. nov., *Rhyacophila kokoa* sp. nov., *Ernodes mingreliensis* sp. nov., *Schizopelex mingrelia* sp. nov.)

Photo 7. Georgia, Racha-Lechkumi and Lower-Svanetie, above Kulbaki, spring 1380m, 42.6341N, 42.5821E (G. Vinçon) (*Wormaldia kulbaka* sp. nov., *Stenophylax kulbak* sp. nov., *Schizopelex akhalchala* sp. nov.)

Photo 9. Georgia, Kakhetie, above Lapankuri, Lopota valley, nice lateral spring and brooklet, 1620m, 42.15°N, 45.6668°E (G. Vinçon) (*Wormaldia lopota* sp. nov., *Kelgena lapankura* sp. nov.)

Photo 8. Georgia, Kakhetie, above Lapankuri, Lopota valley, torrent, 1580m, 42.15°N, 45.6668°E (G. Vinçon) (*Wormaldia lopota* sp. nov., *Kelgena lapankura* sp. nov.)

Photo 10. Georgia, Adjaria, above Varjanauli, brook tributary of Kintrishi River, 740m, 41.777°N, 41.943°E (G. Vinçon) (*Wormaldia varjanulia* sp. nov., *Agapetus kintrisha* sp. nov., *Rizeiella varjana* sp. nov.)

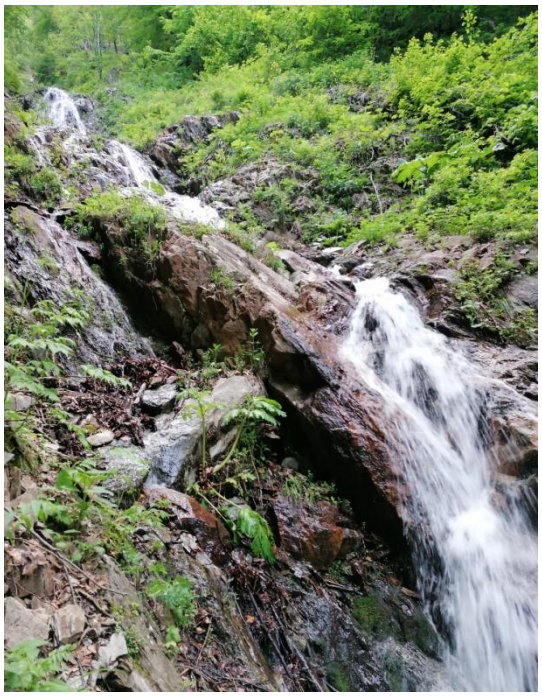


Photo 11. Georgia, Kakhetie, above Lechuri, road to Abano Pass, steep brook and cascade, 1370m, 42.2224N, 45.4764E (G. Vinçon) (*Tinodes abana* sp. nov.)

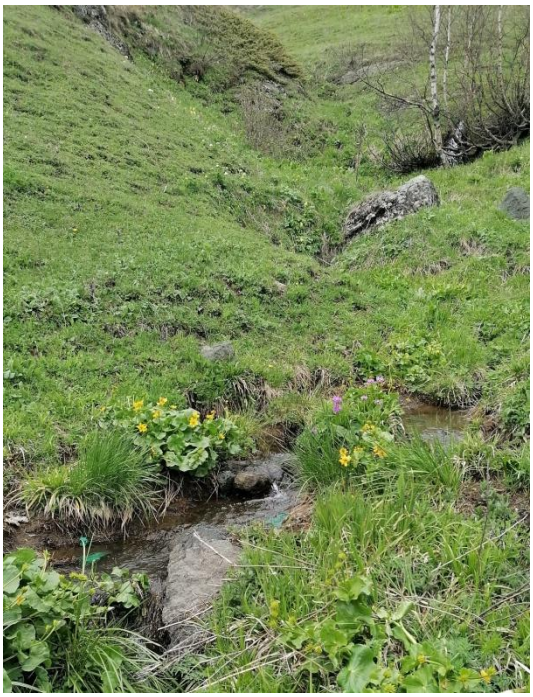


Photo 12. Georgia, Imerethie, below Zekari Pass, South slope, brook and spring, 2050-2070m, 41.8241N, 42.852E (G. Vinçon) (*Plectrocnemia zekaria* sp. nov.)

Photo 13. Georgia, Imerethie, above Sairme, nice brook, 1550m, 41.8776N, 42.7809E (G. Vinçon) (*Plectrocnemia zekaria* sp. nov.)

Photo 14. Georgia, Gouria, above Gadrekili, spring, 2200m, 41.8405N, 42.3595E (G. Vinçon) (*Hydropsyche gouria* sp. nov.)

Photo 15. Georgia, Gouria, above Gadrekili, nice brook, 2140m, 41.8405N, 42.3595E (G. Vinçon) (*Hydropsyche gouria* sp. nov.)

Photo 16. Georgia, High Svanetia, above Mestia, brook and spring above the fish farm in construction, 1540m, 43.0477N, 42.8091E (G. Vinçon) (*Hydropsyche svanetica* sp. nov., *Martynomyia svanetia* sp. nov.)

Photo 17. Georgia, High Svanetia, above Mestia, spring above the fish farm, 1550m, 43.0477N, 42.8091E (G. Vinçon) (*Hydropsyche svanetica* sp. nov., *Martynomyia svanetia* sp. nov.)

Photo 18. Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, spring and brook, tributary of Tetri Aragvi River, 1480m, 42.432°N, 44.5075°E (G. Vinçon) (*Rhyacophila aragva* sp. nov.)

Photo 19. Georgia, Adjaria, Mtirala National Park, torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°E (G. Vinçon) (*Rhyacophila chakvistskala* sp. nov.)

Photo 20. Georgia, Adjaria, Mtirala National Park, torrent tributary of Chakvistskali River, 330m, 41.676°N, 41.871°E (G. Vinçon) (*Rhyacophila chakvistskala* sp. nov.)

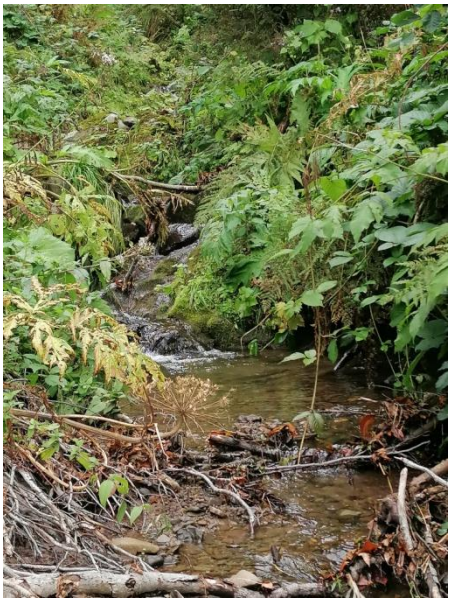


Photo 21. Georgia, Adjaria, Keda, above Namonastrevi, brook, 1730m, 41.551N, 42.0919E (G. Vinçon) (*Rhyacophila namona* sp. nov., *Rizeiella keda* sp. nov.)

Photo 22. Georgia, Adjaria, Keda, above Namonastrevi, spring, 1730m, 41.551N, 42.0919E (G. Vinçon) (*Rhyacophila namona* sp. nov., *Rizeiella keda* sp. nov.)

Photo 23. Georgia in bold, High Svanetie, brook above Nakra, tributary of Utviri River, 1520m, 43.0781N, 42.3695E (G. Vinçon) (*Thremma svaneticum* sp. nov., *Martynomyia svanetia* sp. nov.)

Photo 24. Georgia in bold, High Svanetie, cascade above Nakra, tributary of Utviri River, 1520m, 43.0781N, 42.3695E (G. Vinçon) (*Thremma svaneticum* sp. nov., *Martynomyia svanetia* sp. nov.)

Photo 25. Georgia, Kakhetie, road to Abano, above Lechuri, nice brook, 650m, 42.1643N, 45.419E (G. Vinçon) (*Martynomyia zazai* sp. nov.)

Photo 26. Georgia, Gouria, above Bakhmaro, brook, 1980m, 41.8386N, 42.331E (G. Vinçon) (*Apataniana bakhmara* sp. nov., *Kelgena bakhmara* sp. nov., *K. bellae* sp. nov., *K. levani* sp. nov., *Rizeiella sashuala* sp. nov.)

Photo 27. Georgia, Gouria, above Bakhmaro, 1980m, 41.8386N, 42.331E, landscape (G. Vinçon). nov.)

Photo 28. Georgia, Mtskheta-Mtianeti, above Stephantsminda, brook, 2150m, 42.6627N, 44.6103E (G. Vinçon) (*Drusus stephantsmind* sp. nov.)

Photo 29. Georgia, Mtskheta-Mtianeti, above Stephantsminda, brook, 2150m, 42.6627N, 44.6103E (G. Vinçon) (*Drusus stephantsmind* sp. nov.)

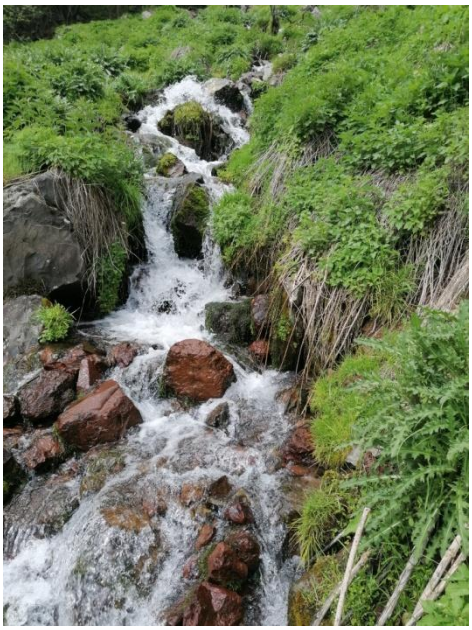


Photo 30. Georgia, Mtskheta-Mtianeti, above Kvemo Mleta, spring and cascade, 1540m, 42.4364N, 44.4946E (G. Vinçon) (*Drusus stephantsmind* sp. nov.)

Photo 31. Georgia, Mingrelia - High Svanetia, Markhi Valley, spring, 2080m, 43.0796°N, 42.2424°E (G. Vinçon) (*Badukiella markha* sp. nov.)

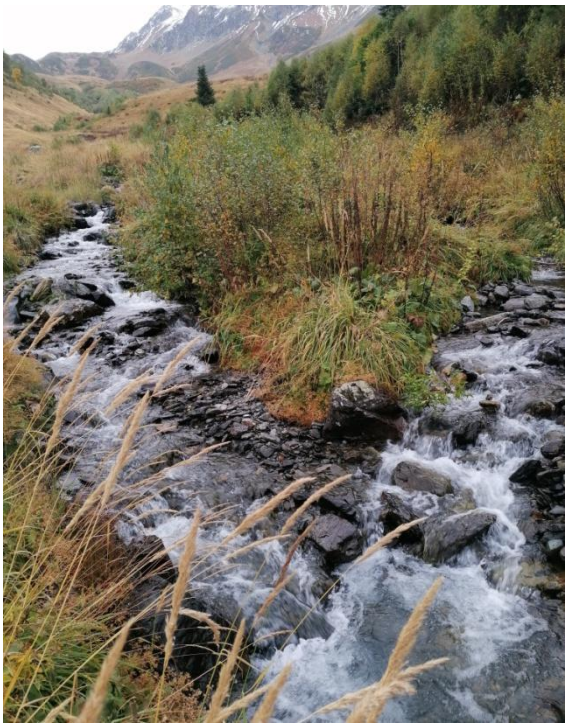


Photo 32. Georgia, Mingrelia - High Svanetia, Markhi Valley, brook, 2080m, 43.0796°N, 42.2424°E (G. Vinçon) (*Badukiella markha* sp. nov.)

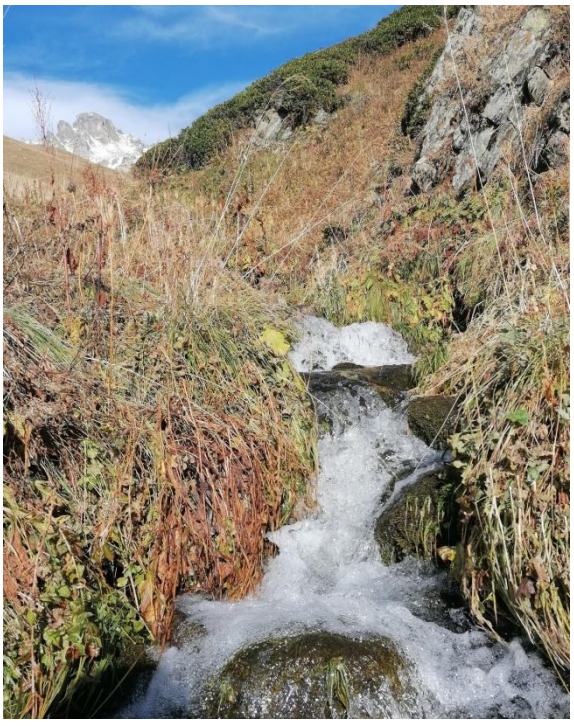


Photo 33. Georgia, Mingrelia - High Svanetia, Tetnuldi ski resort, torrent, 2700m, 43.0214°N, 42.9166°E (G. Vinçon) (*Badukiella markha* sp. nov., *Kelgena tetnulda* sp. nov.)

Photo 34. Georgia, Mingrelia - High Svanetia, Tetnuldi ski resort, 2700m, 43.0214°N, 42.9166°E, landscape (G. Vinçon)

Photo 35. Georgia, Adjaria, Goderdzi Alpine Garden, spring and brook, 1960m, 41.6253°N, 42.5364°E (G. Vinçon) (*Kelgena goderdza* sp. nov.)

Photo 36. Georgia, Adjaria, Goderdzi Alpine Garden, 1960m, 41.6253°N, 42.5364°E, landscape (G. Vinçon) (*Kelgena goderdza* sp. nov.)

Photo 37. Georgia, Samtskhé-Djavakhétie, Ktsia-Tabatskuri Managed Reserve, spring and brook, 2380m, 41.6555°N, 43.49°E (G. Vinçon) (*Kelgena samtskha* sp. nov.)

Photo 38. Georgia, Shida Kartli, below Shikhan Mount, landscape, 41.748N, 44.3934E (G. Vinçon) (*Kelgena samtskha* sp. nov.)

Photo 39. Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, 2230m, landscape, 42.7559N, 43.1173E (G. Vinçon) (*Kelgena tetnulda* sp. nov.)

Photo 40. Georgia, Racha-Lechkumi and Lower-Svanetie, above Shkedi, 2230m, spring, 42.7559N, 43.1173E (G. Vinçon) (*Kelgena tetnulda* sp. nov.)

Photo 41. Georgia, High Svanetie, N. Tobari, trib. of Lakhami River, spring, 2320m, 43.0578N, 42.0684E (G. Vinçon) (*Kelgena tobara* sp. nov.)

Photo 43. Georgia, Adjaria, below Green Lake, spring, 2050m, 41.6784°N, 42.499°E (G. Vinçon) (*Kelgena vekona* sp. nov.)

Photo 42. Georgia, High Svanetie, N. Tobari, landscape, 2320m, 43.0578N, 42.0684E (G. Vinçon) (*Kelgena tobara* sp. nov.)

Photo 44. Georgia, Adjaria, below Green Lake, landscape, 2050m, 41.6784°N, 42.499°E (G. Vinçon) (*Kelgena vekona* sp. nov.)

Photo 45. Georgia, Adjaria, Tbeti, spring, 1190m, 41.568°N, 42.1526°E (G. Vinçon) (*Rizeiella tbetia* sp. nov.)

Photo 47. Georgia, Kakhetia, above Almati, landscape, 1450m, 42.0994N, 45.7387E (G. Vinçon) (*Stenophylax almat* sp. nov.)

Photo 46. Georgia, Kakhetia, above Almati, spring, 1450m, 42.0994N, 45.7387E (G. Vinçon) (*Stenophylax almat* sp. nov.)

Photo 48. Georgia, Mingrelie, below Jvari Pass, brook, 330m, 42.6956N, 42.0757E (G. Vinçon) (*Ernodes mingreliensis* sp. nov., *Schizopelex jvaria* sp. nov., *S. mingrelia* sp. nov.)

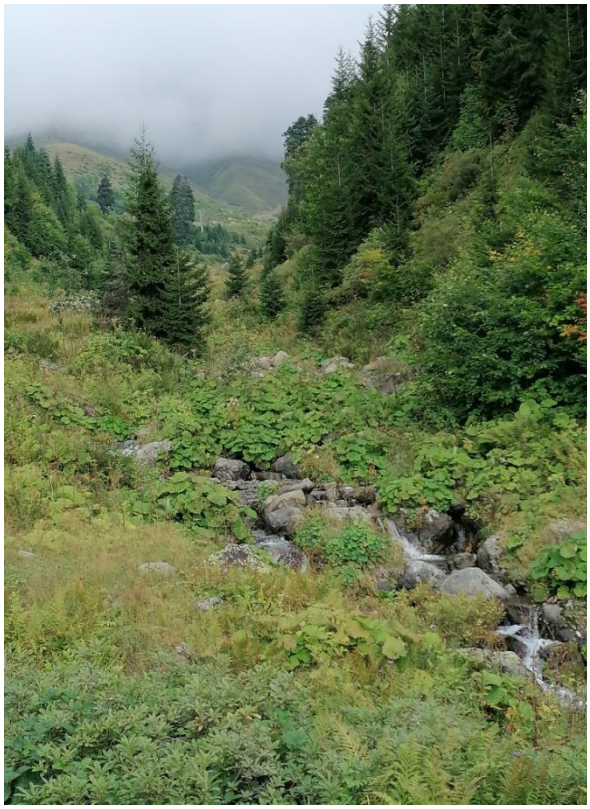


Photo 49. Akhalchala 1880m (G. Vinçon) (*Schizopelex akhalchala* sp. nov.)

Photo 50. Georgia, Mingrelie, above Koko, swampy brook on limestone substratum, 330m, 42.6467N, 42.2028E (G. Vinçon) (*Rhyacophila kokoa* sp. nov., *Ernodes mingreliensis* sp. nov., *Schizopelex mingrelia* sp. nov.)