Vestnik zoologii, **51**(1): 9–14, 2017
DOI 10.1515/vzoo-2017-0002

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UDC 595.792(477)

A REVIEW OF THE GENUS *EXERISTES* (HYMENOPTERA, ICHNEUMONIDAE, PIMPLINAE) FROM CARPATHIANS, WITH AN ILLUSTRATED KEY TO WESTERN PALEARCTIC SPECIES

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urn:lsid:zoobank.org:pub:05C4B5B7-0CC0-4E40-AC29-31B326AADE64

A Review of the Genus *Exeristes* (Hymenoptera, Ichneumonidae, Pimplinae) from Carpathians, with an Illustrated Key to Western Palaearctic Species. Varga, O. — *Exeristes longiseta* (Ratzeburg, 1844) and *E. roborator* (Fabricius, 1793), the Carpathian species of the genus *Exeristes* Förster, 1869, are reviewed. *Exeristes longiseta* is recorded for Ukraine for the first time. The following synonymy is established: *E. ruficollis* (Gravenhorst, 1829) = *E. denticulator* Aubert, 1983 **syn. n.** An illustrated key to Western Palaearctic species of the genus is provided.
Key words: parasitoids, new records, taxonomy, Ukraine.

Introduction

Exeristes Förster, 1869 is a small genus of the subfamily Pimplinae, with only nine known species worldwide, six of which occur in Western Palaearctic (Yu et al., 2012). By far two species, *E. arundinis* (Kriechbaumer, 1887) and *E. roborator* (Fabricius, 1793), have been recorded from Ukraine (mainly eastern and central parts) by Kasparyan and Khalaim (Kasparyan, 1981; Kasparyan, Khalaim, 2007). The Ukrainian Carpathian species of *Exeristes* are reviewed by the author for the first time: *E. longiseta* and *E. roborator* were found on the studied territory. *Exeristes longiseta* is recorded for the first time from

Ukraine. Constantineanu and Pisica (1977) recorded four species from Romania, *E. arundinis*, *E. longiseta* (Ratzeburg, 1844), *E. montanus* Constantineanu & Pisica, 1970, and *E roborator*, three of them — except *E. arundinis* — from the mountainous part. *Exeristes montanus* is known only from several females from Caraș-Severin, Brașov, Prahova, and Suceava Countries. According to Yu et al. (2012), most of the specimens from Ichneumonidae collection (including types), published by M. Constantineanu and C. Pisica (1977) are deposited at the Faculty of Biology (Alexandru Ioan Cuza University of Iasi). During my visit to Iasi I found that this collection was removed to M. Constantineanu's home and after his death was passed to his son, R. Constantineanu. Currently, this collection is stored at the abandoned M. Constantineanu's house and almost fully destroyed by *Anthrenus* beetles (M. Mitroiu, pers. comm.). Most of Pimplinae specimens (including types) are probably lost, but their real condition cannot be checked, because R. Constantineanu does not give an access to the collection. C. Pisica prepared his own collection, which is deposited at the Faculty of Biology (UAIC). This is the only available ichneumonid collection in Romania now. The collection contains specimens, identified by C. Pisica, and a large part of unsorted ichneumonid wasps (approximately 30–40 % of collection).

The species of the genus are ectoparasitoids of concealed larvae of insects from different orders (Yu et al., 2012).

Material and methods

This study is mainly based on specimens collected by sweep netting and using Malaise traps by the author in various locations of the Ukrainian Carpathians and adjacent territories in 2011–2014. Specimens are deposited in the collection of the I. I. Schmalhausen Institute of Zoology (ZISK, Ukraine), the Bavarian State collection of Zoology (ZSSM, Germany), the Alexandru Ioan Cuza University of Iasi (UAIC, Romania), the Natural History Museum, Wroclaw University (MNHHWU, Poland), and the Cantonal Museum of Zoology, Lausanne (CMZL, Switzerland) were also studied. All the specimens from Pisica's collection (UAIC) were examined, sorted and identified or re-identified (for misidentification see comments under each species) by the author. Morphological terminology used in the study follows that of Gauld (1991) and general species distribution follows that of Yu et al. (2012). Photographs of specimens were taken with a Leica DMRBE microscope with Nikon V1 camera, combined with CombineZM software (at ZSSM) and with a Leica stereomicroscope 205A with DFC 500 camera, combined with Zerene® software (at UAIC).

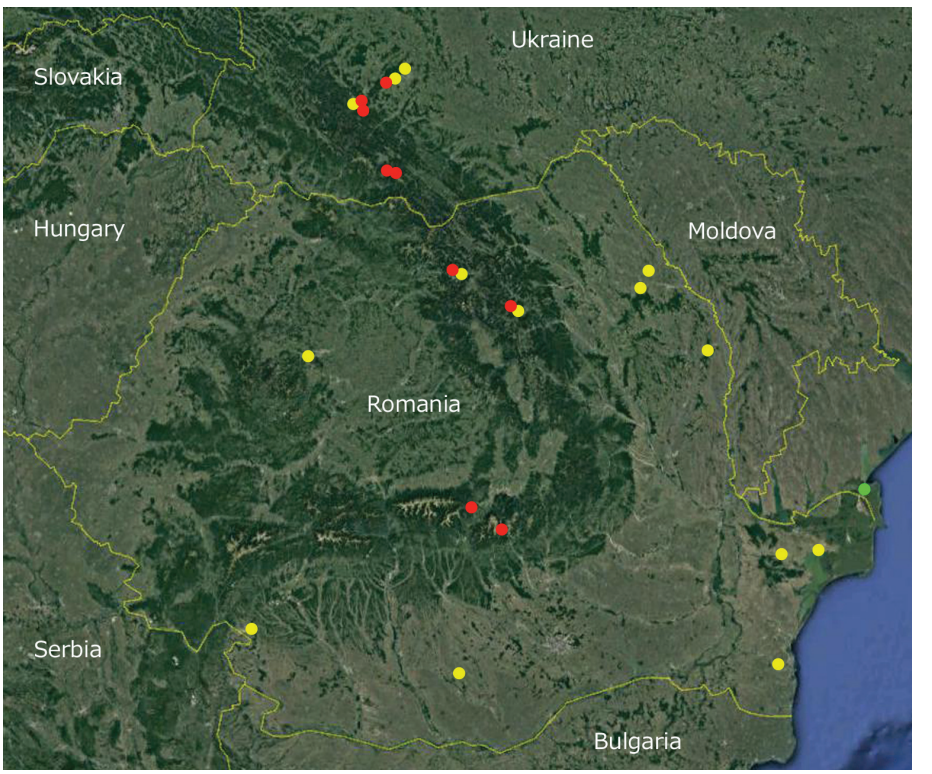

Fig. 1. The Carpathian *Exeristes* spp. distribution map. Yellow circle — *E. roborator*; red circle — *E. longiseta*; green circle — *E. arundinis*.

Key to Western Palaearctic *Exeristes* species

1. Female fore tarsal claws without basal lobes. Mesosoma partly red. Male hind coxa red and all trochanters yellow (fig. 3, *3*). ..... *E. ruficollis*
– Female fore tarsal claws with basal lobes. Mesosoma usually black, if sometimes partly or entirely red, then the ovipositor tip with a subapical tubercle (fig. 2, *1*, *3*). Male hind coxa and trochanters variable. If all male trochanters yellow, then hind coxa black. 2
2. Female metasomal tergites strongly transverse (fig. 2, *10*). Ovipositor tip with a subapical tubercle and female fore tarsal claws simple (not emarginated apically). Male clypeus with an apical tubercle (fig. 3, *4*). All male coxae usually black, trochanters red. ..... *E. roborator*
– Female metasomal tergites subquadrate or elongated. Ovipositor tip without a subapical tubercle or female fore tarsal claws emarginated apically. Male clypeus without an apical tubercle. Male coxae and trochanters variable. 3
3. Tarsomere 5 of hind tarsus about 1.2 times longer than tarsomere 2 (fig. 3, *5*). Ovipositor tip with a subapical tubercle (fig. 2, *3*). Female fore tarsal claws emarginated apically (fig. 1, *6*). Male scape, pedicel and all coxae black; all trochanters red (fig. 3, *1*). ..... *E. arundinis*
– Tarsomere 5 of hind tarsus shorter than tarsomere 2 (fig. 3, *2*). Ovipositor tip without a subapical tubercle (fig. 2, *2*). Female fore tarsal claws simple. Male scape, pedicel, fore and middle coxae, and all trochanters yellow; hind coxa black (fig. 3, *2*). ..... *E. longiseta*

Exeristes arundinis (Kriechbaumer, 1887) (figs 1; 2, *3*, *6*; 3, *1*)

Material. **Type material.** Lectotype ♀ and paralectotype ♀ (ZSSM). No material examined from Carpathians. **Additional material. Ukraine:** Odesa Region: Kyliya District, 12 km of Vylkovo, sweeping, 4.07.1997, 3 ♂, idem, 6.07.1997, 1 ♀ (Kasparyan) (ZISK).

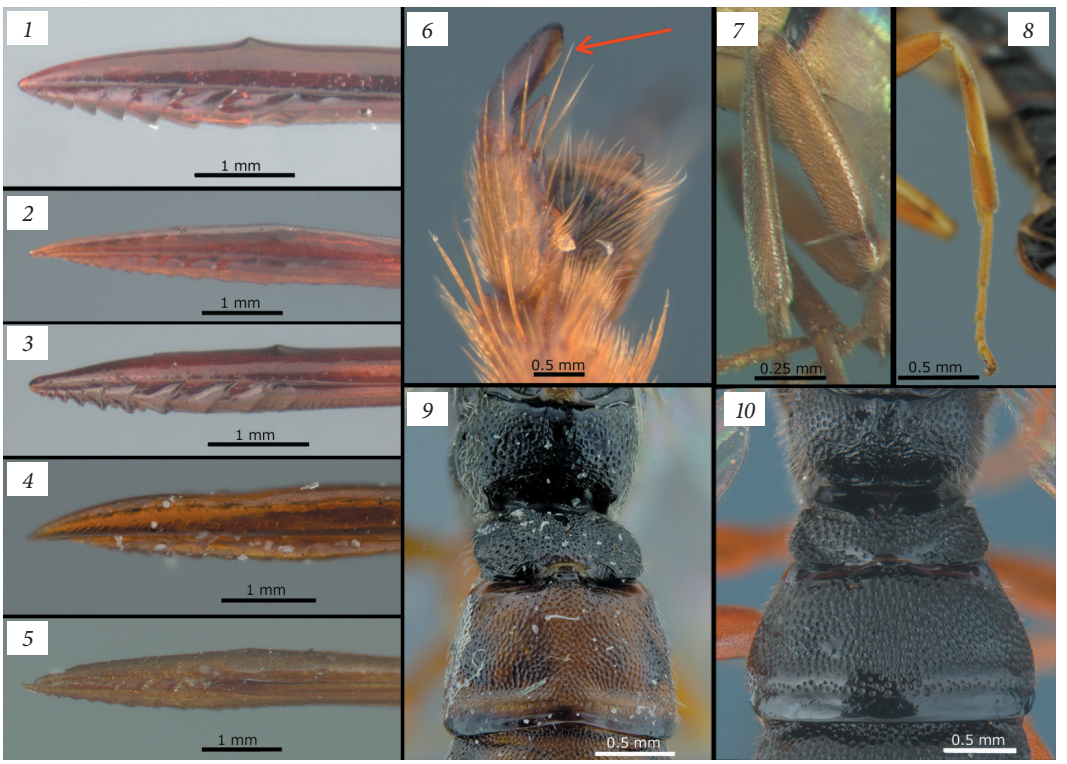

Fig. 2. *Exeristes* spp., female. *1* — *E. roborator*, ovipositor tip (lateral view); *2* — *E. longiseta*, ovipositor tip (lateral view); *3* — *E. arundinis*, ovipositor tip (lateral view); *4* — *E. denticulator*, holotype, ovipositor tip (lateral view); *5* — *E. ruficollis*, lectotype, ovipositor tip (lateral view); *6* — *E. arundinis*, fore tarsal claw (lateral view); *7* — *E. ruficollis*, lectotype, hind femur and tibia (lateral view); *8* — *E. denticulator*, holotype, hind tibia and tarsus (lateral view); *9* — *E. denticulator*, holotype, propodeum and tergites I–II of metasoma (dorsal view); *10* — *E. roborator*, propodeum and tergites I–II of metasoma (dorsal view).

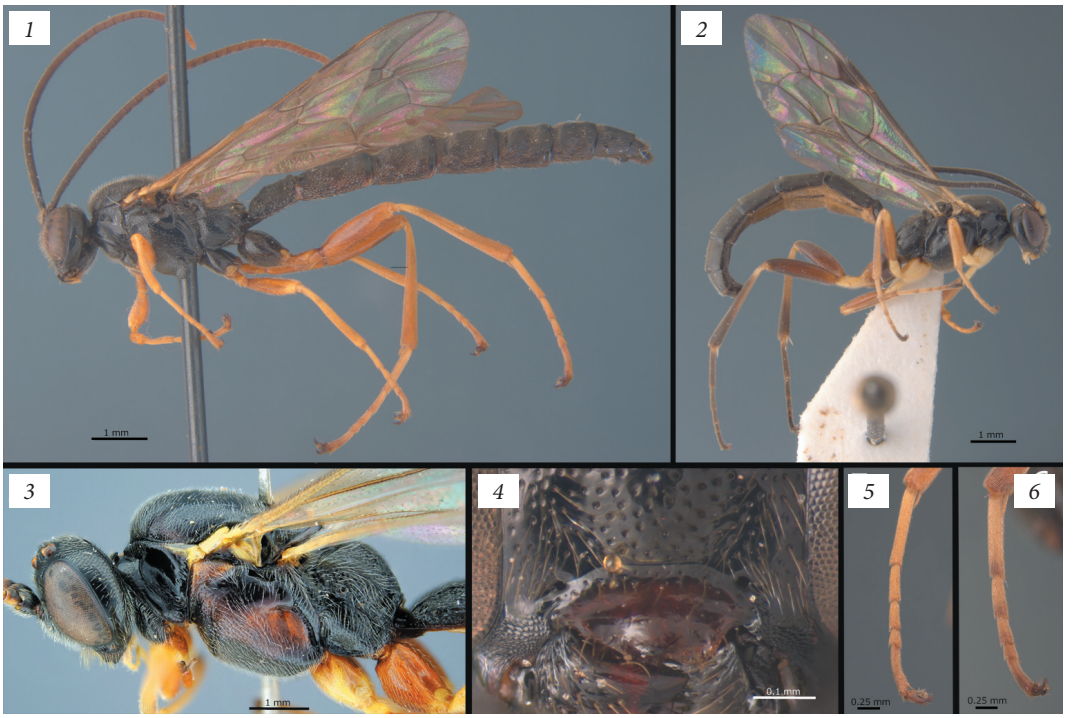

Fig. 3. *Exeristes* spp., male. *1* — *E. arundinis*, habitus (lateral view); *2* — *E. longiseta*, habitus (lateral view); *3* — *E. ruficollis*, head and mesosoma (lateral view); *4* — *E. roborator*, clypeus (frontal view); *5* — *E. arundinis*, hind tarsus (lateral view); *6* — *E. roborator*, hind tarsus (lateral view).

Diagnosis. The female is characterized by the hind coxa black, trochanter red; fore tarsal claws enlarged basally (into lobes) and emarginated apically (fig. 2, *6*); ovipositor tip subapically tuberculated (fig. 2, *3*); metasomal tergites elongated; and hind tarsus with fifth tarsomere about 1.2 times longer than second tarsomere (fig. 3, *5*). The male generally resembles female and has black scape, pedicel, and all coxae; red all trochanters (fig. 3, *1*).

Distribution. Palaearctic Region (Yu et al., 2012).

Exeristes longiseta (Ratzeburg, 1844) (figs 1; 2, *2*; 3, *2*, *6*)

Material. **Carpathians. Romania:** Brasov Country: Piatra Craiului, 17.08.1960, 1 ♀; Sinaia, 10.12.1960, ex cones, 1 ♀; Neamt Country: Ceahlau, 16.07.1967, 1 ♀; Suceava Country: Poiana Stampei, 17.08.1974, 1 ♀ (Pisica). **Ukraine:** Ivano-Frankivsk Region: Bogorodchany District: Zhbyr, 400 m, mixed forest, 7–8 km SW of Bogorodchany, sweeping, 21.04.2011, 1 ♀; idem, ex *P. mugo* (Turra, 1764) cones infested by *Pissodes validirostris* (Sahlberg, 1834), collected 17.10.2013, reared 25.10.2013, 1 ♂, 1 ♀; idem, Malaise trap, 2–20.07.2014, 1 ♂; Gorgany, 1500–1600 m, m. Syvulya, subalpine zone, 14–15 km SW of Stara Guta, sweeping, 14.07.2012, 7 ♂, 2 ♀; idem, sweeping, 1.07.2012, 3 ♀; Nadvirna District: Chornogora, subalpine zone, near Nesamovyte, sweeping, 10–11.07. 2013, 1 ♀; Transcarpathian Region: Rakhiv District: Chornogora, 2020 m, m. Petros, sweeping, 17.06.2012, 1 ♀ (Varga).

Diagnosis. The female is characterized by the hind coxa black, trochanter yellowish; fore tarsal claws enlarged basally (into lobes); ovipositor tip subapically simple (without tubercle) (fig. 2, *2*); metasomal tergites elongated; and hind tarsus with fifth tarsomere weakly shorter than the second tarsomere (as on fig. 3, *2*). The male generally resembles female and has yellow scape, pedicel, fore and mid coxae, and all trochanters (fig. 3, *2*).

Distribution. Palaearctic Region (Yu et al., 2012), **new record for Ukraine**.

Remarks. Only two identified females found in Pisica's collection, both incorrectly: one female as "*Liotryphon punctulatus* (Ratzeburg, 1848)" and another one as "*Dolichomitus kriechbaumeri* (Schulz, 1906)".

Exeristes roborator (Fabricius, 1793) (figs 1; 2, *1*, *10*; 3, *4*)

Material. **Carpathians. Romania:** Constanţa Country: Agigea, 12.08.1964, 2 ♂, 3 ♀; idem, 13.08.1964, 1 ♂, 4 ♀; idem, 20.08.1964, 2 ♀; idem, 2.06.1968, ♀; Teleorman Country: Merisani, 10.08.1958, ♀; Vaslui Country: Husi, 17.06.1980, ♀; Maramures Country: Cluj, 25.07.1979, ex *Larinus* sp., 2 ♂; idem, ex *Larinus* sp., 21.07.1989, 1 ♀; idem, ex *Larinus* sp., 18.07.1990, 1 ♂, 2 ♀; idem, 25.07.1990, 4 ♂, 2 ♀; Mehedinti Country: Planisevita, 15.05.1967, 1 ♀; Iasi Country: Breazu, 28.09.1961, 2 ♀; idem, 2.08.2000, 1 ♀; idem, 17.08.2000, 1 ♂; Dumesti, 22.08.1959, 1 ♂; idem, 24.08.1959, 1 ♂, 2 ♀; idem, 5.09.1959, 1 ♀; Neamt Country: Rugineşti, 9.07.1967, 1 ♂; Suceava Country: Poiana Stampei, 19.08.1971, 1 ♀; idem, 17.08.1954, 1 ♀; Tulcea Country: Babadag, 07.1968, 1 ♂; Murighiol, 8.09.1982, 3 ♂; idem, 13.09.1983, 1 ♂ (Pisica). **Ukraine:** Ivano-Frankivsk Region: Bogorodchany District: Mochary, 300–350 m, mixed forest, 5 km NE of Bogorodchany, sweeping, 5.09.2011, 1 ♀; idem, 7.09.2011, 1 ♀ (Varga); Gorgany, Stara Guta, 07.2004, 1 ♀; Ivano-Frankivsk, Vovchynets, 21.05.2006, 1 ♀ (Sirenko).

Diagnosis. The female is characterized by the hind coxae and all trochanters red; fore tarsal claws enlarged basally (into lobes); ovipositor tip subapically tuberculated (fig. 2, *1*); metasomal tergites strongly transverse; and hind tarsus with fifth tarsomere about 1.0–1.1 times longer than second tarsomere (as on fig. 3, *6*). The male generally resembles female and has black coxa, red trochanter, and apically tuberculated clypeus (fig. 3, *4*).

Distribution. Afrotropical, Oriental and Palaearctic Regions (Yu et al., 2012).

Remarks. Some specimens in Pisica's collection were misidentified as "*Exeristes arundinis*" and "*Gregopimpla bernuthii* (Hartig, 1838)". The collection also contains numerous specimens without locality labels reared from *Rhyacionia buoliana* (Denis & Schiffermuller, 1775).

Exeristes ruficollis (Gravenhorst, 1829) (figs 2, *4*, *5*, *7–9*; 3, *3*)

Exeristes denticulator Aubert, 1983 **syn. n.**

Material. **Type material.** *Exeristes ruficollis*: lectotype ♀ (MNHHWU); *E. denticulator*: holotype ♀ (CMZL). No material examined from Carpathians. **Additional material.** 1 ♂ and 6 ♀ (ZSSM).

Diagnosis. The female is characterized by the hind coxa red, all trochanters yellowish-red; fore tarsal claws simple basally (without lobes); mesosoma partly red; ovipositor tip subapically simple (without tubercle) (fig. 2, *4, 5*); and metasomal tergites subquadrate to weakly transverse (fig. 2, *9*). The male generally resembles female and has red hind coxa, yellow trochanters, almost entirely black scape and pedicel (fig. 3, *1*).

Distribution. Palaearctic Region (Yu et al., 2012).

Remarks. *Exeristes denticulator* holotype female generally resembles *E. ruficollis*, but differs in the coloration of the hind tibia (fig. 2, *7*, *8*), which is however can be a variable character (G. Broad, pers. com.).

The author is deeply grateful to the museum collections curators, Marek Wanat (MNHHWU) and Anne Freitag (CMZL) for providing materials, Stefan Schmidt (ZSSM), Ovidiu Popovici, Lucian Fusu, and Mircea Mitroiu (UAIC) for access to the collections and photolaboratories of the respective institutions. The author's visit to Germany was funded by the Ernst Mayr Travel Grant and DAAD scholarship, and visit to Romania by the Erasmus Mundus Scholarship. The author's field work in Carpathians was funded by The Rufford Foundation.

References

Constantineanu, M. I., Pisica, C. 1977. Hymenoptera. Ichneumonidae. Subfamiliile Ephialtinae, Lycorininae, Xoridinae si Acaenitinae. *Fauna Republicii Socialiste Romania*, **9** (7), 1–305.

Gauld, I. D. 1991. The Ichneumonidae of Costa Rica, 1. *Memoirs of the American Entomological Institute*, **47**, 1–589.

Kasparyan, D. R. 1981. Subfamily Pimplinae (Ephialtinae). *In*: Medvedev, G. S. eds. *Key to insects of European Territory of the USSR. Vol. 3. Hymenoptera. Part 3*. Leningrad, Nauka, 41–97 [In Russian].

Kasparyan, D. R., Khalaim, A. I. 2007. Subfamily Pimplinae *In*: Lelej, A. S. eds. *Key to the insects of Russia Far East. Vol. IV. Neuropteroidea, Mecoptera, Hymenoptera. Part 5*. Vladivostok, Dalnauka, 279–410 [In Russian].

Yu, D. S., van Achterberg, K., Horstmann, K. 2012. *World Ichneumonoidea 2011. Taxonomy, Biology, Morphology and Distribution.* Avaliable from http://www.taxapad.com/

Received 19 January 2017
Accepted 28 March 2017