A new species of *Hellichiella* (Diptera: Simuliiidae) with 11-segmented antenna from the Eocene

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**ABSTRACT**

We synonymize *Hellichiella pugach* Perkovsky & Sukhomlin, 2015 with *Greniera yankovskyi* Perkovsky & Sukhomlin, 2015 (Stegoterniini) based on the holotype and female paratype of *H. pugach* (Stegoterniini). *Hellichiella polessica* n. sp. differs from *Hellichiella oligocenica* (Rubtsov, 1936) (the only species of *Hellichiella* known in Baltic amber) by its smaller body, narrower head, 11-segmented antenna, greater number of upper corneal facets, cylindrical metabasitarsus, and narrowed gonostylus. Our findings show three species of blackflies in Rovno amber: *Greniera ukrainica* Perkovsky & Sukhomlin, 2015 and *G. yankovskyi* Perkovsky & Sukhomlin, 2015 (Stegoterniini) and *Hellichiella polessica* n. sp. (Nevermanniini).

**KEYWORDS:** Rovno amber, Eocene, Simuliidae, *Hellichiella*, blackflies.

**INTRODUCTION**

In the extant world blackfly fauna, there are three genera and 43 species belonging to the tribe Stegoterniini Enderlein, 1930 and 13 genera and 738 species in the Nevermanniini Enderlein, 1921. Most species of both tribes feed on birds, although they can also attack mammals, including humans (Yankovsky 2002; Adler & Crosskey 2015). Five fossil species of Stegoterniini are known; these are *Greniera ukrainica* Perkovsky & Sukhomlin, 2015 and *Greniera yankovskyi* Perkovsky & Sukhomlin, 2015 from the Rovno amber (Perkovsky & Sukhomlin 2015), and three species—*Greniera affinis* (Meunier, 1904), *Greniera importuna* (Meunier, 1904), *Greniera pulchella* (Meunier, 1904)—from the Baltic amber (Meunier 1904). A single fossil genus and species was previously known in the Nevermanniiini, *Hellichiella oligocenica* Rubtsov, 1936, from the Baltic amber (Rubtsov 1936). Recently Perkovsky and Sukhomlin (2015) described *Hellichiella pugach* from the Rovno amber. Further examination and comparison of the holotype and paratype of *H. pugach* with descriptions of fossil and modern species prompted their reassignment to the genus *Greniera* based on their 10-segmented antenna and the presence of the basal medial cell in their wings. Thus, members of the genus *Greniera* clearly dominate Rovno amber blackflies.
Herein, we describe a new blackfly species from the Rovno amber. *Hellichiella polessica* n. sp. is assigned to this genus based on its 11-segmented antenna with the pedicel considerably longer than the third antennomere, non-pubescent anepisternal membrane and katepisternum, the wing without medial cell, well developed and large calcipala, and the absent pedisulcus.

**MATERIALS AND METHODS**

All Rovno amber blackflies discussed here save for the specimen UA-28008 (see Perkovsky & Sukhomlin, 2015) were undoubtedly excavated from the Pugach quarry, near the Klesov village in the Rovno Region. The specimen K-9812 was found in a clear piece of amber (65×36×18 mm, weight 16.3 g) from a representative collection. The material including types are housed in the amber collection of the Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kiev (SIZK). The specimens were photographed using a Leica 165 M microscope with an Olympus SZX10 and Olympus CX41 camera.

**TAXONOMY**

Tribe Stegopterniini Enderlein, 1930  
Genus *Greniera* Doby & David, 1959  
*Greniera yankovskyi* Perkovsky & Sukhomlin, 2015

*Greniera yankovskyi* Perkovsky & Sukhomlin, 2015: 50, pl. VII, fig.1

*Hellichiella pugach* Perkovsky & Sukhomlin, 2015: 51, pl. VII, fig.2, **n. syn.**

Scrupulous scrutiny of the holotype of *Hellichiella pugach* showed that it must be attributed to the genus *Greniera* based on the following characters: 10-segmented antenna, presence of the basal medial cell in the wing and developed albeit small calcipala. The specimen is assigned to species *Greniera yankovskyi* based on the following combination of features: short maxillary palp, large palpomere 2, palpomere 4 not longer than palpomeres 2 and 3 combined, basal radial cell short (0.25 wing length). The female paratype SIZK K-26804 of *H. pugach* also belongs to *G. yankovskyi*.

Tribe Nevermanniini Enderlein, 1921  
Genus *Hellichiella* Rivosecchi & Cardinali, 1975  
*Hellichiella polessica* Perkovsky & Sukhomlin, n. sp.  
(Figs 1–25)

*Hellichiella pugach* [partim]: Perkovsky, Sukhomlin, 2015: 51, pl. VII, fig. 3.  
**LSID:** urn:lsid:zoobank.org:act:58E7A98C-C4FF-424C-9409-4A82616656EE.  
**Etymology:** From Polesie, the natural and historical region of Eastern Europe, where the holotype was found.  
**Description:** Female (Figs 1–15). Head slightly smaller than thorax. Clypeus convex, rounded-square. Antenna 11-segmented, pedicel considerably longer than
scape or antennomere 3. Maxillary palp long; palpomere 4 long, distinctly longer than palpomeres 2 and 3 together.


Wing. Radial sector not branched. Basal radial cell short, 0.2 wing length. Basal medial cell absent. Medial veins (M1, M2) merge at posterior margin of cell, form short stem.
Legs in holotype spotted, hind tibia yellow, darkened apically (hind tibia dark in paratype). Basitarsi of all legs cylindrical. Calcipala well developed, large; pedisulcus invisible. Claw with large tooth basally.


Male (Figs 16–25). Head slightly smaller than thorax, ca 5× as long as body. Antenna 11-segmented, pedicel considerably longer than scape and almost equal to antennomere 3. Maxillary palp long; palpomere 4 long, distinctly longer than palpomeres 2 and 3 together. Eyes with distinctly separated upper and lower corneal facets; facets numerous, forming more than 15 rows.
Figs 12–15. *Hellichiella polessica*, paratype SIZK K-9812: (12) general lateral view, (13) antenna, (14) abdomen and scutum, (15) wing. Scale bars (mm): Fig. 12 – 1, Fig. 13 – 0.2, Figs 14, 15 – 0.5.

Figs 16–21. *Hellichiella polessica*, paratype SIZK K-26871: (16) general view, (17) thorax, (18) calcipala and pedisulcus, (19) maxillary palp, (20) antennae, (21) male genitalia. Scale bars (mm): Fig. 16 – 1, Fig. 17 – 0.5, Figs 18, 20, 21 – 0.2, Fig. 19 – 0.1.

Wing. Both hair-like and spine-like seta clearly present on costa.

Legs mostly dark. Basitarsus of all legs cylindrical. Calcipala well developed, large; pedisulcus absent.


Measurements (mm). Holotype: wing length, 2.09; head width, 0.87; maxillary palp length, 0.48; antenna length, 0.59. Paratype female: body length 2.63; head length 0.48; wing length 2.20; wing width 0.175; antenna length 0.47. Paratype male: body length, 1.93; head length, 0.37; maxillary palp length 0.28; palpmere 4 0.17; antenna length 0.37.

Material examined: Ukraine: Holotype ♀ (SIZK UA-28008): Rovno amber, Late Eocene [well preserved, well visible in dorsal and lateral views, and partly ventrally]. Paratypes: 1♂ (SIZK K-9812) Klesov, Rovno amber, Late Eocene [satisfactorily preserved, partly visible in dorsal and ventral views; syninclusions: Sciarioidea, stellate hairs]; 1♂ (SIZK K-26871); Klesov, Rovno amber, Late Eocene [moderately well preserved, clearly visible in ventral view and poorly visible in dorsal view; syninclusion: Acari: Erythraeidae, Fig. 26].

Figs 22–25. Hellichiella polessica, paratype SIZK K-26871: (22) antennae, (23) calcipala and pedisulcus, (24) maxillary palp, (25) gonocoxites and gonostyli. Scale bars (mm): Figs 22, 23, 25 – 0.2, Fig. 24 – 0.1.
Comparison: The new species differs from *H. oligocenica* (Rubtsov, 1936) (the only *Hellichiella* species known from the Baltic amber) in having a smaller body, narrower head, 11-segmented antenna, greater number of upper corneal facets, cylindrical metabasitarsus, and a narrowed gonostylus. The species differs from extant *Hellichiella* species by silvery spots on scutum and a slightly curved gonostylus. Most extant species have characteristic pattern—three lighter longitudinal bands—on the scutum in females, which we have not observed.

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