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**REDESCRIPTION AND NEW DATA ON DISTRIBUTION OF
GLYPHOMERUS FLAVABDOMEN WITH KEY
TO THE PALEARCTIC SPECIES OF THE GENUS
GLYPHOMERUS (HYMENOPTERA, TORYMIDAE)**

M. D. Zerova, V. N. Fursov

*Schmalhausen Institute of Zoology, NAS of Ukraine,
vul. B. Khmel'nitskogo, 15, Kyiv, 01030 Ukraine
E-mail: zerova@izan.kiev.ua; ufensia@gmail.com*

Redescription and New Data on Distribution of *Glyphomerus flavabdomen* with a Key to the Palearctic Species of the Genus *Glyphomerus* (Hymenoptera, Torymidae). Zerova, M. D., Fursov, V. N. — A detailed redescription of *Glyphomerus flavabdomen* based on a previously unknown material from Georgia is represented. An improved key to the Palearctic *Glyphomerus* species is provided. Review of trophical association of the Palearctic species of *Glyphomerus* is given.
Key words: Hymenoptera, Torymidae, *Glyphomerus*, distribution, key.

Introduction

The genus *Glyphomerus* includes nine species in the Palearctic region (Grissell, 1995; Noyes, 2017). *Glyphomerus flavabdomen* Zerova was originally described from Iran (Zerova et al., 2008). This species was reared by Dr. Karimpour in the North-Western of Iran from galls of *Hedickiana levantina* (Hedicke) (Cynipidae) on *Salvia* sp. (Lamiaceae). Now this species is found in the material received from Georgia. Detailed illustrated redescription of *G. flavabdomen* including the characters of the illustrated specimens from Georgia is discussed. Proposed key to the Palearctic *Glyphomerus* species includes species which have not been previously included (Zerova, Seryogina, 1999; Stojanova, 2005).

***Glyphomerus flavabdomen* Zerova 2008 (fig. 1–4)**

Zerova, Seryogina, 1999: 960, 2000: 95; Zerova et al., 2008: 289.

Material. Type. Holotype ♀: Iran: Urmia, Seer Mountain, h = 1400 m, ex galls on stems of *Salvia* sp. (Lamiaceae) induced by *Hedickiana levantina* (Hedicke) (Cynipidae), em. 11–18.07.2007 (Karimpour). Paratypes: 31 ♀, 26 ♂ (labels as in the holotype) (SIZK).

Non-type. **Georgia:** Tbilisi, Botanical Garden, dry stone slopes, from cynipid galls on stems (plant was not identified), coll. 20.06.1976, reared 12.07.1976, 3 ♀, 3 ♂ (Khodjevanishvili) (SIZK).

Description

Female. Body length 2.3–3.5 mm, holotype 2.5 mm (without ovipositor), ovipositor sheaths a little longer than metasoma length (60 : 41) (in profile). Head and mesosoma dark green with bronze shine, on some specimens bright green, all coxa dark green, femur brown, tibia variable from yellowish-brown to yellow, tarsi yellow. Metasoma in some specimens including holotype yellow, in other specimens basal part of metasomal terga yellow, especially terga 1–2 yellow, last tergum brown with dark green reflection; colour of metasoma variable; ovipositor brown. Fore wing with dark spot below stigma, veins and pubescence on wing disc dark brown.

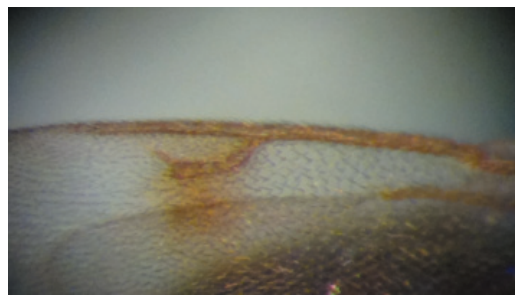
Head from above slightly wider than pronotum, twice broader than long (65 : 33); temples short, not bulging with converging sides, POL almost three times longer than OOL (17 : 6). Head in frontal view: width to height in ratio 65 : 49; malar space shorter than eye length in ratio 12 : 26; anterior margin of clypeus straight, eye with sparse short hairs. Head with finely reticulate surface and dense pubescence. Antenna inserted slightly below middle of face; scrobal depression reaching median ocellus; scape almost reaching median ocellus; scape long, 5 times as long as its width (26 : 5); anellus strongly transverse, first flagellar segment somewhat elongate, second a little elongate, flagellomere 5–7 transverse; club thin, 3-segmented. Flagellum closed with short white adpressed hairs.



1



2



3



4

Fig. 1–4: *Glyphomerus flavabdomen* Zerova: 1 — female, lateral view; 2 — abdomen and ovipositor; 3 — fore wing venation; 4 — antenna.

Mesosoma: distinctly bulging in profile, dorsal surface of mesosoma reticulate and shiny with short, white pubescence; pronotum (from above) three times as wide as long, tegula green. Propodeum finely reticulate. Fore wing in basal third bare, only costal cell (from above) with some very short hairs; the last part of wing disc with sparse brown hairs; one elongated brown spot under stigmal vein and other little spot under distal part of parastigma; marginal, postmarginal and stigmal vein as 20 : 22 : 5; radial vein shortly petiolate. Hind coxa punctuated, hind femur thickened. Mesepisternum with fine punctation, mesepimeron without distinct sculpture.

Metasoma: metasoma somewhat longer than mesosoma (7 : 4) with distinct punctured surface and long thick pubescence on terga 2–6. Ovipositor longer than metasoma, ovipositor index (ratio length of ovipositor to length of hind tibia) 2.2 (20 : 9).

Male. Body length 1.5–3.0 mm, differs from female by stouter funicle. Colour of metasoma variable as in female from yellow to almost green dorsally with yellow colour on ventral side. Specimens from Georgia entirely dark-green.

Variation

In original description of *G. flavabdomen* we noted that coloration of abdomen of female is variable from entirely yellow to dark-green with yellow spots only on two or three first terga. Some specimens have also yellow spots on lateral sides of mesosoma. In specimens from Georgia all females have yellow spots only on first metasomal tergum.

Coloration of male body is more variable. In specimens from Iran colour of metasoma is variable as in female, from yellow to almost green dorsally with yellow colour on ventral side, but in specimens from Georgia metasoma is wholly dark-green.

Tropical associations and distribution of Palearctic *Glyphomerus* species

Species	Host	Distribution
<i>G. aylax</i> Stojanova, 2005	<i>Aylax hypecoi</i> Trotter (Cynipidae) on <i>Hypecoum imberbe</i> Sibthorpet & Smith (Hypecoaceae)	Bulgaria
<i>G. carinatus</i> Nikolskaya, 1952	<i>Diplolepis</i> spp. (Cynipidae) on <i>Rosa</i> spp. (Rosaceae)	Austria, Ukraine, Kyrgyzstan, Tadjikistan
<i>G. europaeus</i> (Erdős, 1957)	Unknown	Hungary, Czech Republic, Slovakia, former Yugoslavia
<i>G. flavabdomen</i> Zerova, 2008	<i>Hedickiana levantina</i> (Hedicke) (Cynipidae) on <i>Salvia</i> spp. (Lamiaceae)	Iran, Georgia
<i>G. isosomatis</i> Zerova et Seryogina, 1999	<i>Tetramesa brevicornis</i> Walk., <i>T. brevicollis</i> Walk., <i>T. aneurolepidii</i> Zer. (Eurytomidae) on <i>Festuca</i> , <i>Sulcata</i> , <i>Aneurolepidium ramosum</i> (Poaceae)	Ukraine, Russian Federation (Astrahan')
<i>G. montanus</i> Zerova et Seryogina, 1999	<i>Niporhodites magna</i> Vyezh. (Cynipidae) on <i>Rosa</i> spp. (Rosaceae)	Kyrgyzstan
<i>G. parvulus</i> Zerova et Seryogina, 2000	<i>Liposthenes hymenocrateris</i> Diak. (Cynipidae) on <i>Hymenocrater bituminosus</i> Fisch. et Mey (Lamiaceae)	Turkmenistan
<i>G. stigma</i> (Fabricius, 1793)	<i>Diplolepis</i> spp. (Cynipidae) on <i>Rosa</i> spp. (Rosaceae)	Holarctic
<i>G. tibialis</i> (Förster, 1856)	<i>Aulacidea</i> spp. <i>Diastrophus</i> spp. (Cynipidae) on <i>Potentilla</i> (Rosaceae), <i>Hieracium</i> (Astraceae)	Palearctic

Key to the Palearctic species of *Glyphomerus* Förster

1. Pronotum in dorsal view with anterior corners prominent, below the corners with deep holes laterally. Propodeum with distinct median carina and two short carina laterally. Ovipositor as long as abdomen (laterally). Body black with green reflection. Scape yellow at least below. In galls of *Diplolepis* spp. (Cynipidae) on *Rosa canina*. — Austria, Ukraine, Kyrgyzstan, Tajikistan.
..... *G. carinatus* Nikolskaya

- Pronotum in dorsal view without prominent corners and holes laterally with sides subparallel.....2.
2. Body completely orange or yellow, sometimes metasoma with yellow or yellow-brown spots especially on basal terga and also on head and mesosoma.
- Body dark-green to black with bluish-green reflection. Fore wing usually maculate. 4.
3. Body completely orange, scape yellow, flagellum brown, fore wing not maculate. Ovipositor much shorter than metasoma, 1/2 the length of hind tibia. — Hungary, Czech Republic, Slovakia, former Yugoslavia. *G. europaeus* (Erdös)
- Body with green mesosoma and yellow or partly yellowish-brown metasoma especially on basal terga, sometimes the head also with yellow spots. Fore wing with dark spot near radial vein. Ovipositor a little longer than metasoma. In galls of *Hedickiana levantina* (Hedicke) (Cynipidae) on *Salvia* sp. — Georgia, Iran. *G. flavabdomen* Zerova
4. Malar space short, 0.25 to 0.33 length of eye. 5
- Malar space longer, 0.4–0.55 length of eye. 6
5. Body black with bronze or violet reflection. Propodeum coarsely reticulate and with some curved wrinkles. Postmarginal vein 2 times as long as stigmal vein. Ovipositor somewhat longer than metasoma. In cynipid galls of the genus *Diplolepis* on *Rosa* spp. — Holarctic. *G. stigma* (Fabricius)
- Body bright-green. Propodeum finely reticulate. Postmarginal vein 1.7 times as long as stigmal vein. Ovipositor a little longer than metasoma. In galls of *Niporhodites* (Cynipidae) on *Rosa* spp. — Kyrgyzstan. *G. montanus* Zerova et Seryogina
6. First funicular segment distinctly transverse. 7.
- The second to seventh funicular segments subquadrate; club as broad as funicle. Marginal and postmarginal veins subequal in length. Ovipositor as long as metasoma and 1.85 times longer than hind tibia. Fore wing infumate with 2 connected maculae. Stigmal vein about half as long as marginal vein. In galls of some *Tetramesa* (Eurytomidae) species on *Festuca* spp. and *Aneurolepidium ramosum* (Poaceae). — Ukraine, Russian Federation (Astrakhan'). *G. isosomatis* Zerova et Seryogina
7. The second to seventh funicular segments distinctly transverse; club broader than funicle. Marginal vein 1.3 times as long as postmarginal vein. Ovipositor longer than metasoma in ratio 10 : 4.5. Stigmal vein about half as long as marginal vein. Fore wing with one dark spot below stigma. In galls of *Liposthenes hymenocrateris* (Cynipidae) on stems of *Hymenocrater bituminosus* (Lamiaceae). — Turkmenistan. *G. parvulus* Zerova et Seryogina
- First funicular segment subquadrate or slightly elongate. 8
8. Marginal vein 1.8 times as long as postmarginal vein and 3.0 times as long as stigmal vein. Second funicular segment slightly elongate. Fore wing with two dark spots. In cynipid galls on *Potentilla* spp. (Rosaceae). — Palaearctic Region. *G. tibialis* (Förster)
- Marginal vein 1.2 times as long as postmarginal vein and 2.4 times as long as stigmal vein. The second funicular segment quadrate. Fore wing infumate with one dark spot under the stigmal vein. Ovipositor as long as metasoma. In galls of *Aylax hypaei* (Cynipidae) on *Hypocoum imberbe* (Hypocoaceae) — Bulgaria. *G. aylax* Stojanova

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