

Order Coleoptera, family Georissidae

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INTRODUCTION

The Georissidae is a small hydrophiloid family with 77 known species classified into the only genus *Georissus* Latreille, 1809. The representatives of the genus occur in all zoogeographical regions, with the highest diversity in the Old World tropics (Hansen, 1999). Both larvae and adults inhabit wet muddy or sandy banks of streams, rivers and standing waters, sometimes also on wet habitats far from permanent water bodies. Typically, adults are covered by a layer of mud or sand grains dorsally, and are therefore quite easy-to-overlook when collected. Adults are attracted to light and seem to be good flyers. Larvae are predaceous, preying on various invertebrates, e.g. larval Diptera and Nematoda (Hansen, 2000). Adults are saprophagous, feeding most probably on decaying organic particles found in the mud (Hebauer, 1998).

No species of the Georissidae have been recorded from the Arabian Peninsula so far. During 2006–2007, short series of a georissid species have been collected by Antonius van Harten at a few localities in the United Arab Emirates. This material, representing the first record of the family for Arabian Peninsula, proved to belong to a new species, which is described below.

MATERIALS AND METHODS

A portion of the specimens were dissected, male genitalia were cleared in lactic acid and placed on a plastic card below the beetle in water-soluble dimethyl hydantoin formaldehyde resin (DMHF). Male genitalia and abdomen were examined under Nikon TS100 light microscope, the figure of male genitalia was traced from a photograph. The habitus photo was taken using Olympus Camedia C-5060 camera attached to Olympus SZX9 binocular microscope.

Within the description, only the characters reliable for specific identification are mentioned, for generic diagnosis see Hansen (1991). In descriptions of superficial structures, small denticles bearing apical sensilla are referred to as ‘granules’ analogically to the terminology used for similar features of the Helophoridae by Angus (1992).

The holotype was deposited in the National Museum, Praha, Czech Republic (NMPC, M. Fikáček); paratypes were deposited in the Museum of Southeastern Moravia, Zlín, Czech Republic (MJMZ, D. Trávníček); the Division of Entomology, University of Kansas Natural History Museum, Lawrence, Kansas (KSEM, A. Short) and the United Arab Emirates Invertebrate Collection (UAEIC).

SYSTEMATIC ACCOUNT

Georissus (Neogeorissus) chameleo* Fikáček & Trávníček *nov. spec. Plate 1, Figure 1
Specimens examined: Holotype: ♂, United Arab Emirates, Sharjah-Khor Kalba, near tunnel [24°59'N 56°09'E], 31.v–7.vi.2006, light trap, leg. A. van Harten. Paratypes: 1 ♀, same data as holotype. 3 ex., al-Ajban, 27.v–26.vi.2006; 2 ex., 9–16.v.2006; 2 ♀, 2 ex., 5–12.vi.2006, all light trap, leg. A. van Harten; 1 ♀, 1.iv–2.v.2006, same locality and collector, Malaise trap. 1 ♂, 1 ex., Hatta, 10–17.iv.2006; 1 ex., 19–26.iv.2006; 1 ex., 24–29.v.2006; 1 ♂, 17–24.viii.2006; all light trap, leg. A. van Harten. 1 ex., Wadi Wurayah, 18–25.iii.2007, Malaise trap, leg. A. van Harten.

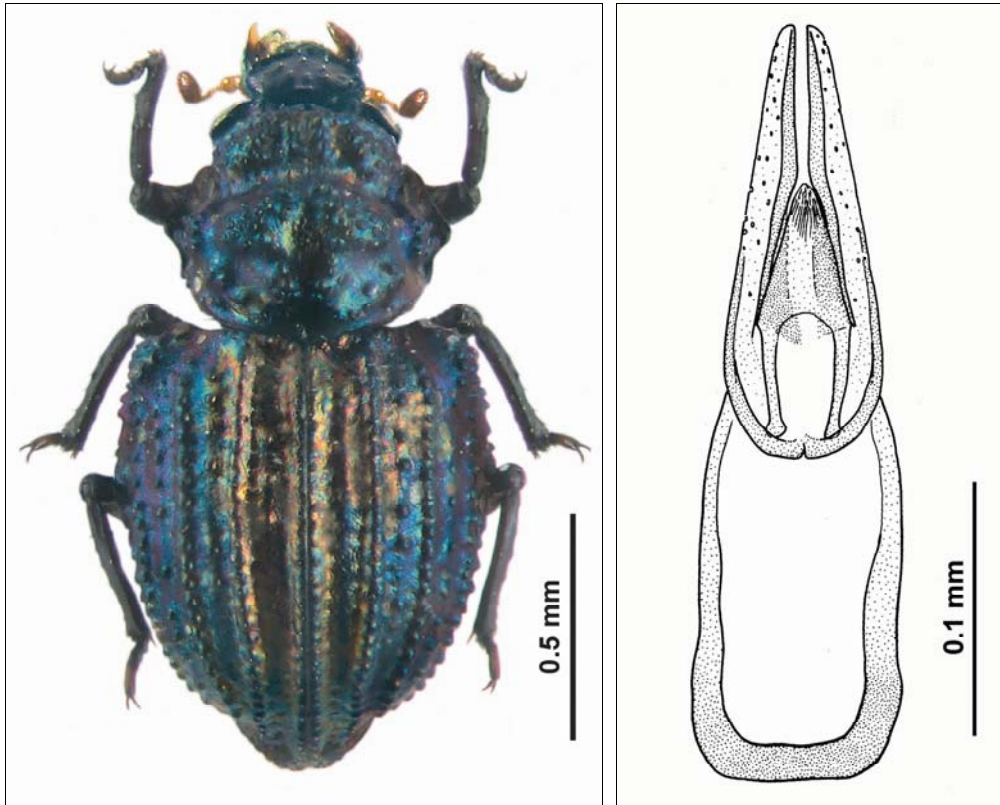


Plate 1: *Georissus chameleo* nov. spec., habitus of specimen with strong bluish hue. Figure 1: *Georissus chameleo* nov. spec., aedeagus.

Differential diagnosis: Based on the costate odd intervals bearing granules, metallic body coloration and the sculpture of pronotum, *Georissus chameleo* nov. spec. can be placed among the species of *G. costatus* group sensu Delève (1967a, b). It is easily recognizable from all other *Georissus* species by the shape of aedeagus, especially by long and narrow parameres with straight outer and angulate inner margin, and phallobase only indistinctly shorter and wider than parameres, not widened posteriad.

Description: Body strongly convex. Length 1.35–1.65 mm (holotype 1.35 mm); width of pronotum 0.55–0.65 mm (holotype 0.55 mm); width of elytra 0.70–0.85 mm (holotype 0.70 mm). Coloration dark with metallic shine, hue varying from copper to blue (Plate 1).

Head. Clypeus smooth, with line of granules on anterior edge and with scattered granules on disc; lateral margins of clypeus continuing posteriad on frons as longitudinal ridges. Frons with median longitudinal depression limited by elevate ridges, and with small area lacking granules situated laterally to median depression; surface of frons with few scattered granules. Antennae with 9 antennomeres; scapus and pedicel enlarged, antennomeres 3–6 small, antennomeres 7–9 forming rather wide club.

Pronotum $1.15\times$ broader than long, with maximal width at midlength; lateral margins bearing obtuse protrusions at midlength. Anterior part slightly convex in lateral view, sparsely granulate, with longitudinal rows of granules submesally and weakly developed low

bulges laterally. Posterior part with large central depression lacking granules, surrounded by a pair of large oblique bulges anterolaterally, and by a pair of lower, narrow oblique bulges posterolaterally; all bulges sparsely granulate. Posterolaterally to central depression with pair of smaller depressions lacking granules, limited posteriorly by oblique, elevate row of granules. Lateral parts of pronotum above the lateral protrusions with a pair of small, sparsely granulate bulges.

Elytra $1.15 \times$ wider than long; base of elytra wider than pronotum; humeral bulges distinct, sparsely granulate. Intervals 1, 3, 5, 7 and 9 ridged, bearing dense row of granules. Even intervals much lower, bearing rows of sparsely situated granules; length of row of tubercles on interval 2 variable, other intervals with tubercular rows reaching at least subapically. Elytral punctures minute, indistinct.

Abdominal ventrite 1 with scattered granules on its surface and row of tubercles near the posterior margin.

Aedeagus (Fig. 1) symmetrical, 0.3 mm long. Parameres slightly longer than phallobase, nearly straight on outer margin; inner margin with very distinct obtuse angle in apical 0.35. Inner margin and base of parameres widely beaded. Median lobe $0.6 \times$ as long as parameres, with long basal apophyses. Phallobase slightly wider than parameres, indistinctly widened posteriad, with very wide and distinct bead especially in basal half.

Variability: Hue colour highly variable among the specimens examined, varying from strong blue hue (includes the holotype) through specimens with weak bluish hue to those with weak copper hue. The latter specimens are nearly black on the first view, contrasting with extensively blue specimens. Variation of superficial sculptures concerns especially the head and elytra. On the head, slight variability was observed in the width of median depression on frons. Elytral sculptures vary in the height of odd intervals (only slightly higher than even intervals in some specimens, in contrast to highly ridged odd intervals in other specimens including of holotype) and the granulation of the elytral interval 2 (in some specimens, the row of granules reaches only basal 0.4 and the remaining part of the interval is smooth, whereas in others the row reaches up to 0.8 of elytral length). The morphology of male genitalia is completely identical in all examined specimens and the variability seems not to be based geographically.

Biology: Habitat preferences unknown, all specimens were collected in light- or Malaise traps operated in desert and mountain habitats.

Distribution: The species is so far known only from a few localities in the northern and eastern part of the UAE (al-Ajban, Hatta, Sharjah, Wadi Wurayah).

Etymology: The species name refers to the extreme colour variability of the species.

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REFERENCES

- Angus, R.B. (1992): Insecta Coleoptera Hydrophilidae Helophorinae. In: Schwoerbel, J. & P. Zwick (eds): *Süsswasserfauna von Mitteleuropa*, 20, part 10 (2), Gustav Fischer Verlag, Stuttgart, Jena, New York, xi + 144 pp.
- Delève, J. (1967a): Notes sur les *Georissus* d'Afrique et descriptions d'espèces nouvelles (Coleoptera Georissidae). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique*, 43: 1–23.
- Delève, J. (1967b): Les *Georissus* de Madagascar (Coleoptera Georissidae). *Bulletin et Annales de la Société Royale d'Entomologie de Belgique*, 103, 233–254.
- Hansen, M. (1991): The Hydrophiloid Beetles. Phylogeny, classification and a revision of genera (Coleoptera: Hydrophiloidea). *Biologiske Skrifter*, 40: 1–365.
- Hansen, M. (1999): *World Catalogue of Insects. Volume 2. Hydrophiloidea (s.str.)(Coleoptera)*. Apollo Books, Stenstrup, 416 pp.
- Hansen, M. (2000): Observations on the immature stages of Georissidae (Coleoptera: Hydrophiloidea) with remarks on the evolution of the hydrophiloid egg cocoon. *Invertebrate Taxonomy*, 14: 907–916.
- Hebauer, F. (1998): Teil A: Imagines. Pp. 1-90 in: F. Hebauer, & B. Klausnitzer: Insecta: Coleoptera: Hydrophilidae (exkl. *Helophorus*). *Süsswasserfauna von Mitteleuropa*, 20, part 7, 8, 9, 10-1. Gustav Fischer, Stuttgart, Jena, Lübeck, Ulm, xii + 134 pp.

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