

Aquatic Insects

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/naqi20>

A new species of *Goera* Stephens, 1829 (Goeridae: Trichoptera) from the Solomon Islands

Marianne Espeland^{a b} & Kjell Arne Johanson^a

^a Entomology Department, Swedish Museum of Natural History, Box 50007, SE-104 05, Stockholm, Sweden

^b Department of Zoology, Stockholm University, SE-106 09, Stockholm, Sweden

Available online: 22 Aug 2011

To cite this article: Marianne Espeland & Kjell Arne Johanson (2011): A new species of *Goera* Stephens, 1829 (Goeridae: Trichoptera) from the Solomon Islands, *Aquatic Insects*, 33:2, 185-189

To link to this article: <http://dx.doi.org/10.1080/01650424.2011.600254>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan, sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

A new species of *Goera* Stephens, 1829 (Goeridae: Trichoptera) from the Solomon Islands

Marianne Espeland^{a,b,*†} and Kjell Arne Johanson^a

^aEntomology Department, Swedish Museum of Natural History, Box 50007, SE-104 05 Stockholm, Sweden; ^bDepartment of Zoology, Stockholm University, SE-106 09 Stockholm, Sweden

(Received 29 July 2010; final version received 22 June 2011)

Male and female of *Goera pitisopai* sp. nov. from the Solomon Islands are illustrated and described based on recently collected material. This is the first species of the family Goeridae reported from the Solomon Islands, and the sixth from the Australasian region.

Keywords: Trichoptera; new species; Goeridae; *Goera*; South-West Pacific; Solomon Islands

Introduction

The family Goeridae Ulmer, 1903 belongs to the superfamily Limnephiloidea Kolenati, 1848 within the suborder Integripalpia Martynov, 1924 (Weaver 1984; Kjer, Blahnik and Holzenthal 2001) and comprises 175 species distributed in all biogeographical regions, except the Neotropical Region. Most of the diversity, 168 species, is recorded in the subfamily Goerinae Ulmer, 1903. The largest genus in the subfamily, *Goera* Stephens, 1829, includes 141 described species, of which most are found in the Oriental Region (Morse 2010). *Goera* species in the Australasian Region have so far been described from Fiji (Viti Levu, three species), Vanuatu (Aneityum, one species) and Papua New Guinea (Bismarck Archipelago, one species) (Banks 1924; Neboiss 1986; Malicky 1994; Johanson and Oláh 2008; Johanson, Wells, Malm and Espeland in press), and these represent the southernmost records of the genus. With a total of only 16 described species (Morse 2010), the Trichoptera fauna of the Solomon Islands is largely unknown, but several new species have recently been described (Johanson and Espeland 2010). The new species described here from Kolombangara Island in the New Georgia group, Western Province, is the first record of the family Goeridae from the Solomon Islands.

Materials and methods

The examined material were collected by one of us (ME) in January 2008 using a UV light trap.

*Corresponding author. Email: marianne.espeland@gmail.com

†Current address: Department of Organismic and Evolutionary Biology and Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, MA 02138, USA.

Fore- and hind wings of the male and female were removed from the body and mounted on temporary slides in glycerol. They were examined and illustrated using a Leica MZ95 stereomicroscope with a drawing tube. The abdomina were macerated in hot 8% KOH for two hours, dehydrated in absolute alcohol and temporarily mounted on microscope slides in Euparal before examination and drawing using a Leitz Laborlux S light microscope. All material is stored in 80% ethanol and types are deposited at the Swedish Museum of Natural History, Stockholm (NHRS).

Taxonomy

***Goera pitisopai* sp. nov** (Figures 1–10)

Material examined

Holotype male. SOLOMON ISLANDS: Western Province, Kolombangara island, N slope of Mt Veve, 2.5 km S end of road L57, 723 m, loc 12, 7°55.494'S, 157°02.986'E, light trap, 12.i.2008 [M. Espeland].

Paratypes. 2 females: same data as for holotype. 1 male, 1 female: same data as for holotype, except loc 11.

Diagnosis

This species is distinguished from the other *Goera* species in the male genitalia by the slender and tubular harpagones, approximately of same length as the coxopodites; the slender, tubular lateral processes of segment X, being straight and about twice the length of the superior appendages in lateral view; in dorsal view with apices of the lateral processes of segment X crossing each other; and by the short dorsomesal process of segment X. Females can be distinguished by the shape of the external parts of gonopods VIII and IX.

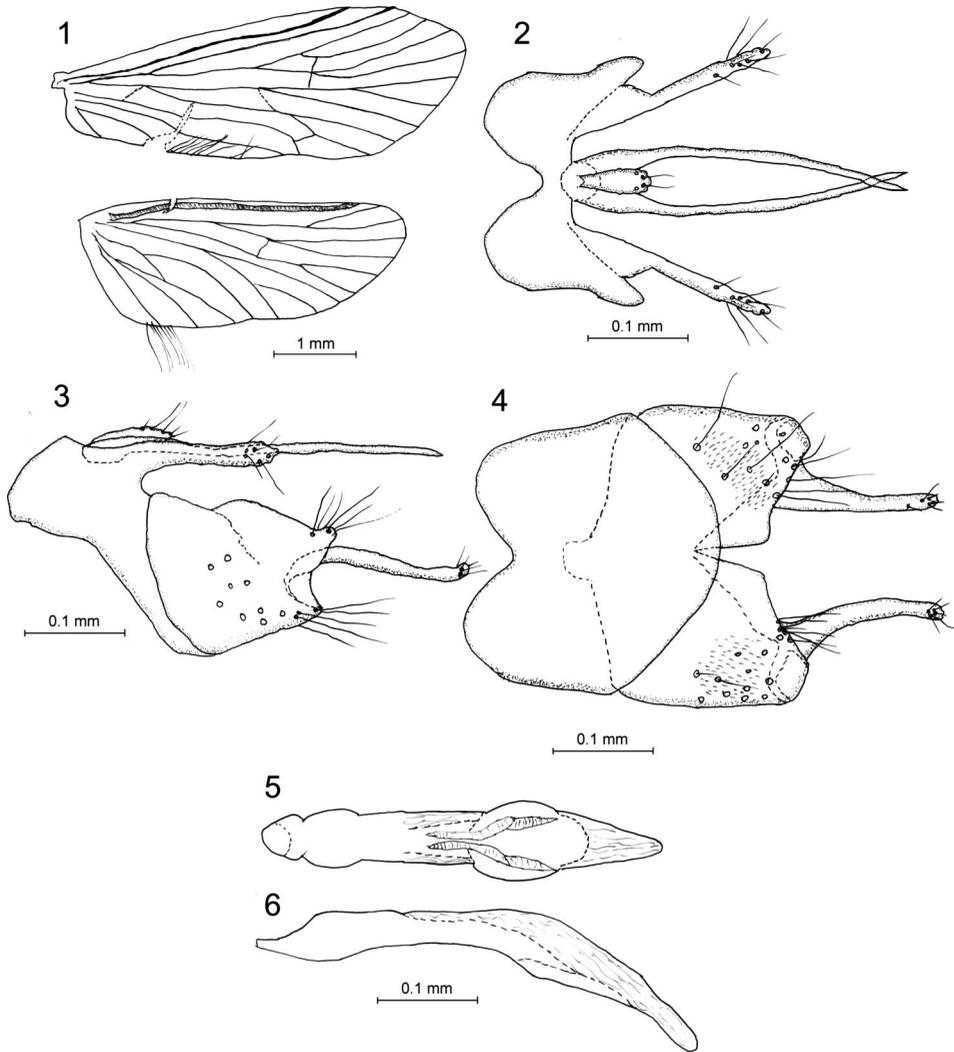
Description

Male imago

Wings (Figure 1). Forewing length 5.0 mm, hind wing length 4.0 mm.

Genitalia (Figures 2–6). Anteromesal margin of segment IX in dorsal view (Figure 2) and ventral view (Figure 4) emarginate; posteromesal margin trapezoid in dorsal view; deeply convex in ventral view. Superior appendages originating from dorsolateral part of segment IX; with long setae at apex; tubular, with irregularly rounded apex (Figure 2); straight in lateral view (Figure 3), about 0.5 × length of lateral processes of segment X; slightly diverging towards apex in dorsal view.

Dorsomesal process of segment X in lateral view less than half length of superior appendages (Figure 3); with apical setae; club-shaped in dorsal view. Lateral processes of segment X slender, tubular; straight in lateral view; converging and crossing each other near apex in dorsal view; apices pointed; basal 1/4th slightly widening. In lateral view (Figure 3) with proximal part of coxopodites about 2 times taller than distal part; anterior margin slightly convex; posterior margin irregularly concave, with long setae at ventral and dorsal ends; in ventral view (Figure 4) with posteromesal margin concave, mesally with deeply V-shaped notch; distal half with



Figures 1–6. Male of *Goera pitisopai*, new species. (1) Right wings, dorsal; (2) genitalia, dorsal view; (3) genitalia, left lateral view; (4) genitalia, ventral view; (5) phallus, ventral view; (6) phallus, left lateral view.

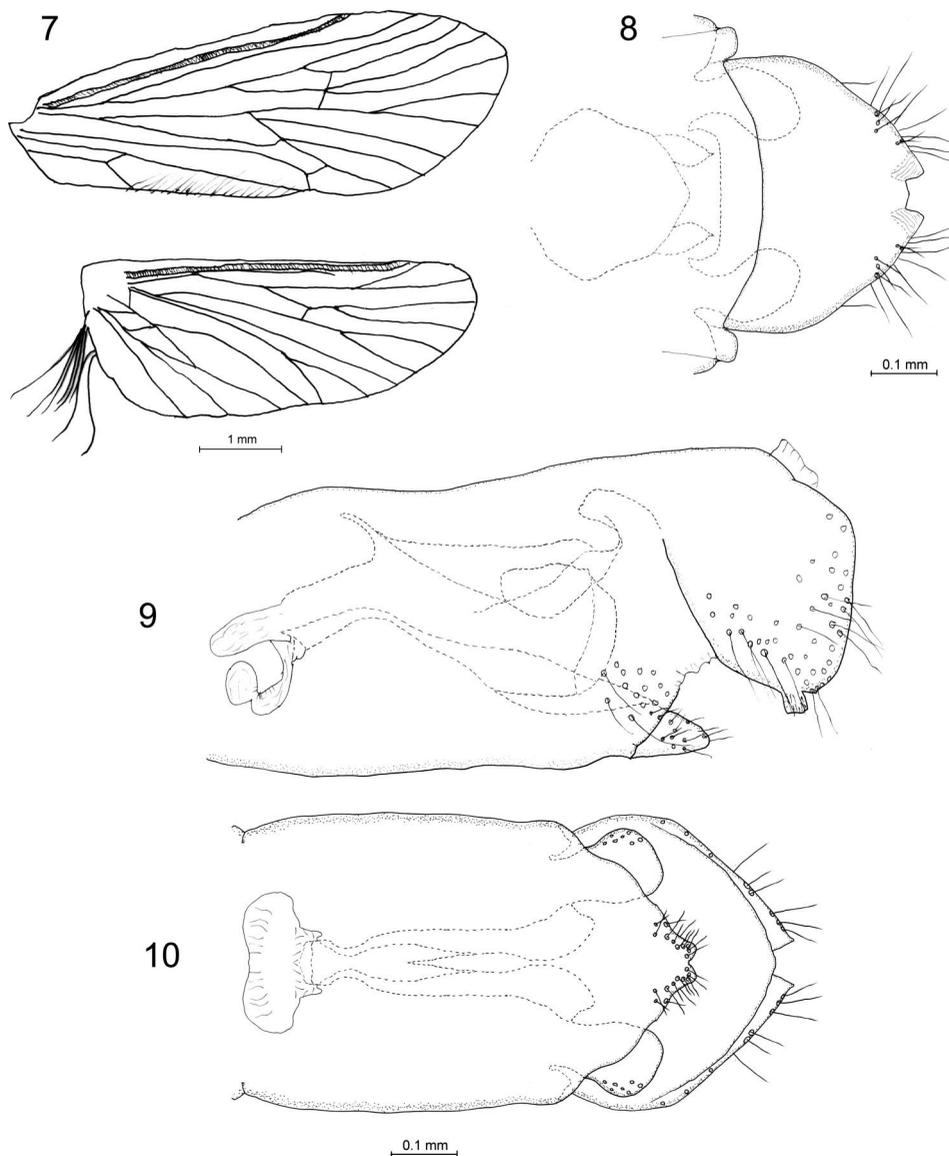
long setae and microtrichia; lateral margins straight. Harpagones slender, tubular, each with rounded apex; in lateral view each about 1/5th width of distal margin of each coxopodite; in ventral view narrowing slightly distally; proximal half slightly converging, distal half slightly diverging.

Phallus (Figures 5–6): slightly curving along its length in lateral view (Figure 5), with large membranous posterior part; in ventral view (Figure 6) with posterior end narrowly triangular, with slightly rounded apex; posterior second quarter disk shaped, with pair of folded structures widely parallel posteriorly, strongly converging mesad, narrowly, parallel-sided anteriorly; anterior first quarter 2-lobed, with proximal lobe slightly shorter and narrower than distal lobe.

Female imago

Wings (Figure 7). Forewing length 6.1 mm, hind wing length 4.8 mm. Hind wings with tuft of long setae at base. Subcosta thickened in both wing pairs.

Genitalia (Figures 8–10). Segments IX and X fused, in dorsal view (Figure 8) with convex posterior margin, mesal part with irregularly rectangular notch; anterior margin concave; posterior part of lateral margins with aggregated setae; in lateral view (Figure 9) forming irregular lobe with rectangular, membranous process at venteromesal margin; scattered setae located mesally and ventrally. External part of



Figures 7–10. Female of *Goera pitisopai*, new species. (7) Right wings, dorsal; (8) genitalia, dorsal view; (9) genitalia, left lateral view; (10) genitalia, ventral view.

gonopods IX setose, not clearly delimited in lateral view (Figure 9); in ventral view (Figure 10) forming lobe with rounded posterior margin. External part of gonopod VIII setose, triangular in lateral view, with rounded apex; in ventral view widely triangular, with emarginate apex. Spermatecal process forming membranous sack in ventral view (Figure 10), about two times wider than long, located at anterior end of segment VIII.

Etymology

Pitisopai, named after Mr Fred Pitisopa, Forestry Department, Honiara, for his invaluable help during fieldwork.

Acknowledgements

We thank Fred Pitisopa (Forestry Department, Honiara), Vaenu Vigulu (Kolombangara Forest Products, Inc.) and all others involved for their help and great enthusiasm during fieldwork on the Solomon Islands.

References

- Banks, N. (1924), 'Descriptions of new neuropteroid insects', *Bulletin of the Museum of Comparative Zoology at Harvard College*, 65, 421–455.
- Johanson, K.A., and Espeland, M. (2010), 'Description of new *Chimarra* (Trichoptera: Philopotamidae) species from the Solomon Islands', *Zootaxa*, 2638, 25–43.
- Johanson, K.A., and Oláh, J. (2008), 'The Fijian species of *Goera* Stephens, 1829 (Trichoptera: Goeridae) with description of two new species', *Bishop Museum Occasional Papers*, 98, 21–29.
- Johanson, K.A., Wells, A., Malm, T., and Espeland, M. (in press), 'The Trichoptera of Vanuatu', *Deutsche Entomologische Zeitschrift*.
- Kjer, K.M., Blahnik, R.J., and Holzenthal, R.W. (2001), 'Phylogeny of Trichoptera (caddisflies): characterization of signal and noise within multiple datasets', *Systematic Biology*, 50, 781–816.
- Malicky, H. (1994), 'Neue Trichopteren aus Nepal, Vietnam, China, von den Philippinen und vom Bismarck-Archipel (Trichoptera)', *Entomologische Berichte Luzern*, 31, 163–172.
- Morse, J.C. (2010), '*Trichoptera World Checklist*', <http://entweb.clemson.edu/database/trichopt/index.htm>.
- Neboiss, A. (1986), 'Taxonomic changes in caddis-fly species from the South-West Pacific-Australian region with description of new species', *Memoirs of the Museum of Victoria*, 47, 213–223.
- Weaver, J.S. (1984), 'The evolution and classification of Trichoptera, Part I: The groundplan of Trichoptera', in *Proceedings of the 4th International Symposium on Trichoptera*, The Hague: Dr. W. Junk Publishers, pp. 413–419.