



Revision of the Afrotropical Lycorininae (Ichneumonidae; Hymenoptera) II. Three new *Lycorina* species and additional distribution records

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Abstract

Three new Afrotropical *Lycorina* species are described: *L. horstmanni* sp. nov., *L. jacksonfive* sp. nov. and *L. riftensis* sp. nov. The description of *L. globiceps* is expanded to include the large variability of the colour pattern. New distribution records are provided for *L. fici* and *L. globiceps*. An illustrated dichotomous key, and an online interactive matrix key available on www.waspweb.org, are provided for the identification of the seven known Afrotropical Lycorininae species.

Key words: Africa, Afrotropical region, identification key, koinobiont parasitoid wasp, taxonomy, systematics

Introduction

Lycorininae is a small-sized subfamily of Ichneumonidae, with a single worldwide distributed genus, *Lycorina* Holmgren, 1859, and about 30 species known. The genus is mainly characterized by the unique hook-like structure linking the hind corners of the metanotum to the basal corners of the propodeum. The subfamily's phylogenetic placement within Ichneumonidae is unclear (Gauld, 1997; Quicke *et al.*, 2009), but it might be related to the probably paraphyletic Tryphoninae, within the ophioniform subfamily group (Quicke *et al.* 1994; 2009). The larval cephalic structure and *in vivo* observations also denote an unusual ecology—Lycorininae species are apparently internal ectoparasitoids of various lepidopteran caterpillars (Coronado-Rivera *et al.*, 2004; Shaw, 2004).

We recently provided a first overview of this subfamily in the Afrotropical region (Rousse & van Noort, 2013), based on the material housed in the Iziko South African Museum in Cape Town. However, a later visit to the European museums housing the major Afrotropical collections provided some unexpected undetermined material. Given the small size of the subfamily, any new data significantly increases the knowledge of the subfamily's species richness. We thus present these new descriptions as an addition to our first assessment of the Afrotropical Lycorininae.

Material and methods

Depositories

BMNH Natural History Museum, London, UK (Gavin Broad).

SAMC Iziko South African Museum, Cape Town, South Africa (Simon van Noort).

Photographs. Specimens were point mounted on black, acid-free card for examination (using a Leica M205C stereomicroscope with LED light source), photography and long term preservation. Images were acquired using a Leica LAS 4.4 imaging system, which comprised a Leica® Z16 microscope with a Leica DFC450 Camera and 0.63x video objective attached. The imaging process, using an automated Z-stepper, was managed using the Leica Application Suite V 4.4 software. Lighting was achieved using techniques summarized in Buffington *et al.* (2005),

Diagnosis. Black overall with yellow markings; face punctate-granulate with punctation sparser medially; clypeus nearly smooth with ventral margin hardly concave medially; mesosoma largely granulate laterally, densely and finely punctate-rugose dorsally with propodeum coarsely punctate-rugose; anterior transverse carina of propodeum present, medially strong; metasoma punctate reticulate; ovipositor moderately long. Male unknown.

Differential diagnosis. Characterized among Afrotropical *Lycorina* species by the short antennae and the unique sculpture of mesosoma, with mesopleuron mostly granulate and mesonotum finely rugose-punctate.

Description. Female (holotype). B 5.0; A 3.4; F 3.4; MD 0.9; OT 1.4.

Colour. Black overall with metasoma hardly lighter, very dark brown, and with yellow markings: orbits, clypeus, dorsal margin of pronotum, tegula, posterior and lateral margins of scutellum, and post-scutellum; apical margins of tergites yellowish; legs yellowish-orange except hind coxa dark brown; wings hyaline, slightly infuscate apically, venation yellowish.

Head. Transverse in dorsal view, temple constricted behind eye; temple, vertex and frons sparsely and finely punctate; face moderately punctate-granulate, punctation strongly sparser medially; clypeus nearly smooth, very superficially punctate with noticeably long hairs, its ventral margin subtruncate and hardly concave medially; malar distance long; antenna short with 22 flagellomeres.

Mesosoma. Pronotum coarsely striate ventrally, granulate dorsally; mesopleuron mostly granulate with moderately dense punctures along anterior and ventral margins, speculum smooth; metapleuron moderately punctate-rugose, background smoother along anterior margin; epicnemial carina reaching half height of mesopleuron; mesonotum densely and finely punctate-rugose, rugosities more distinct along superficial notaulus; scuto-scutellar groove smooth; propodeum coarsely punctate-rugose, with anterior transverse carina medially strong and laterally weakened, in profile abruptly subdivided by the strong apical transverse carina into horizontal anterior and vertical posterior parts.

Metasoma. Deeply punctate-reticulate overall except oblique impressions costulate; ovipositor moderately long.

Male. Unknown.

Etymology. For the type locality, in the Rift Valley province. Noun in apposition.

Type material. HOLOTYPE ♀ H.J.A. Turner Naivasha [Kenya] 6 36 (BMNH).

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References

- Benoit, P.L.G. (1953) Notes ichneumonologiques africaines III. *Revue de Zoologie et de Botanique Africaines*, 47, 145–52.
- Buffington, M.L., Burks, R. & McNeil, L. (2005) Advanced techniques for imaging microhymenoptera. *American Entomologist*, 51, 50–54.
- Buffington, M.L. & Gates, M. (2009) Advanced imaging techniques II: using a compound microscope for photographing point-mount specimens. *American Entomologist*, 54, 222–224.
- Coronado-Rivera, J., Gonzalez Herrera, A., Gauld, I.D. & Hanson, P. (2004) The enigmatic biology of the Ichneumonid subfamily Lycorininae. *Journal of Hymenoptera Research*, 13, 223–227. Available from: <http://www.biodiversitylibrary.org/page/2760102#page/19/mode/1up> (accessed 24 September 2014)
- Gauld, I.D., Wahl, D.B., Bradshaw, K., Hanson, P. & Ward, S. (1997) The Ichneumonidae of Costa Rica, 2. *Memoirs of the American Entomological Institute*, 57, 1–485.
- Holmgren, A.E. (1859) Conspectus generum Pimpliarum Sueciae. *Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar*, 16, 121–132.
- Kerr, P.H., Fischer, E.M. & Buffington, M.L. (2008) Dome lighting for insect imaging under a microscope. *American Entomologist*, 54, 198–200.
- Quicke, D.L.J., Fitton, M.G., Tunstead, J.R., Ingram, S.N. & Gaitens, P.V. (1994) Ovipositor structure and relationships within the Hymenoptera, with special reference to the Ichneumonoidea. *Journal of Natural History*, 28, 635–682.

<http://dx.doi.org/10.1080/00222939400770301>

Quicke, D.L.J., Laurenne, N.M., Fitton, M.G. & Broad, G.R. (2009) A thousand and one wasps: a 28S rDNA and morphological phylogeny of the Ichneumonidae (Insecta: Hymenoptera) with an investigation into alignment parameter space and elision. *Journal of Natural History*, 43, 1305–1421.

<http://dx.doi.org/10.1080/00222930902807783>

Rousse, P. & van Noort, S. (2013) Revision of the Afrotropical Lycorininae (Ichneumonidae; Hymenoptera), with description of a new species from South Africa. *Zootaxa*, 3666 (2), 252–266.

<http://dx.doi.org/10.11646/zootaxa.3666.2.8>

Seyrig, A. (1932) Les Ichneumonides de Madagascar. 1. Ichneumonidae Pimplinae. *Mémoires de l'Académie Malgache*, 11, 1–183.

Yu, D.S.K., van Achterberg, C. & Horstmann, K. (2012) *Taxapad 2012. Ichneumonoidea 2011*. Database on flash-drive. Ottawa, Canada. Available from: <http://www.taxapad.com> (accessed 24 September 2014)