



## A new mycophagous species of the genus *Gaurax* Loew, 1863 (Diptera: Chloropidae) from Benin, Africa

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A special survey was undertaken to study the insects living in the sporophores of Basidiomycota in Benin, Africa. Three specimens of Chloropidae, which are described here as a new species of *Gaurax* Loew, were reared from two fruiting bodies of different species of fungi: *Amanita subviscosa* Beeli and a species of Boletaceae. The fungi were collected from Miombo woodlands in Central Benin. Fruiting bodies were placed in plastic containers covered with nylon gauze, while sawdust was used as a pupariation substrate. Details of collecting localities and the method of insect rearing have also been described by Disney et al. (2013). The new species belongs to the worldwide genus *Gaurax* Loew, which includes 157 known species, the majority of which are from the Australasian region (Pape & Evenhuis 2013, Nartshuk & Andersson 2013). Only three species are so far recorded from the Afrotropical region (Sabrosky 1980, Pape & Evenhuis 2013).

The material is deposited in the collections of Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russian Federation (ZIN), and in the collections of the Institute of Agriculture and Environmental Sciences, Estonian University of Life Sciences (formerly the Institute of Zoology and Botany), Tartu, Estonia (IZBE). The reference samples of the corresponding fungal sporophores are deposited in the Fungal Herbarium of the University of Tartu, Estonia (TU). The habitus figure for this paper have been prepared using a Canon EOS7D camera (for details see Kurina et al. 2011) while the figures of male genitalia were prepared by methods and equipment described by Kurina & Oliveira (2013). Morphological terminology including that of male genitalia follows Nartshuk & Andersson (2013).

### *Gaurax mycophagus* Nartshuk, sp. n.

(Fig. 1)

**Type material.** *Holotype*. ♂, Africa, Benin, Kpessou, 9.600 N, 2.185 E, ex *Amanita subviscosa* (TU116118), coll. 30.06.2010, emerg. 13.07.2010, leg. L. Tedersoo (slide mounted in Euparal, hypopygium in glycerine, in ZIN). *Paratype*. ♀, same as holotype (in alcohol, in IZBE).

**Other material studied.** ♀, Benin, Koussanzamou, 10.211 N, 1.447 E, ex Boletaceae (TU116120), coll. 5.07.2010, emerg. 15–20.07.2010, leg. L. Tedersoo (in alcohol, in ZIN).

**Description.** Small flies with an overall yellow body colour in male and darkened thorax in females. Ocellar triangle extending 2/3 the length of frons, yellow except for a black ocellar tubercle in males and darkened in females. Frons microtomentose, ocellar triangle shiny. Two ocellar bristles, reclinate, somewhat smaller and darker than inclinate postocellar bristles. Occiput black below ocellar triangle and along eye. Antenna yellow, postpedicel reniform. Arista short, pubescent. Eye large, oval. Gena below eye as broad as postpedicel, not projecting beyond eye. Palpus black.

Thorax yellow with a black mark on anepisternum in male and with darkened scutum and four black marks on pleura in female. Metanotum black. Scutellum pale, lighter than scutum, both dusted. Two pale yellow apical scutellar bristles, as long as scutellum. Notopleural bristles 1+2. Abdomen yellow with tergites 4–5 darkened. Fore leg pale yellow, middle and hind legs pale yellow with black knees (tip of femur and base of tibia). Claws black. Mid-femoral organ absent. Wing hyaline with yellow veins, venation typical of *Gaurax* species. Haltere pale yellow.

Body length: 1.4 mm.

Male genitalia (Fig. 1 A–E). Epandrium of usual form for Oscinellinae. Cerci small, widely separated, triangular in lateral view. Surstyli simple in form, slightly tapering apically with long simple setae, turned towards the middle. Hypandrium open. Pre- and postgonites without sclerotization. Pregonites separated from postgonites. Pregonites small, postgonites with two setae. Phallus with rounded basal part.

**Etymology.** The name refers to the mycophagous larvae of the species.

**Taxonomic note.** The examined specimens are stored in alcohol and are therefore somewhat pale. Living specimens are probably more strikingly coloured.

The new species is described in the genus *Gaurax* Loew, 1863 on the basis of the yellow colour of the body, large eye, gena not projecting beyond eye, postpedicel reniform, and general pattern of leg coloration (Andersson 1977). Only three Afrotropical species of the genus *Gaurax* are listed by Sabrosky (1980) and no additional species have been described since then (cf. Pape & Evenhuis 2013). All are different in colour from the new species. *Gaurax africanus* Sabrosky, 1951 is a shiny black species with yellow scutellum, antenna and legs, and black haltere and palpus (Sabrosky 1951). *Gaurax seychellensis* Lamb, 1912 has a black dusted scutum, yellow scutellum, yellow pleura with several shining brown marks (Lamb 1912). *Gaurax vittipennis* (Thomson, 1869) is a considerably bigger species with a length of about 3 mm and wing with a dark band along costal margin (Thomson 1869).

The legs of all four discussed species have a similar type of colouration: yellow with a different arrangement of black parts. *Gaurax africanus* has yellow fore legs with a black tibial base, yellow mid legs with black knees; Sabrosky (1951) did not describe the hind legs. *Gaurax seychellensis* has the tip of all femora black and hind tibia with a black band. *Gaurax vittipennis* has yellow legs with dark fore tibia and tarsi, and a brown hind femur (Duda 1934). In the new species, the fore legs are entirely yellow, while the middle and hind legs are yellow with black knees.

Species of the genus *Gaurax* were occasionally described in other genera of Chloropidae, particularly in *Oscinella* Becker, 1909 and *Conioscinella* Duda, 1932. The senior author checked the descriptions of all Afrotropical species of these genera (listed by Sabrosky 1980) but did not find any which correspond to the description of the new species.

All examined specimens of the new species were reared from sporophores of fungi. It is known that some other species of the genus *Gaurax* develop in fungi. *Gaurax dubius* (Macquart, 1835) was reared from *Piptoporus betulinus* and its imagines visit fungi of the genera *Trametes*, *Bjerkandera* and *Fomitopsis* (Chandler 2010). Ferrar (1987) considered fungi to be the usual habitat of *Gaurax* larvae, while other habitats of the larvae are considered to be decaying vegetable matter, decaying wood infested by insects, and birds' nests. All these substrates can presumably contain the mycelia of fungi. There are several specimens of *Gaurax* in the collection of ZIN which were reared from material obviously infested by mycelia: *G. dubius* under the bark of a fir tree and Siberian pine tree infested by Ipidae (Coleoptera); *G. ephippium* (Zetterstedt, 1848) from damaged cones of fir and pine trees; *G. polonicus* Nartshuk, 1980 under the bark of aspen and oak; *G. fascipes* Becker, 1910 from damaged cones of fir and pine trees, from the damaged sprouting tip of pine tree and under the bark of alder tree; *G. flavomaculatus* (Duda, 1933) under the bark of oak; *G. niger* Czerny, 1906 from a buzzard's nest (Krivokhatskii & Nartshuk 2001, Nartshuk 2008).

Larvae of the genus *Gaurax* may be considered mycophagous. Among Palaearctic species, larvae of related genera – *Gampsocera* Schiner, 1862 (at least *G. numerata* (Heeger, 1858)) and *Tricimba* Lioy, 1864 (*T. cincta* (Meigen, 1830) and *T. lineella* (Fallén, 1820)) – have also been reared from fungi. The genus *Tricimba* is known from fossils in Baltic amber (von Tschirnhaus & Hoffeins 2009); consequently, mycophagy may be considered as the ancestral type of larval feeding in Chloropidae.

## Acknowledgements

The authors are greatly indebted to the collector Dr. L. Tedersoo (Tartu, Estonia) for providing the material. Financial support for E.P. Nartshuk is received from RFFI (grant 13-94-00639) and from the program of Presidium RAS “Living natura: modern status and problems of development”. O. Kurina was funded by grants 8583 and 9174 of the Estonian Science foundation and by institutional research funding (IUT21-1) of the Estonian Ministry of Education and Research. We thank Dr. A.C. Pont (Oxford, UK) for checking the English text and two anonymous referees for their comments and suggestions.

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