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A revision of the genus *Conicofrontia* Hampson (Lepidoptera, Noctuidae, Apameini, Sesamiina), with description of a new species: new insights from morphological, ecological and molecular data

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Abstract

The aim of this study was to review the species of *Conicofrontia* Hampson, a small genus of noctuid stem borers (Noctuidae, Apameini) that is distributed in East and Southeastern Africa. We review the morphology of species in this group and provide new diagnoses and ecological data for five species. The following taxonomic changes are proposed: *Hygrostola dallolmoi* (Berio, 1973) (= *Conicofrontia dallolmoi* Berio, 1973) **comb. n.** and *Conicofrontia bipartita* (Hampson, 1910) (= *Phragmatiphila bipartita* Hampson, 1910) **comb. n., stat. rev.** One new species is also described: *C. lilomwa*, **sp. n.** from Tanzania. Wing patterns as well as male and female genitalia of the five species are described and illustrated. Finally we carried out molecular phylogenetic and molecular species delimitation analyses on a multi-marker dataset of 31 specimens and 15 species, including the five mentioned species. The results of molecular analyses provide a clear support for the proposed taxonomical changes.

Key words: *Conicofrontia*, molecular phylogenetics, molecular species delimitation, Sesamiina, systematics, taxonomy

Introduction

African noctuid stem borers of the tropical subtribe Sesamiina consist of 13 genera encompassing about 200 species (Zilli *et al.* 2005; Toussaint *et al.* 2012), which are usually hardly distinguishable without a thorough examination of wing patterns and genitalia (Moyal & Le Ru 2006; Moyal *et al.* 2010, 2011; Le Ru *et al.* 2014). About 65% of the species diversity in this subtribe is found in four genera: *Acrapex* Hampson (more than 80 species), *Sesamia* Guenée (more than 50 species) (Toussaint *et al.* 2012). The remaining genera consist of a few species only, as in the case of the genus *Conicofrontia* Hampson.

Hampson (1902) described the genus *Conicofrontia* for *Conicofrontia sesamoides* based on external characters such as the shape and venation of wings and the structure of palpi, frons and thorax; the genus was named after the slightly conical prominence of the frons. From the beginning, the taxonomic history of *Conicofrontia* has been a bit

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genus. Like *Hygrostola homomunda* Fletcher the male genitalia has a long and thin uncus, rounded at the apex; valves elongate and narrow; strong cucullus, club-shaped tufted with bristles, with a short neck; sacculus without clavus, presence of a sclerotized plate or spine across the upper edge of the sacculus, aedeagus short, curved, with vesica armed with rows of short stout spines. However it can be easily separated from *H. homomunda* with the less elongated sacculus, a sclerotized costal margin with a strong spine expansion, pointed backward, juxta large and plate-shaped, vesica with one strong cornuti, ovipositor less elongated, ostium bursae without a cup-shaped antrum.

The four *Conicofrontia* species collected in the field as larvae from host-plants belong to the *Sesamia*-like species as defined by Le Ru *et al.* (2006b). They are morphologically similar with ground colour pinkish buff without any markings; only *C. lilomwa* larvae looks different with head and thoracic shield dark brown when it is red-brown in the three other species.

Host-plant associations. We report here for the first time the host-plant associations of *Conicofrontia* spp. to four Andropogonae species, *Cymbopogon giganteus, Cymbopogon* sp., *Miscanthus capensis* and *Saccharum officinarum*. The feeding habits of *Conicofrontia diamesa*, *C. lilomwa* and *C. sesamoides* are similar, with the typical symptom of plant attack as death of the central tiller, often referred to as 'dead heart'. In addition, like for *Acrapex* spp. (Le Ru *et al.* 2014), we always found the larvae solitary in the stems. On the other hand, the feeding habits of *C. bipartita* is quite different with typical symptoms of plant attack as drying out of the inflorescence with second and third instar larvae found at the bottom of inflorescence, always gregarious up to 50–70 larvae. We speculate that *Conicofrontia* larvae typically fed on more than one stem before completing their development. The four *Conicofrontia* species larvae are also found to be markedly hygrophilous species inhabiting grasses along banks of streams, rivers and marshes. We suspect that the larvae disperse when they reach the fourth instar. No pupae were found in stems, and therefore borers probably pupate in the soil.

Our results suggest restricted distributions and host-plant associations of the four *Conicofrontia* species. Despite extensive surveys in more than 16 sub-Saharan countries we did not collect any *Conicofrontia* specimens in any other country than South Africa and Tanzania.

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