



Observations on the biology of Afrotropical Hesperiiidae (Lepidoptera). Part 7. Hesperiiinae *incertae sedis*: grass and bamboo feeders

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Abstract

Partial life histories for 17 Hesperinae *incertae sedis* that feed on grasses or bamboos (Poaceae) are described and illustrated. The genera dealt with are: *Astictopterus* (from Evans' (1937) *Astictopterus* group), *Prosopalpus*, *Kedestes* (from Evans' (1937) *Ampittia* group), *Ceratrachia*, *Pardaleodes*, *Ankola* (From Evans' (1937) *Ceratrachia* and *Acleros* groups), *Perrotia* (part), *Chondrolepis*, and *Monza* (part) (all from Evans' *Ploetzia* genera group). The Poaceae-feeders comprise a relatively small proportion of the Afrotropical Hesperinae fauna, particularly the mainland Afrotropical fauna. The caterpillars shown here are fairly homogeneous, with the head wider nearer the base, and lacking obvious setae on the body. Wax glands have been noted over most of the ventral surface A1–A8 in the final instar of *Ceratrachia*, *Pardaleodes* and *Monza*, but are absent in *Chondrolepis*, and either absent or not documented for other genera. The short double frontal projection of *Tsitana uitenhaga* is unusual, but pupae of the congeneric species have not been documented. The pupae of *Kedestes* spp. generally have extensive black or dark areas. The pupae of *Pardaleodes* and *Ankola* are very flimsy and collapse after emergence. All known pupae of *Chondrolepis* spp. have a short, blunt downturned frontal projection, not seen for any other Afrotropical genera, although *Semalea* spp. may have a short blunt projection. The remaining pupae are all generally similar and undistinguished. These are not substantial differences, but suggest that pupal characters may be useful in grouping some of the genera of Afrotropical Hesperinae *incertae sedis*.

Key words: Lepidoptera, Afrotropical Hesperiidae

Introduction

This is a further contribution to a series on the biology of Afrotropical Hesperiidae, which have dealt with Coeliadinae in Part 1 (Cock 2010), the tribes Tagiadini (Part 2: Cock & Congdon 2011a) and Celaenorrhini (Part 3: Cock & Congdon 2011b). Treatments of the remaining tribe of Pyrginae (Carcharodini) and the Heteropterinae have been deferred to tackle the Hesperinae, where documented life histories are likely to be more helpful in untangling the classification of the subfamily in the context of T.B. Larsen's on-going revision of the Afrotropical species.

Cock & Congdon (2012) introduced the Afrotropical Hesperinae and treated the biology of the Afrotropical Baorini, which are grass-feeders, although we anticipate that one or more species will be found to feed on Areaceae instead, or as well (Cock *et al.* 2014). The remaining Afrotropical Hesperinae are currently *incertae sedis* (Warren *et al.* 2009). In our treatment, we have grouped the Hesperinae *incertae sedis* based on their known food plants: dicotyledon-feeders (Cock & Congdon 2013) and palm-feeders (Cock *et al.* 2014). Here, we treat the grass and bamboo-feeders, while future parts in preparation will cover the *Dracaena*-feeders and the remaining monocotyledon-feeders. Given the context, all food plants mentioned below belong in the Poaceae, unless otherwise indicated.

Evans (1937) divided the Hesperinae into a series of genera groups: the *Astictopterus* group, the *Ampittia* group, the *Ceratrachia* group, the *Acleros* group, the *Ploetzia* group and the *Gegenes* group. Here we include members of all these groups apart from the *Gegenes* group (which comprises dicotyledon-feeders and the Poaceae-feeding Baorini). The sequence of Poaceae-feeding species used here follows Evans' generic groups and his sequence of genera within the groups.

As in previous papers, material referred to as TCEC in this paper reflects the outputs of the Butterfly/Host Plant Research Programme which has run in Tanzania and neighbouring countries for over 20 years under the auspices of the Tanzania Commission for Science and Technology (COSTECH). The key researchers have been T.C.E. Congdon, I. Bampton (deceased May 2010) and S.C. Collins. TCEC did all of his rearing in collaboration with the late Ivan Bampton, and it is not possible to separate the efforts of these co-workers. However, TCEC did all the photography and writing up of what they reared together. Hence, reference to TCEC collections in this paper should automatically be considered to include Bampton. Both Congdon and Bampton have been Research Associates of the African Butterfly Research Institute (ABRI) since its inception in 1996, and all material collected and reared under the COSTECH programme has been incorporated in the ABRI collection in Nairobi.

From Evans' (1937) *Astictopterus* group

Evans' (1937) *Astictopterus* group included the genera *Hovalia* Evans, *Metisella* Hemming, *Tsitana* Evans, *Lepella*

although *Semalea* spp. may have a short blunt projection. However, the remaining pupae are all rather generally similar and undistinguished. These are not substantial differences, but suggest that pupal characters may be useful in grouping some of the genera of Afrotropical Hesperiiinae *incertae sedis*.

Cock & Congdon (2012) drew attention to the characteristic pupae of most Baorini—green, with or without pale stripes, elongate, with a well-developed, forward directed, pointed frontal spike, but no wax—and pointed out that similar pupae are found in several other tribes and *incertae sedis* groups of Hesperiiinae. We suggested that this pupa form might be an adaptation to pupating in an exposed or partially exposed way, particularly on grasses and palms. Here, we have confirmed that no other African grass-feeding Hesperiiinae have this type of pupa, although we speculate that the pupa of *Prosopalpus styła* may be found to be of this type, and we shall show that it is found in *Osmodes* (*incertae sedis*) and Afrotropical Heteropterinae. The corollary of this is that pupae treated here without this camouflaged shape and colouring are probably formed in closed shelters that do not expose them to visually hunting predators, and this seems to be the case from our observations.

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Identifications of food plants from Kenya were mostly made by the East Africa Herbarium, National Museums of Kenya and MJWC thanks the Botanist in charge, Dr Christine Kabuye, for her support. TCEC thanks Hassam Patel, who identified *Setaria grandis* at the Ruo Gorge, Malawi. Both authors thank the Director and Staff of the Royal Botanic Gardens Kew for their help.

In the 1990s, several of MJWC's colleagues at that time with CABI, including Drs Annette Walker, John LaSalle and Andy Polaszek examined the parasitoids and made a preliminary sort into species, but unfortunately were not in a position to take this work any further. Dr Janny Vos (CABI) checked MJWC's Dutch translation (*Monza cretacea*). Although we have not cited Mark Williams' website *Afrotropical Butterflies* (<http://www.atbutterflies.com/>) we did check against this comprehensive compilation of information on Hesperiididae, to make sure that we had not overlooked important references on the biology of the species treated here. Freerk Molleman readily agreed to let us use one of his photographs, although in the event we decided not to use it for this paper. Ian Sharp and Vaughan Jessnitz kindly shared with us their images of the early stages of the southern population of *Kedestes callicles*.

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