Zootaxa 3946 (1): 113–124
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3946.1.5
http://zoobank.org/urn:lsid:zoobank.org:pub:5E11419C-46F9-49DF-8ED9-08340F8740E5

Redescription of *Libanasa brachyura* Karny, 1928. (Orthoptera: Anostostomatidae: ?Lutosinae) from Tanzania and problems at the subfamily level

PETER M. JOHNS[1] & CLAUDIA HEMP[2]

[1]*Research Fellow, Canterbury Museum, Christchurch, New Zealand. E-mail: pjohns@canterburymuseum.com*
[2]*University of Würzburg, Dept. Animal Ecology and Tropical Biology (Zoology III), Würzburg, Germany. E-mail: claudia.hemp@uni-wuerzburg.de*

Abstract

Libanasa brachyura Karny, 1928 is resurrected and redescribed. Morphological details are added which now question its placement in the Lutosinae, and this in turn questions the subfamily arrangements as a whole. New characters are introduced for future comparison with other genera. Some details of its biology are also added.

Key words: Orthoptera, Anostostomatidae, king cricket, weta, Lutosinae, subfamily characters

Introduction

Five species of *Libanasa* are known. Two named species, *L. brachyura* Karny and *L. signatus* (Brunner v. Wattenwyl) are described from Tanzanian localities while the remaining three species occur in southern Africa. With relatively fresh specimens now available further diagnosis of one poorly known species of East Africa can now be made. Many type specimens were examined and reported on (Johns 1997) and some synonymies were made or suggested. But relating types and their names with modern material is of real concern, especially when species were described on few poorly preserved specimens or, even worse, juveniles that show none of the adult genitalic characters on which species differentation is mainly based. Such is the case with this species below. A very conservative approach has been taken and, as the type of the senior name is yet to be examined, the junior name is resurrected.

Libanasa brachyura Karny, 1928 reinstated species

Libanasa brachyura Karny, 1928
Libanasa signatus: sensu Johns, 1997

Material examined. Holotype ♀ nymph. labelled (1) *Libanasa brachyura* det Karny Type (in Karny's hand) (2) Coll. Karny (handwritten) (3) Coll. Karny (printed) (NHMW) Dar es Salaam, Tanzania. There is also a so called "allotype" which is a very small female nymph (NHMW).

2 ♂♂, 1 ♀, 1 ♂ nymph, 1 ♀ nymph, Kazimzumbwi Forest Reserve, Kisarawe District, Tanzania 39º 3' E, 6º 57' S. Coll. FRONTIER Tanzania, Jan–Feb. 1991 (ZMUC). 1 ♂ nymph, 3 ♀♀ nymphs, Kambai Forest Reserve, Muheza District, (Tanga Region), Tanzania. 38º 41' E, 4º 59' S. coll. FRONTIER Tanzania, Jan–Feb 1991 (ZMUC). 1 ♂, 1 ♀, 1 ♂ nymph, 1 ♀ nymph, Tanzania, East Usambara Mountains, Zigi Trail, 4.97 S, 38.67 E, 450 m, wet forest, March 1999, August 2001, October 2006, December 2011 (collection C Hemp). 8 ♂♂, 10 ♀♀, 2 ♂ nymphs, Tanzania, West Usambara Mountains, Lutindi forest, 4.67 S 38.33 E, 1250 m, submontane forest, March 2014, October 2014, December 2014 (collection C Hemp).

Accepted by D. Rentz: 24 Feb. 2015; published: 8 Apr. 2015

Certainly the external structure of prothoracic spiracles of *L. brachyura* is similar to those of *Penalva* sp, *Paterdecolyus/Pteranabropsis* sp, and *Exogryallacris ornata,* all considered as Lutosinae by Gorochov (2001), and *Anabropsis* sp, *Cnemotettix* sp (Anabropsinae) and somewhat similar to *Libanasidus vittatus* (Anostostomatinae) and *Cratomelus* (Cratomelinae). Very different are those of *Hemideina maori* (Deinacridinae), several species of *Hemiandrus* and *Anostostoma australasiae* (Anostostomatinae). Associated with the mesothoracic spiracle is the expansion of the adjacent epipleuron to form a cover over that spiracle as seen in Fig. 6. The size, shape and position of the last abdominal spiracle close to, or even surrounded by the tergite, needs to be accommodated in any future subfamily or tribal system.

Perhaps important are the differences between various species in the arrangement and development of paired, elongate lobes on the ventral sclerites of the thorax. Those of *L. brachyura, Penalva* sp and *Hydrolutos breweri* and others are similar to each other, but are different from *Hemideina* spp (see Maskell 1928; O'Brien & Field 2001), *Deinacrida* spp and *Motuweta riparia* by these being flat and having a reduced basisternite (pers. obs. PMJ). Although this "deinacridine" form could be seen as a development associated with the loss of wings and flight, the same form, but with distinct indication of the presence of presternites, is seen in *Cratomelus* sp (pers. obs. PMJ). The flightless and wingless Australian and American species all have an arrangement similar to that of *L. brachyura* and the winged species. As the shape and arrangement of these sclerites is known to change and develop in *Hemiandrus* sp, many other representatives must also be studied before any real relationship between form and function may be utilised for classificatory purposes. The apex of male cerci often have a bare sclerotised tip but not so in *L. brachyura.* The paired pockets, lobes, or median processes of the female 6/7 intersternite membrane, so variously and often spectacularly developed in *Hemiandrus* and *Cnemotettix*, and known to be present in simple form in *L. brachyura*, *Hypocophus* sp and ?*Carcinopsis* (a Madagascan species) need to be evaluated for all other genera.

Acknowledgements

We gratefully acknowledge grants from the Deutsche Forschungsgemeinschaft. Part of this research received support from the Synthesys Project http://www.synthesys.info/ which is financed by the European Community Research Infrastructure Action under the FP6 “Structuring the European Research Area Programme” enabling CH to visit the Zoologisk Museum Copenhagen in April 2013. Many thanks also to Prof H. Enghoff for sending specimens of *Libanasa* to us for further studies. We also thank the Commission for Science and Technology, Tanzania and the Tanzania Wildlife Research Institute, Tanzania for granting and supporting research. Many types were examined by PMJ in 1996-7 and the help of the Museums involved is again acknowledged.

References

Ander, K. (1939) Vergleichend anatomische und phylogenetische Studien uber die Ensifera (Saltatoria). *Opuscula Entomologica*, 2 (Supplement), 1–306.

Brettschneider, H., Chimimba, C.T., Scholtz, C.H. & Bateman, P.W. (2007) Review of southern African Anostostomatidae (Orthoptera: Ensifera), with a key to genera. *African Entomology*, 15, 103–119. http://dx.doi.org/10.4001/1021-3589-15.1.103

Brunner von Wattenwyl, C. (1888) Monographie der Stenopelmatiden und Gryllacriden. *Verhandlungen der zoologisch-botanischen Gesellschaft, Wien*, 38, 247–394.

Cadena-Castañeda, O.J. & Cortés-Torres, C. (2013) New species and taxonomic rearrangements of Anostostomatid Crickets (Orthoptera: Stenopelmatoidea: Anostostomatidae) from the Neotropics. *Zootaxa*, 3664 (3), 335–348. http://dx.doi.org/10.11646/zootaxa.3664.3.4

Derka, T. & Fedor, P. (2010) *Hydrolutos breweri* sp. n., a new aquatic Lutosini species (Orthoptera: Anostostomatidae) from Churí-tepui (Chimantá Massif, Venezuela). *Zootaxa*, 2653, 51–59.

Eades, D.C., Otte, D., Cigliano, M.M. & Braun, H. (2015) *Orthoptera Species File*. Version 5.0/5.0. Available from: http://Orthoptera.SpeciesFile.org (accessed 12 January 2015)

Gorochov, A.V. (1988) System and phylogeny of the recent superfamilies Hagloidea and Stenopelmatoidea (Orthoptera) with description of new taxa. Communication 1. *Zoologicheskij Zhurnal*, 67 (3), 353–366. [in Russian]

Gorochov, A.V. (2001) The higher classification, phylogeny and evolution of the superfamily Stenopelmatoidea. chapter 1. *In*: Field, L.H. (Ed.), *The biology of wetas, king crickets and their allies*. CABI publishing, Wallingford, pp. 3–33. http://dx.doi.org/10.1079/9780851994086.0003

Ingrisch, S. (2014) DORSA. Available from: http://orthopteraspeciesfile.org/common/basic/ShowImage.aspx?TaxonNameID=1131974&ImageID=129897 (accessed 15 December 2014)
Johns, P.M. (1997) The Gondwanaland Weta: Family Anostostomatidae (formerly in Stenopelmatidae, Henicidae or Minermidae): Nomenclatural problems, World checklist, New Genera and species. *Journal of Orthoptera Research,* 6, 125–138.
http://dx.doi.org/10.2307/3503546
Judd, W.W. (1948) A comparative study of the proventriculus of orthopteroid insects with reference to its use in taxonomy. *Canadian journal of research,* D (26), 93–161.
http://dx.doi.org/10.1139/cjr48d-011
Karny, H.H. (1928) Gryllacriden aus verschiedenen deutschen und Österreichen Sammlungen. *Stettiner Entomologische Zeitung*, 89, 247–312.
Maskell, F.G. (1928) The anatomy of *Hemideina thoracica* . *Transactions of the New Zealand Institut*e, 57, 637–670.
O'Brein, B. & Field, L.H. (2001) Morphology and anatomy of New Zealand wetas. Chapter 8. *In*: Field, L.H. (Ed.), *The biology of wetas, king crickets and their allies*. CABI publishing, Wallingford, pp. 179–204.
http://dx.doi.org/10.1079/9780851994086.0127
Pratt, R.C., Morgan-Richards, M. & Trewick, S.A. (2008) Diversification of New Zealand weta (Orthoptera: Ensifera: Anostostomatidae) and their relationships in Australasia. *Philosophical transactions of the Royal Society* (B), 363, 3427–3437.
http://dx.doi.org/10.1098/rstb.2008.0112

APPENDIX

list of genera: Lutosini Gorochov, 1988.

http://species.wikimedia.org/wiki/Lutosini extracted 6/12/2014
Aistus (New Caledonia)
Apotetamenus (Brazil)
Carcinopsis (New Caledonia, Madagascar)
Hydrolutos (Venezuela)
Hypocophoides (India)
Hypocophus (Madagascar)
Libanasa (South Africa, Tanzania)
Licodia (Cuba, Hispaniola)
Lutosa (Neotropics)
Neolutosa (Neotropics)

http://orthoptera.speciesfile.org/common/basic/Taxa.aspx?TaxonNameID=1131839, extracted 6/12/2014
Apotetamenus (Neotropics)
Carcinopsis (New Caledonia, Madagascar)
Hydrolutos (Venezuela)
Libanasa (South Africa, Tanzania)
Licodia (Cuba, Hispaniola)
Lutosa (Neotropics)
Neolutosa (Neotropics).
Papuaistus (Papua/New Guinea)
Spizaphilus (Madagascar)