



Two new species of *Afronurus* Lestage, 1924, from Hong Kong, China (Ephemeroptera: Heptageniidae)

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Abstract

Afronurus alces, **sp. nov.**, and *A. otus*, **sp. nov.**, are described based on male adult material from Hong Kong, China. *Afronurus alces*, **sp. nov.**, has penes that are extraordinarily differentiated and laterally expanded. *Afronurus otus*, **sp. nov.**, has a distinctive bifurcation at the tip of each penis lobe, with sharply pointed prongs that are subequal in size. Discussion is provided about the state of systematics for the tribe Afronurini Webb & McCafferty, 2007, with special reference to the genus *Afronurus* Lestage, 1924.

Key words: taxonomy, Asia, Africa, morphology, *Cinygmia assamensis*

The flat-headed mayfly tribe Afronurini Webb & McCafferty, 2007, (Ephemeroptera: Heptageniidae: Ecdyonurinae) currently contains the genera *Afronurus* Lestage, 1924, *Darthus* Webb & McCafferty, 2007, and *Parafronurus* Zhou & Braasch, 2003 (Webb & McCafferty, 2007). *Darthus* and *Parafronurus* each are monospecific and are known from Borneo and China, respectively (Zhou & Braasch, 2003; Webb & McCafferty, 2007). *Afronurus*, on the other hand, currently contains numerous species from Asia and Africa (Wang & McCafferty, 2004; Webb & McCafferty, 2007, 2007b). Webb & McCafferty (2008b) recently provided illustrated keys and diagnoses for identifying the male adults and larvae of Afronurini genus groups.

Wang & McCafferty (2004) considered the Asian genus *Cinygmia* Kimmins, 1937, to be a junior synonym of the more widespread Asian and African *Afronurus* because they could not identify an apomorphy to maintain *Afronurus* as a separate genus from *Cinygmia*, the latter of which has a presumably apomorphic gill morphology consisting of distinct long projections on some of the posterior gills (usually gills 5 & 6) (see, e.g., Zhou & Zheng, 2003: Fig.8). Some other *Afronurus* species, such as *A. barnardi* Schoonbee, 1968, *A. scotti* Schoonbee, 1968, and *A. zerningi* Braasch & Freitag, 2008, also may have extensions on the gills (see, e.g. Braasch & Freitag, 2008: Fig. 51), but these extensions do not have the distinctive shape of those found in *Cinygmia*. Although they did not consider it to be a tenable genus, Wang & McCafferty (2004) considered *Cinygmia* to be an apomorphic clade within a paraphyletic *Afronurus*. Steve Jensen (unpublished), Flowers & Pescador (1984), Belfiore et al. (2003) and Kluge (2004) previously had noted the very close similarities of the two nominal genus groups, especially with respect to the morphologies of egg and larval stages.

Hereafter, we refer to the *Cinygmia* clade as the *Afronurus assamensis* group, based on the type species of *Cinygmia*. Tentatively, we include the following species (only original combinations listed) in the *assamensis* group: *Cinygmia assamensis* Kimmins, 1937; *Cinygmia cervina* Braasch & Soldán, 1984; *Afronurus chihpenensis* Kang & Yang, 1994; *Cinygmia dama* Braasch & Soldán, 1987; *Afronurus floreus* Kang & Yang, 1994; *Cinygmia furcata* Zhou & Zheng, 2003; *Cinygmia gilliesiana* Braasch, 1999; *Cinygmia humanensis* Zhang & Cai, 1991; *Ecdyurus hyalinus* Ulmer, 1912; *Cinygmia kambakkaraiensis* Venkataraman & Sivaramakrishnan, 1989; *Cinygmia keralensis* Braasch & Soldán, 1987; *Cinygmia landai* Braasch & Soldán, 1984; *Epeorus levis* Navás, 1912 [= *Cinygmula zachvatkini* Tshernova, 1952, subj. syn. by Kluge (2004)]; *Afronurus namnaoensis* Braasch &