

Three new genera of damselflies (Odonata: Chlorocyphidae, Platynemididae)

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The genera *Stenocypha* [type species: *Libellago gracilis*], *Matticnemis* [type species: *Platynemis doi*] and *Spesbona* [type species: *Metacnemis angusta*], first recognized by molecular analysis, are diagnosed and discussed on morphological grounds.

Keywords: Odonata; Zygoptera; damselfly; Africa; Asia

Introduction

Recent phylogenetic research on Zygoptera has led to extensive revision of the suborder, including the establishment of new families and subfamilies, as well as the synonymy of several genera (Dijkstra & Kalkman, 2013; Dijkstra, Kalkman, Dow, Stokvis, & van Tol, 2013). Three genera that were first identified by molecular analysis, but which are also morphologically well defined, are introduced here.

Systematic part

Stenocypha gen. nov.

Type species

Libellago gracilis Karsch, 1899

Discussion

The genus was discussed by Dijkstra (2007) as the *gracilis* group of *Chlorocypha* Fraser, 1928 and includes (all new combinations) *Stenocypha gracilis* (Karsch, 1899), *S. hasta* (Pinhey, 1960), *S. jacksoni* (Pinhey, 1952), *S. molindica* (Fraser, 1948) and *S. tenuis* (Longfield, 1936). Aside from *S. gracilis*, which occurs in the Lower Guinea (Cameroon through Gabon to Bas-Congo), all

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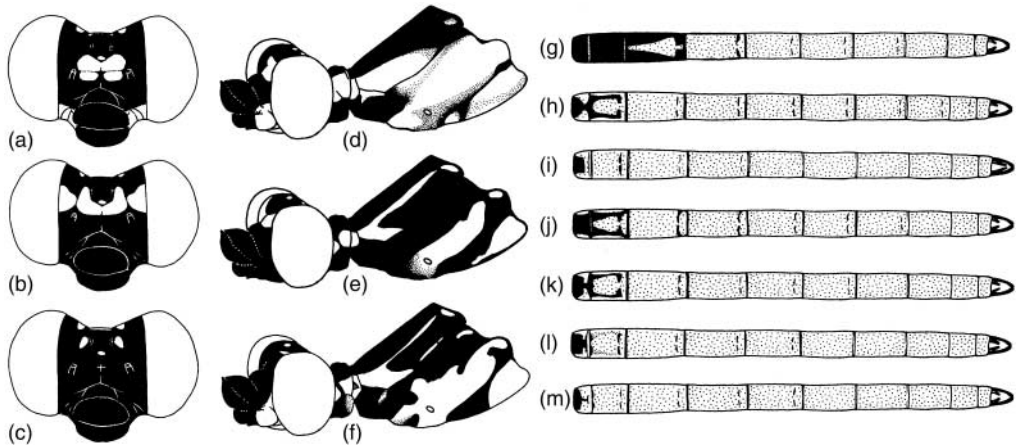


Figure 1. *Stenocypha* males after Dijkstra (2007): (a–c) head in frontal view: (a) *S. jacksoni*; (b) *S. molindica*; (c) *S. tenuis*; (d–f) head and thorax in lateral view (both are all-black in *S. gracilis*): (d) *S. jacksoni*; (e) *S. molindica*; (f) *S. tenuis*; (g–m) abdomen in dorsal view: (g) *S. gracilis*; (h) *S. hasta*; (i) *S. jacksoni*; (j) *S. molindica*; (k) dark *S. tenuis* (*‘basilewskyi’*); (l) typical *S. tenuis*; (m) pale *S. tenuis*.

species range around the Albertine Rift of eastern Africa, from eastern Democratic Republic of Congo and western Tanzania, through Burundi, Rwanda and Uganda to western Kenya. Dijkstra et al. (2013) recovered *S. tenuis* as the sister group of all other African chlorocyphid genera (*Africocypha* Pinhey, 1961, *Chlorocypha*, *Platycypha* Fraser, 1949) and unpublished 16S and 28S sequences confirm *S. gracilis*, *S. jacksoni* and *S. molindica* form a monophyletic group with it (B. van den Heuvel, pers. comm.).

Diagnosis

The genus differs from other African Chlorocyphidae by the slender abdomen, e.g. S3 is about three times as long as wide (Figure 1g–m). The species are much less diverse in coloration than generally seen in this family in Africa: face without, but dorsum of head sometimes with, bright markings; pale double antehumeral stripe often characteristically inverted, i.e. with its dorsal rather than ventral section more prominent (can become obscured by black with age); legs black, tibiae sometimes with pale anterior streaks; abdominal dorsum entirely red, S1 and S2 (and S3 in *S. gracilis*) extensively marked with black.

Etymology

The suffix *cypha*, frequently used for genera in this family, is combined with the Greek prefix *Steno-* (narrow), referring to the slender abdomen and limited range of the new genus.

Key to African genera of Chlorocyphidae

Applies to mature males only. *Chlorocypha cancellata* (Selys, 1879) is excluded: its mixed character set may indicate an unnamed genus.

- 1 Tibiae often expanded and largely white, yellow, orange and/or red, at most with some black at base or apex. Dorsum S2–3 and often further segments (up to S8) typically broadly pale with black line on dorsal carina *Platycypha*

- Tibiae never expanded and always largely black, at most anteriorly with pale streaks. Dorsum S2–8 largely pale without black line; S2–3 rarely largely black dorsally 2
- 2 Abdomen slender, S3 in dorsal view about 3× as long as wide, with dorsum always red *Stenocypha* gen. nov.
- Abdomen broad, S3 less than 2× as long as wide, white to blue and/or yellow to red 3
- 3 Paraprocts at least half as long as cerci. Dorsum S10 always (largely) black, as may be S9. Face with bright markings that may extend onto dorsum of head. Tibiae all black *Africocypha*
- Paraprocts less than half as long as cerci. Dorsum S9–10 mostly unmarked, exceptionally S10 with narrow black rim. Face and/or dorsum of head with or without bright markings. Tibiae often with pale anterior streaks *Chlorocypha*

Key to mature males of *Stenocypha* gen. nov.

- 1 Dorsum of S2 completely black; S3 laterally black, widest at base, enclosing red triangle (Figure 1g). Head and thorax completely black with maturity. Cameroon through Gabon to Bas-Congo *gracilis*
- Dorsum of S2–3 largely red (Figure 1h–m). Head and thorax with contrasting yellowish markings even with maturity (Figure 1a–c). Kivu to Tanzania and Kenya 2
- 2 Thorax marked with oblique yellow panel on sides; tibiae all black (Figure 1d). Head with isolated square pale patch on frons (Figure 1a). Red of S3–10 extends ventrally of lateral carina. Paraprocts red with black tip, clearly more than half as long as cerci *jacksoni*
- Markings of thorax broken up into more or less parallel stripes and blotches; at least hind tibiae often white anteriorly (Figure 1e, f). Head with pale band from eye to eye, or scattered paler spots (Figure 1b, c). Red confined to dorsum of S3–10, venter black. Paraprocts black, about half as long as cerci 3
- 3 Head with bow-shaped yellow band from eye to eye, occiput black (Figure 1b). S2 with complete lateral black lines, separating red centre from yellowish sides. Six to nine cross-veins between R2 and R3 before origin of IR2 (rarely 3–10) *molindica*
- Head with scattered yellowish spots, including bar on occiput (Figure 1c). S2 without lateral black lines or these abbreviated before apex. Three to five cross-veins between R2 and R3 before origin of IR2 (rarely 2–7) 4
- 4 Tibiae all black. S2 with lateral black lines (Figure 1h). Western Tanzania *hasta*
- At least hind tibiae anteriorly white. S2 often without lateral black lines (Figure 1k–m). Burundi to Kenya *tenuis*

***Matticnemis* gen. nov.**

Type species

Platycnemis doi Hämäläinen, 2012

Discussion

Phylogenetic analysis places *Matticnemis doi* (new combination) as the sister group of a clade including true *Platycnemis* Burmeister, 1839, i.e. with the generotype *P. pennipes* (Pallas, 1771), and the black-and-white species formerly placed in *Copera* Kirby, 1890 and transferred to *Pseudocopera* Fraser, 1922 (Dijkstra et al., 2013). Together the three genera form the tribe Platycnemidini, the sister group of Coperini (see discussion under *Spesbona* gen. nov.).

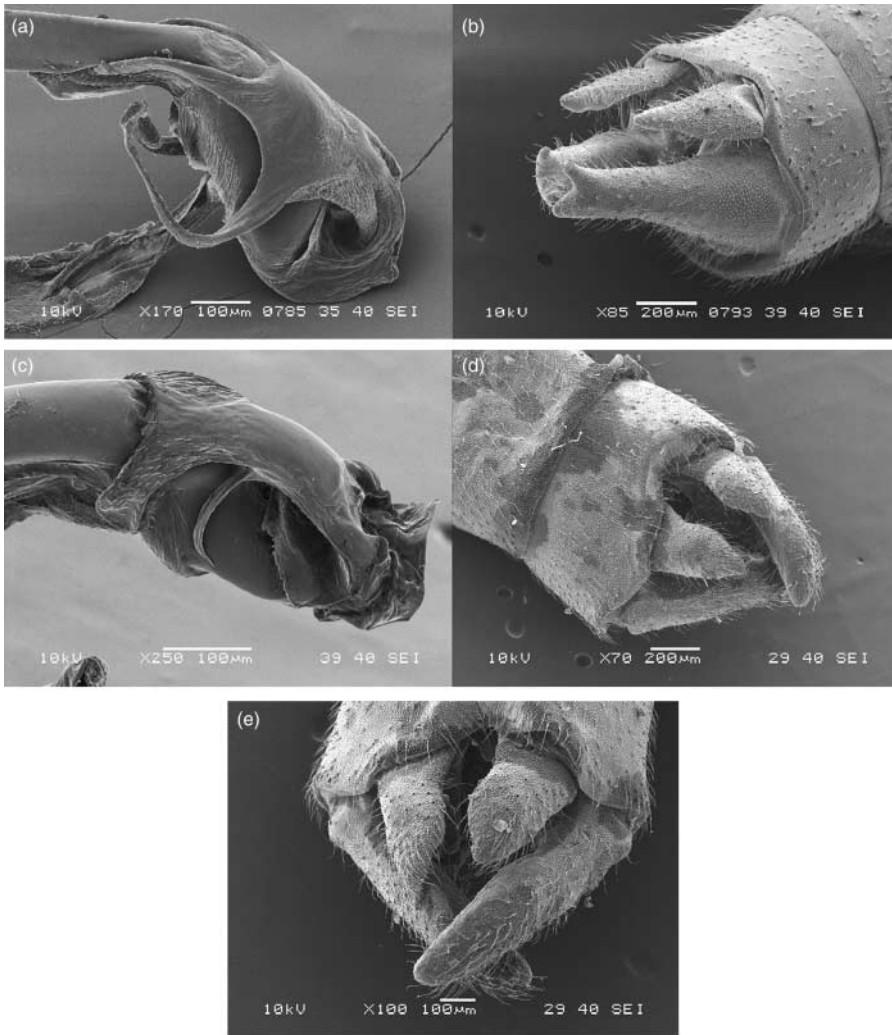


Figure 2. *Matticnemis* (after Hämäläinen, 2012) and *Spesbona* males. Photos by Dirk Gassmann: (a) genital ligula of *M. doi* in lateral view; (b) appendages of *M. doi* in oblique lateral view; (c) genital ligula of *S. angusta* in lateral view; (d) appendages of *S. angusta* in dorsal view, with branch visible under left cercus; (e) appendages of *S. angusta* in caudal view, with branch visible under right cercus.

Diagnosis

The genus is typical of the tribe Platycnemidini in possessing white male tibiae, pairs of elongate apical and lateral branches on the genital ligula (Figure 2a), and lacking a tooth-like process on the inside of the male cerci. The bifurcate tips of the male parapoets are unique within the subfamily (Figure 2b), as are the broken thoracic markings (illustrated in figure 2b in Hämäläinen, 2012).

Etymology

The suffix *cnemis*, frequently used for genera in this family, is combined with the prefix *Matti* in honour of Matti Hämäläinen, author of *M. doi* and *Platycnemis phasmovolans* Hämäläinen (2003) and leading expert of Oriental Odonata.

Spesbona* gen. nov.Type species**Metacnemis angusta* Selys, 1863*Discussion*

Spesbona angusta (new combination) is the sister group of the species formerly placed in *Platycnemis* from Madagascar, Comoros and Pemba (see Dijkstra, Clausnitzer, & Martens, 2007). The latter are all transferred to *Proplatycnemis* Kennedy, 1920 by Dijkstra et al. (2013). Samways & Tarboton (2006) considered the holotype of *S. angusta* lost, although a female labelled “Platycn[emis]. capensis ♀ Cap.” is in Selys’s collection in the Royal Belgian Institute of Natural Sciences in Brussels. The generotype of *Metacnemis* Hagen, 1863 (*M. valida* Hagen in Selys, 1863) is the sister group of the Afrotropical genus *Mesocnemis* Karsch, 1891. *Metacnemis* thus becomes monotypic, as *M. secundaris* Aguesse, 1968 from Madagascar better fits the also Malagasy genus *Paracnemis* Martin, 1903 on morphological grounds (Dijkstra et al., 2013).

Diagnosis

The genus is typical of the tribe Coperini, which also includes *Copera* and *Proplatycnemis*, in possessing larval gills with frilled borders (J. Simaika, pers. comm.) and a well-developed branch-like process on the inside of the male cerci (Figure 2d, e; not noted or illustrated by Samways & Tarboton, 2006). The genital ligula is similar to the condition typical of *Proplatycnemis*, i.e. bearing a pair of lobe-like apical branches with a marked apical notch between them, as well as a more basal pair of slender lateral branches (Figure 2c). However, the lateral lobes are more slender and the apical ones larger, and thus unlike the figure by Samways & Tarboton (2006). The absence of feather-like tibiae (i.e. black and not widened) prevented the species’ earlier association with *Platycnemis* and related genera, but the appendages and markings are typical of the subfamily Platycnemidinae, recalling *Proplatycnemis* especially. The species also shares similarities in the genital ligula with the latter, but the condition of the tibiae, bulging postocular lobes, acute pterostigmata (i.e. anterior border almost twice as long as posterior, rather than about equal) and deep blue colour (notably extensive on S8–10) are unique within the subfamily.

Etymology

The name is feminine and derived from the Latin motto ‘Spes Bona’ (Good Hope) of Western Cape Province. This seems appropriate for this critically endangered species, known from a single site where it was found by Samways & Tarboton (2006) after being unrecorded for 83 years, but from which it has recently disappeared (M. Samways, pers. comm.).

Key to tribes and genera of Platycnemidinae

See Dijkstra et al. (2013) for a discussion of the subfamily, diagnosis of Coperini and list of species transferred to *Proplatycnemis* and *Pseudocopera* Fraser, 1922.

- 1 Male tibiae white, yellow, orange, red, blue or black. Inner side of male cerci with tooth- or branch-like process (rarely reduced completely). Caudal lamellae of larvae with frilled borders. Tropical Asia, Africa and Madagascar (Coperini) 2

- Male tibiae white. Inner side of male cerci without process. Caudal lamellae with smooth borders. Palaearctic and extending into tropical Asia. (Platycnemidini) 4
- 2 Male tibiae not widened and all black. Posterior profile of head (postocular lobes) distinctly bulging. Anterior border of pterostigmata almost twice as long as posterior border. Western Cape. *Spesbona* gen. nov.
- Male tibiae widened and (largely) white, yellow, orange, red or blue. Postocular lobes smoothly curved. Anterior and posterior borders of pterostigmata about equally long. Equatorial Africa and Madagascar. 3
- 3 Genital ligula with pair of lobe-like apical branches, creating marked apical notch between them, and usually also more basal pair of slender lateral branches. Male tibiae white, sometimes orange, red or blue. Madagascar, Comoros and Pemba *Proplatycnemis*
- Genital ligula with rounded apex lacking branches. Male tibiae never white or blue, but yellow to red. Tropical Asia and mainland Africa *Copera*
- 4 Male parapoets with bifurcate tips. Thorax sides with broken pattern of dark and pale blotches *Matticnemis* gen. nov.
- Male parapoets with simple tips. Thorax marked with straight and continuous stripes 5
- 5 Genital ligula with pair of short and lobe-like apical branches. Black on hind legs concentrated at base and apex of femora and tibiae *Pseudocopera*
- Genital ligula with one or two pairs of long and slender branches. Black on hind legs, when present, concentrated along length of femora and/or tibiae, often on longitudinal ribs *Platycnemis*

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