

## The identity of the West African zygopterans *Pseudagrion emarginatum* and *P. camerunense* (Odonata: Coenagrionidae)

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### Abstract

*Pseudagrion emarginatum* is removed from the synonymy of *P. melanicterum*. The following synonymies are established: *P. coeruleiceps* of *P. emarginatum* and *P. angelicum* of *P. camerunense*. The latter, formerly known as *Enallagma camerunense*, should be removed from the list of threatened African Odonata.

### Introduction

*Pseudagrion* is the most species-rich zygopteran genus of tropical Africa, containing almost a hundred species. Despite the thorough revision of Pinhey (1964), numerous taxonomic details remain to be resolved, this being a consequence of the great number of species and the variability of many of them. While identifying material from Ghana, I encountered one incorrect and two new synonymies. These are discussed below.

The following abbreviations are used: BMNH - Natural History Museum, formerly British Museum (Natural History), London; ZMB - Museum für Naturkunde, Humboldt Universität zu Berlin; MNHN - Muséum National d'Histoire Naturelle, Paris.

### *Pseudagrion emarginatum* Karsch, 1893 (Fig. 1a)

*Pseudagrion emarginatum* Karsch, 1893: 38 [type: Bismarckburg, German Togo; ZMB].

*Pseudagrion melanicterum* nec Selys, 1876. — Ris (1936: 45).

*Pseudagrion coeruleiceps* Longfield, 1959: 19 [type: Stock Farm at Vom, Nigeria; BMNH]. syn. nov.

### Specimens studied

Holotype ♂ *emarginatum*—with labels: blue, printed “Togo, Bismarckburg, 1.11.-15.12.90 R. Büttner S.”; red, printed “Typus”; white, hand-written “*Pseudagrion emarginatum* Karsch\*”; Holotype ♂ *coeruleiceps* — with labels: white with red border, circular printed “HOLOTYPE”; white, hand-written “NIGERIA, Vom, Stock Farm, 7 ix. 1956 R.M. Gambles”; white, printed “Brit. Mus., 1957-377”; white, hand-written “*Pseudagrion coeruleiceps*”; Type male, det. Miss C. Longfield\*.

Single ♂ — Laboun Stream east of Odome, Kyabobo National Park, Volta Region Ghana (8°19'N, 0°34'E), 29 April 2000; leg. K.-D.B. Dijkstra.

### Discussion

The male from Ghana was collected a mere stone's throw from former Bismarckburg (formerly in German Togo, now in Ghana), the type locality of *P. emarginatum*. This species is synonymised with *P. melanicterum* by Ris (1936), although Karsch (1893 specifically compares the two species, and states four differences (Table 1). Ris dismisses these differences as mere aberrations. Nonetheless the four characters and Karsch' drawing of the superior appendage agree with the collected specimen and, moreover with Longfield's (1959) description of *P. coeruleiceps*. Comparison of the Ghanaian male with both types has confirmed that the two are identical. All specimens have the entirely sky-blue face for which Longfield named her species and agree in the morphology of the appendages (Fig. 1a), which show it to be distinct from *melanicterum* (Fig. 1b) This means that *emarginatum* should be considered a good species and can therefore be removed from synonymy with *melanicterum*, while it takes priority over *coeruleiceps*.

Table 1. Differences between *Pseudagrion emarginatum* and *P. melanicterum*.

	<i>emarginatum</i>	<i>melanicterum</i>
Postclypeus	blue, save a black basal band	black
Black line on first pleural suture*	complete, nearing or joining black of second pleural suture	broken, leaving an isolated dot
Tarsal segments*	yellow	brown to black
Dorsum of S7*	all black	blue mark on apical fifth
Branches of superior appendages*	short and straight (Fig. 1a)	longer and curved (Fig. 1b)

\* characters mentioned by Karsch (1893)

The species is otherwise known only from near Mbatki in the Central African Republic near Vom in Nigeria and close to the Sudan border of the Democratic Republic Congo (Longfield 1959; Pinhey 1966; Carletti & Terzani 1998). Pinhey (1964) also recorded having examined a specimen from Togo, but did not repeat that record in later papers

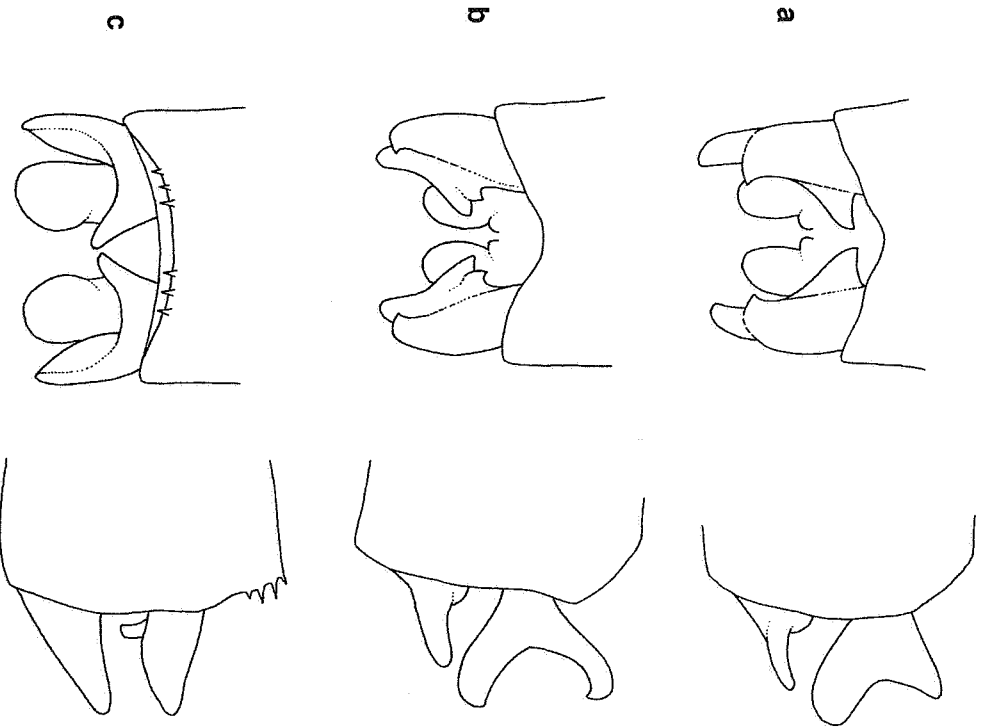


Figure 1. Male anal appendages in dorsal and lateral view — (a) *Pseudagrion emarginatum* from Nigeria (holotype of *P. coarcticeps*); (b) *P. melanicerum* from Sierra Leone (lectotype); (c) *P. camerunense* from Nigeria.

The widely scattered localities have in common that they are in hilly country on the northern transition from equatorial forest to savannah. In the unfinished manuscript of his “The Nigerian dragonflies” Robert M. Gambles provides the most extensive ecological information available on this species to date: “In the North [of Nigeria] the commonest [*Pseudagrion* species] are *kerstani* and *whellani* [now *hamoni*], often joined by *coe-*

*ruliceps* [now *emarginatum*]. This last, however, seems to prefer a certain amount of shade, and in the Middle Belt [further south] it may be found together with *melanicerum* over wooded streams. It may also be found over streams running along the bottom of deep but narrow erosion gullies in open country.” It appears that *P. emarginatum* requires a certain balance of sun and shade along the streams it inhabits. Laboum Stream was surrounded by degraded woodland, and *P. kerstani* and *P. melanicerum*, species of open and more wooded running waters respectively, co-occurred commonly there.

#### *Pseudagrion camerunense* Karsch, 1899

(Figs 1c, 2)

*Enallagma*(?)*camerunense* Karsch, 1899: 168 [type: Johann-Albrecht-Höhe, N Cameroon; ZMB].

*Pseudagrion angelicum* Fraser, 1947: 25 [type: Ivory Coast; MNHN], syn. nov.

*Pseudagrion camerunense* (Karsch). — May (1997: 82).

#### *Specimens studied*

Lectotype ♂ *camerunense* — with labels: blue, printed “N Kamerun, Joh.-Albrechtshöhe, 18.VIII.-30.IX.96, L. Conradt S.”; red, hand-written and printed “Syn-Typus”; yellow, printed “Zool. Mus. Berlin”; white, red-bordered, printed “*E. camerunense*, LECTOTYPE, M. May 1996”. Paralectotype ♂ *camerunense* — with labels: blue, printed “N Kamerun, Joh.-Albrechtshöhe, L. Conradt S.”; red, hand-written and printed “Syn-Typus”; yellow, printed “Zool. Mus. Berlin”; white “15/5.96” (in ZMB). Both specimens lack the terminal abdominal segments.

Several specimens from Liberia (leg. J. Lempert) and Nigeria (leg. R.M. Gambles), and singles from Ghana (leg. K.-D.B. Dijkstra) and Cameroon (leg. G.S. Vick). Type ♂ *angelicum* not seen.

#### Discussion

The status of this species has been obscure for almost a century, because it was erroneously described as an *Enallagma*. In his description Karsch (1899) expressed his doubt of this placement by adding a question mark behind the generic name. Pinhey (1962: 29) reported a specimen from Ghana, also stating it was “not a true *Enallagma*”, but refraining from saying why. Pinhey (1982) included the species in his list of little known or vanishing Afrotropical Odonata, but did not repeat his Ghana record on that occasion, stating only that the two syntypes were known. May (1997) examined both specimens and concluded that they “most likely” belong to *Pseudagrion*, but the loss of the appendages made an exact attribution difficult.

The colour pattern of the *P. camerunense* lectotype illustrated by May (1997) perfectly matches the condition in *P. angelicum*, pointing towards synonymy of the two: the face is entirely orange-yellow up to the anterior ocellus, and the remainder of the head is black with relatively small bluish postocular spots. The orange-yellow antehumeral

stripes are broad, their posterior half being abruptly narrowed ventrally; and the black markings of the synthorax are relatively extensive. The dorsum of S2 is black with an isolated blue marking. By the extensive and contrasting orange-yellow and black markings, *angelicum* stands apart from the other *Pseudagrion* species of Pinhey's (1964) group B. The other species are generally of a bluish, greenish or reddish colour on the face and synthoracic dorsum, and have the black markings more reduced or so extensive that they obliterate (and show little contrast with) paler markings. The *camerunense* lectotype and paratype are relatively dark. They lack the short pale streak below the humeral suture that can be seen in the illustration of the thorax of *angelicum* by Pinhey (1964). This slight difference falls within the variation of the species.

The appendages of *angelicum* are also unique (Fig. 1c), as also well illustrated by Fraser (1947): the superiors and inferiors are both long and slender in lateral view, being about equal in length. Each superior appendage bears a very long internal spine at its base, standing almost at a right angle to the main body of the appendage. A somewhat similar, but less pronounced, spine is found only in *P. basicornis* Ris, 1936. Unfortunately the appendages are absent in the *camerunense* types, complicating the comparison with *angelicum*. The genital ligula of that species (Fig. 2) is identical to that of *P. camerunense* illustrated by May (1997). The structure is rather simple, as is typical for the group B species, most of which have the apical lateral lobes either more extended and pointed, or absent, the apex being rounded. The similarity of the coloration and genital ligula of *angelicum* and *camerunense* confirm their synonymy, *camerunense* taking priority.

*P. camerunense* is known from The Gambia, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Nigeria, Cameroon and Bioko (Fraser 1947; Pinhey 1971; Gambles 1980; Lempert 1988; Carf & D'Andrea 1994; Gambles et al. 1998; Vick 1999). Obviously, the species should be removed from the list of threatened African Odonata (Pinhey 1982). Indeed it is found in open, often disturbed, habitats (Lempert 1988, own observations).



Figure 2. Genital ligula of *Pseudagrion camerunense* from Cameroon, originally identified as *P. angelicum*, leg. G.S. Vick. Photo: D. Gassmann.

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