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Abstract

The holotype of *Lestes birmana* Selys, 1891 (currently *Indolestes birmanus* (Selys, 1891)), housed in Museo Civico di Storia Naturale di Genova, is examined and depicted for the first time. Its cerci are not attenuated apically, hence this taxon cannot be a subspecies of *Indolestes gracilis* (Hagen in Selys, 1862).

Key words: dragonfly, Odonata, *Indolestes burmanus*, Myanmar, Thailand

Introduction

The name *Lestes birmana* Selys, 1891 was erected by Selys (1891) in a conditional way. In his paper (Selys 1891) devoted to a collection by Leonardo Fea from Burma (presently Myanmar) in Museo Civico di Storia Naturale di Genova, he identified a male specimen collected on 28.06.1888 [recte 18] in 'Puepoli' (presently Papun, Kayin State; 18°04' N 97°27' E, 155 m asl) as *Lestes divisa* Hagen in Selys, 1862 (presently considered in the binomen *Indolestes divisus*) and mentioned it using this name as a headline. However, he pointed out a conspicuous difference from the typical *divisa* from Ceylon (type locality: Ramboda Pass), a broad and continuous black humeral stripe, and added the following note: "Cette bande noire n'étant pas mentionnée dans la diagnose de la *divisa*, si ce n'est pas une simple omission, l'espèce de M. Fea serait nouvelle, et je proposerais de la nommer *Lestes birmana* qui se distinguerait de la *divisa* de Ceylon par le devant du thorax noir avec une bande bleue antéhumérale de chaque côté" (Selys, 1891: 495) ["The black band was not mentioned in the diagnosis of *divisa*, and if it is not a mere oversight, the species by M. Fea should be new, and I should propose to name it *Lestes birmana*, which would differ from *divisa* of Ceylon by a black front of the thorax with a blue antehumeral stripe on either side."] In spite of the conditional erection, the name *Lestes birmana* Selys, 1891, being proposed before 1961, is available according to ICZN Art. 15.1.

Basing solely on the thoracic pattern, Ris (1916) identified his series of males and females from Sembaganur, Madura, South India (presently in Tamil Nadu State) as the taxon in question, which he regarded as a subspecies of *Lestes gracilis* Hagen in Selys, 1862 (*L. gracilis birmanus*). Importantly, he noted: "Verbreiterung des Appendix superior meist stumpfer als bei *gracilis*, doch ist dieser Punkt individuell variabel" ["Broadening of the superior appendage is usually blunter than in *gracilis*, but this point is individually variable"] (Ris 1916: 14).

Note that, as mentioned above, Selys (1891) identified the type specimen of *L. birmana* under the title "*Lestes divisa*", which was his main option of his identification of it. Both *divisa* and *gracilis* were described from Ceylon but have quite dissimilar cerci: blunt in *divisa* (Figure 1b) and attenuated apically in *gracilis* (Figure 1c) (Fraser 1933: fig. 31; see also Kosterin 2015: fig. 1b-d). Hence, in spite of Ris' note on "usually" blunter cerci, identification of his specimens as *Lestes birmanus* was problematic. Fraser (1930: 96) solved this problem by proposing a new name "*Ceylonolestes davenporti* (Ris) nov. nom." for "*Lestes gracilis birmanus* Ris nec Selys". Fraser (1930) based his description of characters of this taxon on his specimens from Western Ghats with the appendages as in *gracilis* (see Fraser 1933: fig. 31) but the complete humeral stripes as in *birmanus*. However, since he proposed the new name rather than described a new taxon, this name is based on the type series by Ris (1916).

Fraser (1933) mentioned the taxon in question as bona species but within another genus, as *Ceylonolestes birmana*. He pointed out that the brief original description by Selys (1891) fitted exactly his *Ceylonolestes davenporti* Fraser, 1930, but noted "... I have no doubt the differences will easily be found. ... It is thus, for geographical reasons only at present, that I consider them to be two distinct species" (Fraser 1933: 71).

Later Asahina (1970) published a description and drawings (Figure 1a) of two males collected by Artur Svihla only on 25.04.1953 at Kalaw in Shan State of Myanmar (which is just 250 km NNW of Papun), identified as *Lestes (Indolestes) birmanus* (Selys, 1891), bona species. Then *Indolestes birmanus* was reported, also as bona species, for a number of localities in northern Thailand (Chiang Mai, Tak and Loei Provinces) (Hämäläinen & Pinratana 1999).

Importantly, the apices of the cerci shown by Asahina (1970) (Figure 1a) are not attenuated into caudal direction as in *I. gracilis* (Figure 1c) but straight. They were shown crossed in dorsal view and hardly bent down in lateral view (Figure 1a). Besides, S9 is shown entirely dark (Figure 1a), while in *I. gracilis* ssp. its distal part is light (Fraser 1933: Kosterin 2015: fig. 1b, fig. 4g, h). The same characters can be seen on the photos of *I. birmanus* from Phu Kradung National Park, Thailand by Dennis Farrell (www.allodonata.org).

Nevertheless Dow (2010), following Ris (1916), treated the taxon in question as *I. gracilis birmanus* and tentatively retained synonymy of *Ceylonolestes davenporti* Fraser, 1933 to it, in spite of the gap between Western India and Myanmar. However, Dow (2010) left possible an option of them being distinct species.

Ris (1916), Fraser (1930; 1933) and Dow (2010) focused their attention to the similarity of the thoracic pattern of *birmanus* and specimens from Hindustan (denoted by Fraser as *davenporti*). At the same time, the holotype (by monotypy) of *Lestes birmana* was not examined since Selys (1891) and the shape of its anal appendages was never described verbally, nor depicted. However, this was crucial to judge if the true *birmana* had blunt cerci and so related to *divisa* (Figure 1b), as Selys (1891) supposed, or attenuated cerci and so related to *gracilis* (Figure 1c), as Ris (1916) and Dow (2010) supposed.

This is now fulfilled by the second author, Honorary Curator of Museo Civico di Storia Naturale 'Giacomo Doria', and the results are presented below.

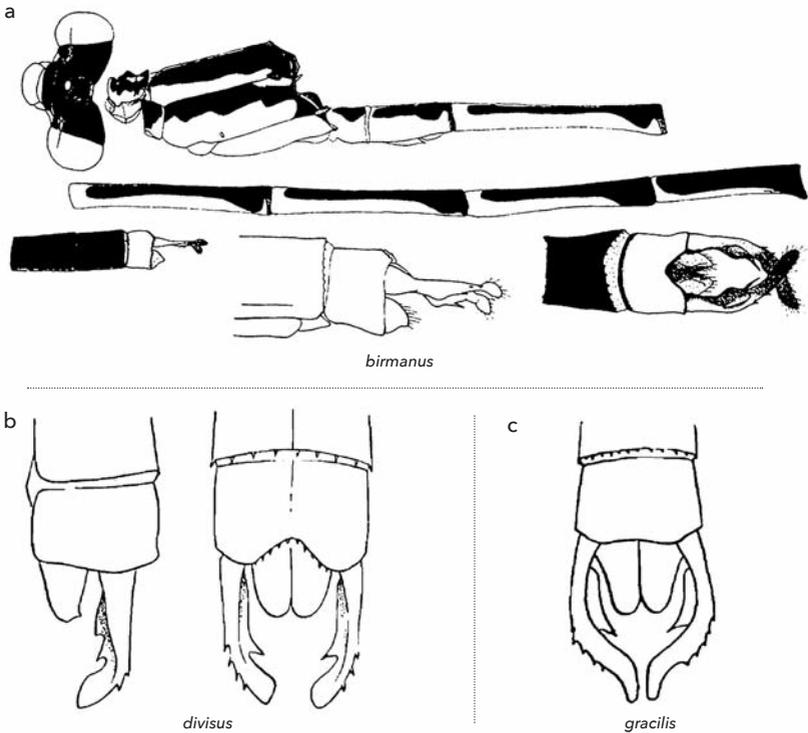


Figure 1. Details of some *Indolestes* spp. ♂♂ as illustrated in literature. – a, *I. birmanus*, body coloration and anal appendages, after Asahina (1970: figs 9-10, as *Lestes (Indolestes) birmanus*); b, *I. divisus*, anal appendages in lateral and dorsal view, after Fraser (1933: fig. 29, as *Ceylonolestes divisa*); c, *I. gracilis gracilis*, anal appendages in dorsal view, after Fraser (1933: fig. 28, as *Ceylonolestes gracilis*). Not to scale.

Holotype of *Lestes birmana* Selys, 1891

The holotype of *Lestes birmana* (Figure 2) is present in good condition in Museo Civico di Storia Naturale 'Giacomo Doria' (Figure 4a). It has a small handwritten yellow label "Puepoli / 18. VI. 88", a yellow label "Lestes / birmana Selys / (divisa? Hagen) / Puepoli / ♂" written by Selys' hand, a red label "HOLOTYPUS / ♂ / Lestes / birmana / Selys, 1891" and a pale gray printed label "Museo Civico di Genova" (Figure 4b).

Of its diagnostic characters the following should be mentioned:

- a broad black humeral stripe with three slanting ledges at its lower margin (Figure 3d);
- S9 entirely black (Figure 3e), except for two pairs of tiny light spots, lateral and lateroposterior, seen only in lateral view (Figure 3f) ; S10 entirely light (Figure 3e);
- cerci in dorsal view long, with apices rather strait, moderately broadened and negligibly attenuated caudad and touching each other (Figure 3a).
- a small and short apical tooth on each paraproot, seen in dorsoposterior view (Figure 3b).

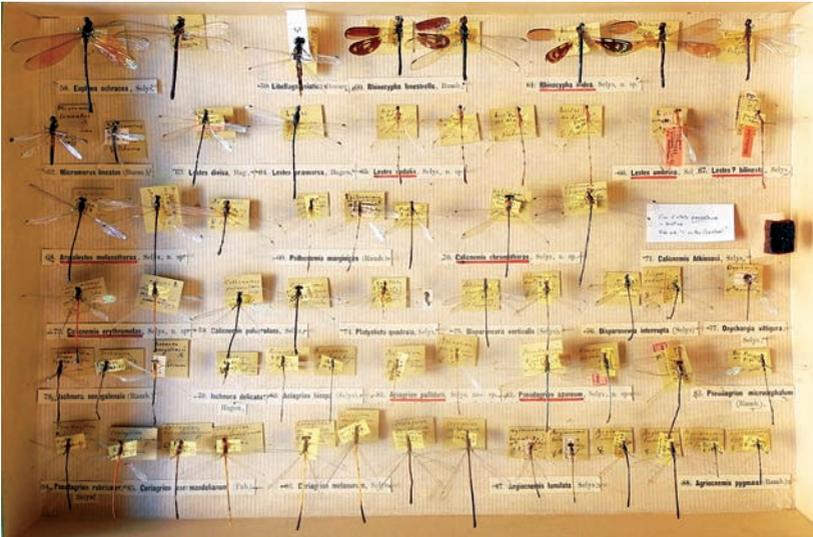


Figure 2. General habitus of the holotype of *Lestes birmana* Selys, 1891 (presently *Indolestes birmanus* (Selys, 1891)) preserved at Museo Civico di Storia Naturale 'Giacomo Doria', Genova. © Museo Civico di Storia Naturale "G. Doria", Genova.



Figure 3. Details of the holotype of *Lestes birmana* Selys, 1891 (presently *Indolestes birmanus* (Selys, 1891)) preserved at Museo Civico di Storia Naturale 'Giacomo Doria', Genova. a-c, anal appendages in dorsal (a), dorsoposterior (b) and ventral (c) view; d, head and thorax; e, f, end of abdomen in dorsal (e) and lateral (f) view. Not to scale. © Museo Civico di Storia Naturale "G. Doria", Genova.

a



b

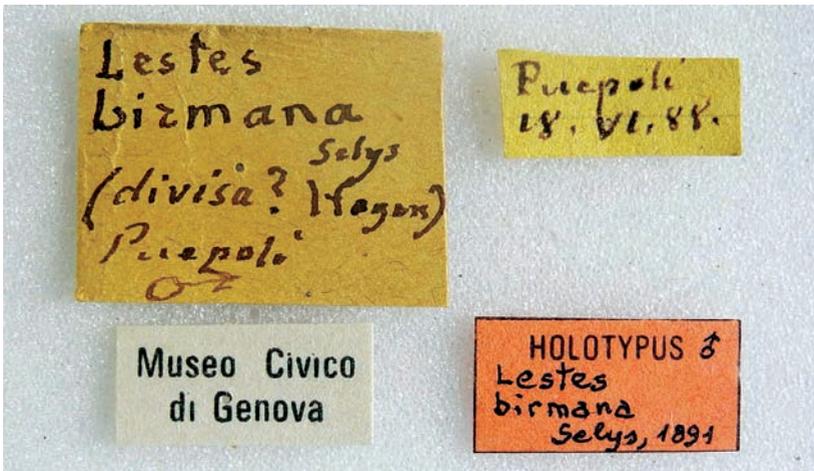


Figure 4. The box in Museo Civico di Storia Naturale ‘Giacomo Doria’ di Genova containing a part of specimens collected by Leonardo Fea, including the holotype of *Lestes birmana* Selys, 1891, and identified by Selys Longchamps (a), and the labels of the said holotype (b). Not to scale. © Museo Civico di Storia Naturale “G. Doria”, Genova.

Discussion

Note that at present, the species to which this note is devoted is considered in the genus *Indolestes* Fraser, 1922. This genus, as well as the genus *Lestes* Leach, 1815, are now considered to be of the masculine gender, so the correct combination and spelling, according to the ICZN Art. 34.2, of the species is *Indolestes birmanus* (Selys, 1891). In the past, the mentioned genera, and also *Ceylonolestes* Kennedy, 1920 (presently a synonym of *Austrolestes* Tillyard, 1913, see Bridges 1994), were considered in the feminine gender, hence Selys (1891) and Fraser (1930; 1933), but not Ris (1916), used species epithets in these genera in the feminine gender. In Introduction, we mentioned the names in combinations and spellings as used by the cited authors. Below we will use the correct modern combinations and spellings.

The most important diagnostic character in *Indolestes* is the shape of cerci. The holotype of *birmanus* has their apices rather long, longer than in *I. divisus* (Figure 1b) but scarcely attenuated caudad, thus differing from *I. gracilis* (see Kosterin 2015, this issue). It may be said that their shape is intermediate between the two last mentioned taxa.

The diagnostic value of the short apical tooth on each paraproct is unclear. This trait was neither mentioned for *I. gracilis* or *I. divisus* nor shown in the drawing of *I. birmanus* (Figure 1a) by Asahina (1970). The paraprocts of the related species *Indolestes peregrinus* (Ris, 1916) are pointed but with attenuated tips (Asahina 1976; see also Kosterin 2015: figs 2a-d).

The humeral black pattern can be variable in Sympecmatinae. It is, for instance, variable in *I. gracilis gracilis* in Ceylon (Lieftinck 1940), from complete absence to 3-4 isolated spots or even fused into irregular fascia, as in the holotype of *birmanus*. However, the holotype of *birmanus* shows a peculiar colorational character: the black S9, while in such taxa as *gracilis* s. str., *divisus* and *davenporti* its apical part is always blue in males (Fraser 1933; Bedjanič et al. 2014). The same entirely black S9 is found in the Himalayan species *Indolestes cyaneus* (Selys, 1862), which also has a very slightly attenuated but much broader apices of the cerci, besides it has paired black dorsal spots on S2-6 and is larger (Fraser 1933). The characters of "*Lestes (Indolestes) birmanus*" depicted by Asahina (1970) (Figure 1a) are the same as in the holotype, except for the cerci apices being not at all attenuated caudad. Their crossing is just a matter of an orientation of a movable organ.

We may conclude that *Indolestes birmanus* is bona species.

One of the consequence of this solution is rejection of synonymy of the taxa *davenporti* Fraser 1930 and *birmanus* Selys, 1891 suggested by Dow (2010). For this reason, the specimens with attenuated cerci from the western and southern Hindustan should be denoted as *Indolestes gracilis davenporti* (Fraser, 1930) nom. resurr.

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