

***Prodasineura doisuthepensis* sp. nov. from Thailand  
(Odonata: Protoneuridae)**

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ABSTRACT

*Prodasineura doisuthepensis* sp. nov. from Thailand is described and figured. The holotype and two paratypes were collected by the author on 11 May 2002 on the slopes of Doi Suthep, Chiang Mai Province, Thailand (18°48'N, 98°56'E). The material will be deposited at the Naturhistorisches Museum Basel (NHMB). The female is unknown. This is the only known species of the genus with the dorsum of the synthorax almost entirely azure-blue.

INTRODUCTION

The genus *Prodasineura* is a relatively large one, with about 35 named species distributed in the Old World tropics from West Africa through India to the Philippines in the east. The greatest species diversity is found at the eastern end of the range in Borneo. The general appearance of the species is fairly uniform, all being similar in size and having a slender black body with pale markings in different colours, especially on the thorax and at the end of the abdomen. The structure of the cerci in the male and of the posterior margin of the prothorax in the female is fairly similar in all species but shows sufficient variation in details to be useful for interspecific distinction.

So far six species of *Prodasineura* are known to occur in Thailand (Hämäläinen & Pinratana 1999). One of these, although widespread and described in detail (Asahina 1983), has no name (*P. nec verticalis* Selys, 1860; see e.g. Hämäläinen & Pinratana 1999). Another species recently discovered by me is reported in Hoess (2002) and Hämäläinen (2002). This latter one is described in the present paper. The species is known, up to now, only from a single locality near Chiang Mai in north-western Thailand. Perhaps the two unidentified *Prodasineura* species mentioned in Kiauta (1983) are identical with the two given above. In addition, there are two further undescribed species of this genus indicated in the literature: one from Palawan (Hämäläinen & Müller 1997) and one from Borneo (Orr 2003).

*Prodasineura doisuthepensis* sp. nov.  
(Figs 1a-c)

### Etymology

The name derives from Doi Suthep, a mountain to the west of Chiang Mai, on the slopes of which the specimens were captured hovering over the narrow mountain stream Huai Kaeo.

### Specimens studied

Holotype ♂: Thailand, Chiang Mai Province, Chiang Mai, Huai Kaeo (18°48'N, 98°56'E; 520 m), 11 May 2002 at 09:29 h [UTC+7h], leg. R. Hoess, deposited at Naturhistorisches Museum Basel (NHMB). — Paratypes: 2 ♂, same locality and date but alt. 600 m, collected at 10:41 h and 10:46 h, respectively, also deposited at NHMB.

### Male holotype

**Head:** Velvety black dorsally with an irregularly margined azure blue transverse band extending from one compound eye to the other (Fig. 1a). This band is narrowly interrupted in the middle and does not touch the median ocellus. Compound eyes dark blackish in life. Antennae black except for the tip of the pedicel which is brown. Rear of head (postgenae) black with a slight touch of white-blue pruinescence. Genae black above, azure in the middle and glossy black below. Anteclypeus dark brown, postclypeus black with small azure spots at the basal outer edges in line with the upper edge of the azure part of the genae. Labrum dark brown, lightened at the outer basal edges. Mandibles black, base and apex reddish. Bases of maxillae light brown and beige. Labium dark brown with black palps and beige hind margin.

**Thorax:** Prothorax black with an azure subtriangular dorsolateral mark on each side (Fig. 1b). Synthorax black with large antehumeral azure marking covering almost entirely the surface of the mesepisternum just failing to reach the antearolar sinus and avoiding the dorsal carina. Plate lateral to the mesostigma brown. Anterior two thirds of metepisternum azure, including the spiracle, becoming whitish at the level of the metakatepisternum. Posterior half of metepimeron azure towards the wings and beige towards the legs. Two azure spots at each wing articulation and three more azure spots on the metascutellum. Poststernum beige-white in the middle tapering from back to front, sides black. Ventral parts of thorax and coxae slightly covered with white pruinescence.

**Legs:** Coxae beige and black, proportion of black decreasing from fore to hind leg. Trochanters dorsally black, ventrally beige-white. Femora black, proximal half of ventral surface whitish. Tibiae black with a beige streak along the outer surface. Tarsi black.

**Wings:** Venation black. Pterostigma dark brown, rhomboid, covering 1.2-1.4 cells. Second antenodal crossvein slightly proximal to the arculus in all wings. A<sub>1</sub> short and arched as typical for the genus. 15 postnodals in Fw and 13 in Hw.

**Abdomen:** S1 sloped towards the thorax, black, each side with an azure posterolateral triangular spot pointing ahead. Ventral surface beige with a black U-formed marking. S2 black with a thin middorsal azure line along the basal fore fifths. Ventral margin of tergite bluish white. Anterior laminae black. S3-6 black-brown with

a very thin middorsal beige line vanishing anteriorly and posteriorly. An azure to white basal dorsolateral crescent shaped spot, and a whitish subterminal ventral smudged fleck on each side of the tergite. S7 black with an azure dorsolateral basal stripe. S8 black. S9 black with a triangular azure dorsal spot in the third quarter pointing ahead. S10 azure on top, black below. Cerci with upper side azure and lower side black with a median triangular ventral tooth at the inner edge (Fig. 1c). Paraprocts S-shaped in the manner typical of the genus, the tips being rolled in- and upwards, outer surface black, inner surface beige-white, especially the interolateral longitudinal bulge. Some white pruinescence on the ventral surface of the last segments and the sides of the paraprocts.

**Measurements [mm]:** Abdomen 28.4, Hw 18.1.

#### Variation in males

The two paratypes, P1 and P2 according to the sequence above, are similar to the holotype with only minor differences. The transverse band on the head is slightly confluent in the middle in P1. The genae are dark brown below in P2. The median posterior spot on the metascutellum is white in both paratypes. The extent of the whitish part on the ventral surface of the femora is less in P1 and P2 than in the holotype. The pterostigmata cover 1.1-1.3 cells in P1 and 1.2-1.6 cells in P2. The second antenodal crossvein is in line with the arculus in Hw in P2. P1 has 16 postnodals in Fw. In both paratypes S2 has a small azure ventrolateral stripe along the hind margin. P2 has even less pruinosity on the above mentioned surfaces.

**Measurements [mm]:** Abdomen 29.0 (P1) and 29.6 (P2), Hw 18.7 (P1) and 18.6 (P2).

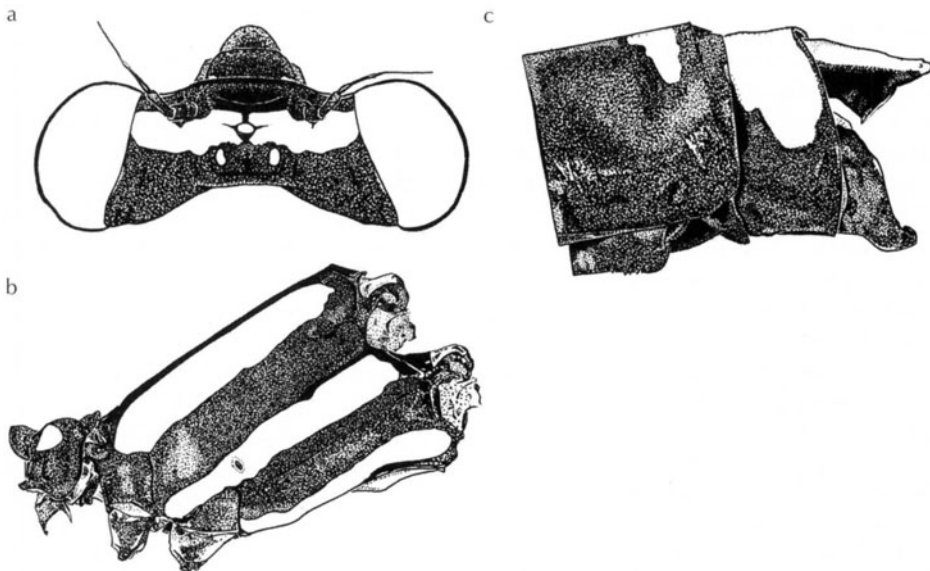


Figure 1: *Prodasineura doisuthepensis* sp. nov. male — (a) head in dorsal view, holotype; (b) thorax in left lateral view, holotype; (c) S9-10 incl. appendages in left lateral view, paratype P2. Not to scale.

## DISCUSSION

Since the female is unknown, comments refer to male characters only. As mentioned above, *Prodasineura* species are slender black zygopterans with pale colours mostly confined to the head and thorax and to the end of the abdomen. However, colour and extent of the pale markings vary between species. White, yellow, orange, red and blue – from azure to dark purple – are the colours known in extant species, or if there are no antehumeral stripes, they look more or less black. Most striking is the extent of the antehumeral stripes and the pale areas of the terminal abdominal segments. Antehumeral stripes may be narrow, broad, or almost covering the top of the synthorax; they may be complete or present only in the lower half. Pale markings on the terminal abdominal segments may be restricted to parts of the appendages or reach S8. The paraprocts are more or less similar in all species, but the cerci are usually pointed distally and with zero to three ventral teeth visible in lateral view. The position of the – usually one – ventral tooth may be basal, median or subapical. A combination of several characters is needed to distinguish among species, and species groups defined by three or more shared characters consist of only two, rarely more species. Thus, neither larger species groups can be separated nor can it be argued which characters are plesiomorphic or apomorphic. The geographical distribution of characters does not help either. It is therefore difficult to place the new species within an infrageneric content. Unfortunately, the revision of the genus *Prodasineura*, announced by Lieftinck (1951), never was published.

*P. doisuthepensis* sp. nov. is most easily recognized by means of its azure dorsum of the synthorax. Other species with an almost completely pale dorsum of the synthorax are either scarlet as *P. flammula* Lieftinck, 1948 from Borneo or orange as *P. dorsalis* (Selys, 1860) from Borneo, *P. croconota* (Ris, 1916) from Taiwan and China and *P. delicatula* (Lieftinck, 1930) from Java or yellow as *P. auricolor* (Fraser, 1927) from Myanmar and Thailand or creamy white as *P. villiersi* Fraser, 1948 from West Africa. These species mostly have cerci with one median ventral tooth but the extent of the pale colour at the terminal abdominal segments is always less.

A relatively large group (12 species) has blue antehumeral stripes; seven of them from Malaysia, including two new ones, were compared by Lieftinck (1951). In only three species these stripes are large (wedge-shaped), namely in *P. notostigma* (Selys, 1860) and *P. collaris* (Selys, 1860), both from Malaya, and *P. integra* (Selys, 1882) from the Philippines. In a northern form of *P. collaris* from Lower Burma, var. *botti* (Fraser, 1922), the antehumeral stripes are only slightly larger. *P. notostigma* has cerci similar to the new species, but there are no pale markings on top of the head and at the terminal abdominal segments. In the other two species the band on top of the head is continuous in front of the ocelli. Additionally, *P. collaris* has two ventral teeth on the cercus, the proximal one is sometimes hidden by the lateral margin of S10. In southwestern populations of *P. integra* the cercus may also show a second, subapical tooth (Asahina 1968; Lieftinck 1974). The hind lobe of the prothorax is black in *P. doisuthepensis* sp. nov., but is entirely blue in *P. collaris* and has two blue spots in *P. integra*. The terminal abdominal segments in *P. integra* are similar in colour and pattern to the new species but black in *P. collaris* except for the appendages which are mostly pale.

Species with cerci bearing one median ventral tooth are numerous. They are of different colour if the dorsum of the thorax is almost completely pale, e.g. *P. auricolor*, *P. croconota*, *P. dorsalis*, *P. flammula*, or they have less extended antehumeral stripes if they are blue, like *P. interrupta* (Selys, 1860) from Malaya, and *P. integra*, *P. notostigma* and *P. theebawi* (Fraser, 1922) from Burma.

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