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***Teinobasis vincenti* sp. nov., a new damselfly from the
Muller Range in Papua New Guinea
(Odonata: Coenagrionidae)**

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Abstract

A new species of the genus *Teinobasis* Kirby is described from the Muller Range in Western Province, Papua New Guinea. Its male is distinguished from all other *Teinobasis* species by having a pale labrum, an extensively bright orange thorax, and ventrally bowed superior anal appendages that are markedly shorter than the plump, apically rounded inferiors. Characters of the male are illustrated, and the affinities of the new species are discussed.

Key words: Coenagrionidae, *Teinobasis*, new species, Western Province, Papua New Guinea

Introduction

Damselflies of the coenagrionid genus *Teinobasis* are generally moderately small, slender species with rather muted colours (Kalkman & Orr 2013) although a few species have extensive orange or yellow colouration on the thorax (Theischinger & Richards 2013; 2015). New Guinea and its adjacent islands (excluding the Solomons) is a hotspot for the genus (Kalkman & Orr 2013) and Kalkman & Theischinger (2014) recognised 33 named species from the region. Recent field surveys on mainland New Guinea have revealed a number of additional undescribed taxa and two of these were described by Theischinger & Richards (2015). Here we describe another new species of *Teinobasis* from the Muller Range of southern Papua New Guinea, bringing to 36 the number of species known from the region.

Material and methods

Descriptive terminology largely follows Watson & O'Farrell (1991). Colouration is given as detectable from the preserved material. All illustrations were done with the aid of a camera lucida and are not to scale. Coordinates are presented using the GPS

datum WGS 84. Material is lodged in the collection of the South Australian Museum, Adelaide, Australia (SAMA).

***Teinobasis vincenti* sp. nov.**

Figures 1-5

Material

Holotype ♂ (SAMA 07-001490): Papua New Guinea, Western Province, Muller Range, CI Muller Range expedition, Camp 1 (Gugusu) (05°43.7515'S, 142°15.797'E; 515 m a.s.l.), 04-11-ix-2009, VJ Kalkman.

Etymology

This interesting species is dedicated to its collector, Dr Vincent Kalkman, world-authority on Odonata. The specific epithet is a noun in the genitive case.

Diagnosis

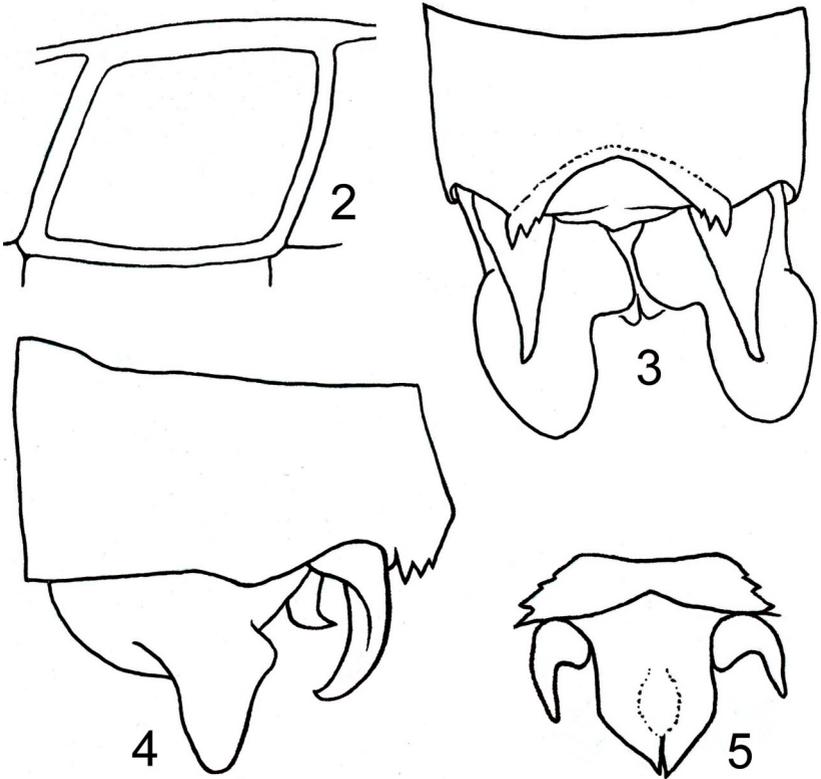
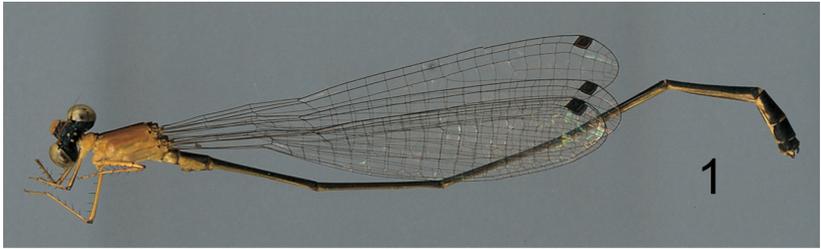
The male of *Teinobasis vincenti* sp. nov. (Figs 1-5) can be distinguished from all congeners by the following combination of characters: labrum pale, thorax extensively bright orange, superior anal appendages ventrally bowed and distinctly shorter than apically rounded inferiors, apex of lower branch of superior anal appendages upturned and inner corner of apical margin of S10 on both sides of mediodorsal cavity produced into a serrated lobe.

Holotype. – Male (Figures 1-5)

Head (Fig. 1). – Labium pale cream; almost all of labrum bright orange, only very base of lateral margins black merging into brown; base of mandibles, genae beyond level of antennae, anteclypeus, anterior frons, face of antennal base, scape and pedicel and most of postgenae dark yellow; tip of mandibles and antennal flagellum brown; postclypeus largely black and dark brown with anteromedial orange patch; most of antennal base, scape and pedicel, top of frons, vertex, post-ocular lobes, top of postgenae adjacent to eyes black.

Prothorax (Fig. 1). – Largely bright orange, only anterior margin of anterior lobe and approximately median third of the widely and rather evenly convex posterior lobe black.

Synthorax (Fig. 1). – Largely bright orange with the following areas black: mid-dorsal carina and a fine black line running parallel along both sides of it; antearlar ridge and sinus; a spot on subalar ridge just posterior to the dorsal end of mesopleural and metapleural suture; a spot on extreme dorsal edge of metakatepimeron; sclerites at wing bases. A distinct yellow spot ends the black middorsal line at the base of the antearlar sinus. Thoracic terga largely yellow to orange; postcoxae yellow; poststernum pale yellow. Legs yellow to orange with only the femora somewhat darkened at knees and spines black. Wings with membrane hyaline, venation grey to black and ptero-



Figs 1-5 *Teinobais vincenti* sp. nov., male: (1) Habitus; (2) pterostigma; (3-5) S10 and anal appendages: (3) dorsal; (4) lateral; (5) part, caudal.

stigma (Fig. 2) black, almost square, higher than adjacent costal cells and overlying a single cell; postnodals 14/13.

Abdomen (Fig. 1). – Largely black. S1 yellow with black trapezoidal dorsal patch, wider posteriorly than anteriorly, and black posterior margin along dull yellowish intersegmental membrane; S2 yellow with black narrow pear-shaped trapezoidal dorsal

patch; S3-S6 dorsally black, laterally yellow, this pale band slightly widened at the very base of each segment; S7 similar to S6 but with black dorsal patch apically widened and with intersegmental membrane dark yellow; S8-S10 largely black, S8 and S9 with intersegmental membrane yellow; S8 lateroventrally margined yellow for most of its length, S9 only in basal $\frac{1}{4}$; S10 only on top of ridge delineating widely subtriangular mediodorsal cavity and ventrally yellow. All abdominal sternites grey to dull yellow.

Inner corner of apical margin of S10 on both sides of mediodorsal cavity produced into a serrated lobe (Figs 3-5). Anal appendages (Figs 3-5): ventrally bowed upper branch of largely blackish brown superiors approximately as long as tergum of S10, rather slender, markedly longer than also rather slender apically upturned lower branch; inferior appendages yellow with ill-defined patch of brown, markedly longer than superiors, plump, with base medially strengthened and apex rounded (Figs 3-4); dorsal appendage of S10 (epiproct) pale yellow, widely tongue-shaped with apex pointed and split in midline.

Measurements. – Hindwing 24.0 mm, abdomen + appendages 37.6 mm.

Female - unknown.

Habitat

The holotype and only known specimen was collected in primary foothill rainforest intersected by numerous small (< 5 m wide), shallow (< 50 cm deep) and steep streams running over bare rock substrates. Most of the streams were shaded for large parts of the day due to extensive canopy cover. Standing water in the form of forest pools was nearly absent.

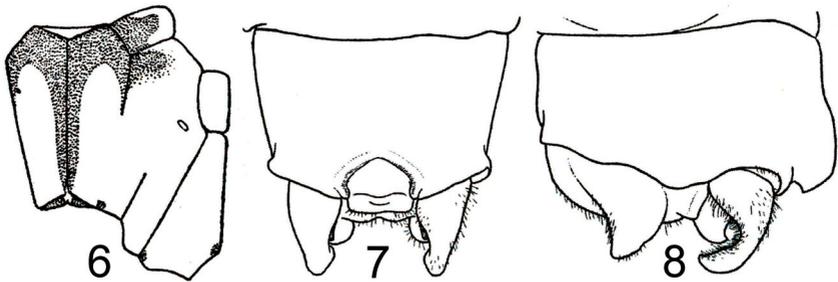
Comparisons with other species

Identification of *Teinobasis* species relies heavily on differences in labrum and thorax colouration and in length, proportions and shape of the male anal appendages (Michalski 2012, Kalkman & Orr 2013, Kalkman & Theischinger 2014).

Teinobasis vincenti sp. nov. can be distinguished from all congeners in the New Guinea region except *T. albula*, *T. angusticlavia*, *T. aurea*, *T. chrysea*, *T. cuneata*, *T. debeauxi*, *T. dominula*, *T. flavolineata*, *T. fulgens*, *T. luciae*, *T. lutea* and *T. rufithorax* by having an extensively orange thorax (including a substantial area of the mesanepisternum). Males of the new species can be distinguished from other species with an orange thorax by the following characters: from *T. albula*, *T. flavolineata*, *T. luciae* and *T. rufithorax* by the presence vs the lack of a black median stripe on the front of synthorax, from *T. albula* and *T. flavolineata* by having an almost square vs a distinctly elongate and slanting pterostigma, from *T. luciae* by size (total length markedly less than 40 mm, wing length 24 mm vs more than 45 mm and more than 30 mm) and very different anal appendages and from *T. rufithorax* by abdominal segments 8-10 black vs orange. Of the species with a black median stripe on the front of synthorax the new species can be distinguished from *T. angusticlavia* by its almost square vs distinctly elongate pterostigma, from *T. aurea* by the largely black vs yellow clypeus, from *T. cuneata* by the dorsally almost completely black vs yellow-spotted abdomen, from *T. chrysea* by having orange vs black tarsi and apex of tibiae, from *T. dominula* by

abdominal segments 8-10 black vs orange, and from *T. fulgens* by the postclypeus largely black vs orange.

With superior anal appendages only slightly longer than inferiors, the superiors bowed ventrally, and the lower branch of the superior anal appendages apically upturned, *Teinobasis debeauxi* Liefkinck, 1938 is morphologically most similar to the new species. In addition these two species share an apparent apomorphic character, namely the inner corner of the apical margin of S10 on both sides of the mediadorsal cavity is produced into a lobe. These similarities suggest that *T. vincenti* (Figs 1-5) is the closest ally to, and possibly the sister species of, *T. debeauxi* (Figs 6-8).



Figs 6-8. *Teinobasis debeauxi* Liefkinck, male: (6) synthorax, frontal and lateral; (7, 8) S 10 and anal appendages: (7) dorsal; (8) lateral. All modified from Liefkinck (1938).

Teinobasis vincenti differs from *T. debeauxi* by having a pale labrum, a narrow, almost parallel sided metallic black band only along the midline of the front of synthorax (Fig. 1) and an almost square pterostigma (Figs 1, 2) vs a black labrum, moderately wide metallic black mediadorsal band extending basally beyond the humeral suture into mesepimeron and also into mesokatepisternum (Fig. 6), and the short and high pterostigma. *Teinobasis vincenti* also has the inner corner of the apical margin of S10 on each side of the mediadorsal cavity produced into a serrated lobe, both branches of the superior anal appendages slender and the inferiors long and plump (Figs 3-5) vs *T. debeauxi* with the inner corner of the apical margin of S10 on each side of the mediadorsal cavity produced into a single pointed lobe, both branches of the superior anal appendages rather stout and the inferiors moderately long and not plump (Figs 7, 8).

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