



## The Neriidae (Diptera) of Southeast Asia: A taxonomic revision of the genus *Telostylus*

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**Abstract.** The Asian neriid fly genus *Telostylus* Bigot (Diptera: Neriidae) is revised, including a key and illustrations of its species. Lectotype designations are proposed for four species: *Telostylus babiensis* de Meijere, *T. decemnotatus* Hendel, *T. remipes* (Walker) and *T. trilineatus* de Meijere. Two new species are described: *Telostylus marshalli* Sepúlveda & de Carvalho, sp. n., from Sarawak, Malaysia, and *T. whitmorei* Sepúlveda & de Carvalho, sp. n., from Masbate, Philippines. The morphology of *Telostylus binotatus* Bigot and *T. remipes* (Walker) is discussed in order to support their synonymy. Additionally, new country records are provided for four species: *Telostylus babiensis* de Meijere for Philippines, *T. binotatus* Bigot for Papua New Guinea, *T. inversus* Hennig for Malaysia and Indonesia, and *T. trilineatus* de Meijere for Malaysia and Philippines.

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### INTRODUCTION

The genus *Telostylus* was proposed by Bigot (1859) for *Telostylus binotatus* Bigot, 1859, a species from Indonesia characterized by having an elongate conical first flagellomere, a tomentose arista placed apically and an elongate pedicel. Almost concurrently with Bigot's (1859) work, Walker (1860) proposed the genus *Coenurgia* to contain a new species from Makassar (Sulawesi, Indonesia), *Coenurgia remipes* Walker, 1860, using the same set of characters as used by Bigot (1859) to diagnose *Telostylus*.

A few years later, in a short publication seeking to address some inaccuracies in previous studies, Bigot (1881) synonymized *Coenurgia* under *Telostylus*, declaring: "Mon *Telostylus bimaculatus*, Leptopodidae? = *Coenurgia remipes* (Walker), à qui appartient la priorité". In this work, Bigot (1881) refers to *T. bimaculatus* as a species of his own authorship, but this was likely a lapsus for *T. binotatus* Bigot, 1859, the only species in that genus at that time.

When Hennig (1937) reviewed the Neriidae, the taxonomy of *Telostylus* began to be organized and its species catalogued. Hennig (1937) lists 11 species in *Telostylus* and provides a new diagnosis for the genus, adding several characters related to the number and size of setae on the head and thorax. The taxonomic changes proposed by Hen-

nig (1937) in *Telostylus* include the revalidation of *Telostylus remipes* (Walker, 1860) and the description of his new species *Telostylus inversus* Hennig, 1937. Except for *Telostylus apicatus* Edwards, 1919, which was subsequently transferred from *Telostylus* to *Chaetonerius* Hendel, 1903 by Steyskal (1977), Hennig's (1937) classification of *Telostylus* currently remains unaltered.

All species currently placed in *Telostylus* occur in South and Southeast Asia (Steyskal, 1966). The type species of *Telostylus*, *T. binotatus*, was redescribed by Aczél (1955) based on a male specimen from Borneo. Later, Steyskal (1966) published a key for the identification of the species of *Telostylus* based on original descriptions and the examination of specimens housed in the National Museum of Natural History, Washington D.C., U.S.A. Steyskal (1966) classified *Telostylus* in Telostylinae (a subfamily mainly characterized by the lack of an antennal base), distinguishing it from the other two genera in the subfamily, *Chaetonerius* and *Teloneria* Aczél, 1954 in having a pointed and elongate flagellomere, one notopleural seta, one dorsocentral seta and sometimes a swollen male fore first tarsomere.

In the only phylogenetic hypothesis available for Neriidae (Koch et al., 2015), *Telostylus* is the most basal lineage and sister to the rest of the family. Since *T. binotatus*

was the only species of *Telostylus* sampled in Koch et al.'s (2015) analysis, no defining synapomorphies for the genus were indicated. Therefore, Steyskal (1966) remains the most important taxonomic reference for this genus. Thus, seeking to contribute to the taxonomy of *Telostylus*, herein we redescribe all of its valid species, describe two new species and provide a new diagnosis for the genus. Additionally, we provide a key for the identification of the species of *Telostylus* and update the geographical distribution of its species.

## MATERIAL AND METHODS

This study is based on material deposited in the following institutions (acronyms according to Evenhuis, 2019): CSCA – California State Collection of Arthropods, Sacramento, California, U.S.A. (Stephen Gaimari); MZH – Finnish Museum of Natural History, Helsinki, Finland (Jere Kahanpää); MZLU – Lund University, Lund, Sweden (Rune Bygebjerg); NHMUK – The Natural History Museum, London, United Kingdom (Daniel Whitmore); RMNH – Naturalis Biodiversity Centre, Leiden, Netherlands (Pasquale Ciliberti); TAUI – Tel Aviv University, Tel Aviv, Israel (Amnon Freidberg); UCDC – University of California, R.M. Bohart Museum of Entomology, Davis, California, U.S.A. (Steven L. Heydon); USNM – National Museum of Natural History, Washington D.C., U.S.A. (Allen Norrbom); ZMHB – Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (Joachim Ziegler); ZMUC – University of Copenhagen, Zoological Museum, Denmark, Copenhagen (Thomas Pape); and ZSM – Zoologische Staatssammlung, Munich, Germany (Marion Kotrba).

The name-bearing type specimens of all species of *Telostylus* were examined, except for *T. binotatus* Bigot (MNHN – Muséum National d'Histoire Naturelle, Paris, France) and *T. niger* Bezzi (MSNM – Museo Civico di Storia Naturale, Milano, Italy). Redescriptions are based on type material, and variation recorded in the additional male and female material examined are included separately. Redescriptions and descriptions include the total length of primary type specimens and other material examined, measured from parafacial to posterior margin of tergite 6, and wings are measured from the insertion of setae on basicosta to the distal margin for length and from the costal vein perpendicularly across the midpoint of dm-cu to the posterior margin for width. General morphological terminology follows Cumming & Wood (2017) and terminology used to describe the male genitalia follows Ovtshinnikova & Galinskaya (2017). Male genitalia are described within the “Abdomen” section and are fully illustrated in Figs 8, 9 and 10 for *T. latibrachium* Enderlein, *T. marshalli* Sepúlveda & de Carvalho sp. n. and *T. philippinensis* Cresson. For all other species, the distiphallus is omitted as it is of uniform shape.

Illustrations of type material are included and the label information is provided for every specimen examined. When the specimens have more than one label, the order of labels from top to bottom is indicated between parentheses. When labels of different specimens share the same information but have different collection dates or museum catalogue numbers, all data are grouped together using m-dash and separated by commas. Each specimen examined in this study received a determination label that contains an identification number. The depository institution and the identification number of the specimens are provided between square brackets in the material examined section for each species. Information on distribution includes the region or province between parentheses when the locality is a large country or an

archipelago. New country records are indicated by an asterisk (\*). Maps with the geographic distribution of the species presented in Figs 90–95 were produced using Google Earth 7.1.1.1580 to obtain decimal coordinates and QGIS 3.6.0-‘Noosa’ was used to plot the distribution of the points.

## TAXONOMY

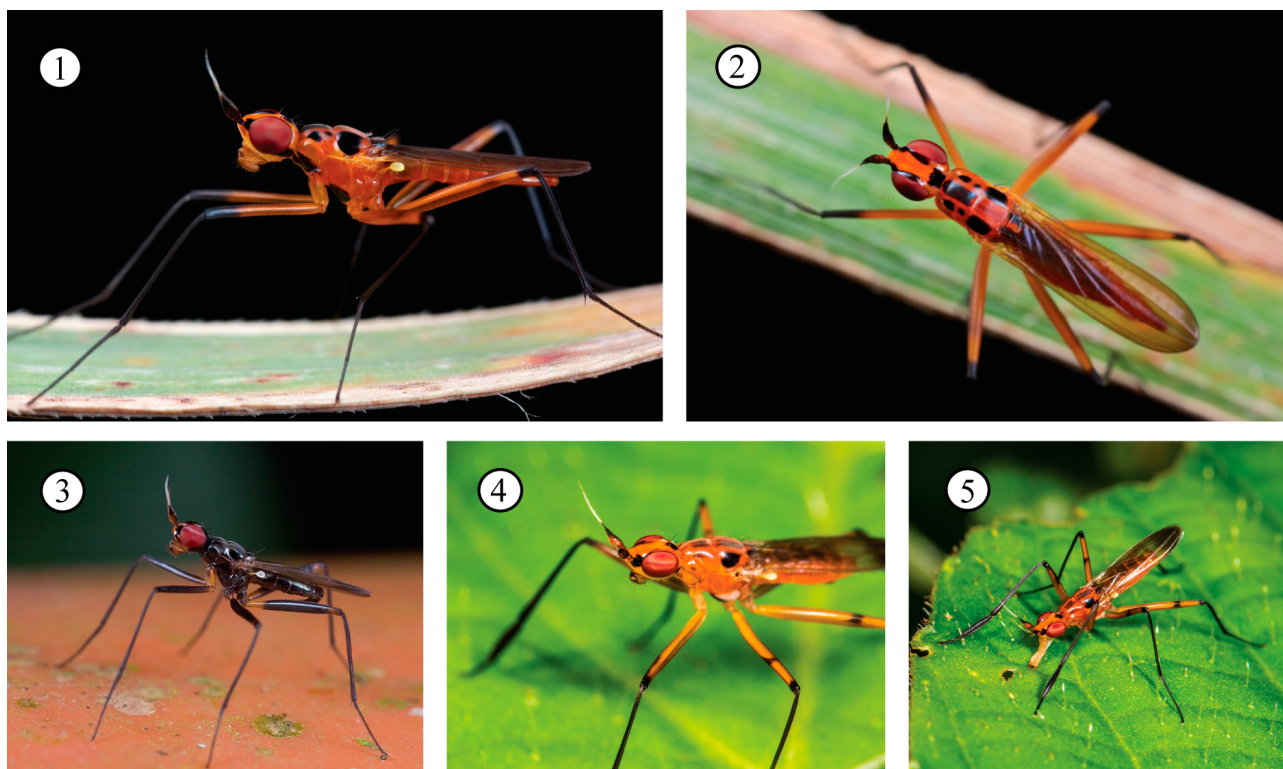
### Genus *Telostylus* Bigot, 1859

*Telostylus* Bigot, 1859: 307. Type species: *Telostylus binotatus* Bigot, 1859 (by monotypy).

*Coenurgia* Walker, 1860: 164. Type species: *Coenurgia remipes* Walker, 1860 (by monotypy). Synonymy with *Telostylus* by Bigot, 1881: 374.

**Diagnosis.** Tegument glossy, with bright colour patterns (Figs 1–5); first flagellomere lanceolate; arista apical, with dense white pubescence; inner process of pedicel wide and linear, with apex rounded, slightly dorsal; antennal base small; frontal vitta with median longitudinal cleft; fronto-orbital plate with only one well-developed posterior seta, other fronto-orbital setae, short and thin when present; occiput rounded laterally; ocellar triangle positioned at level of posterior third of eye; fronto-genal suture anteriorly attached to ventral line of parafacial, leaving a shiny portion of face exposed laterally below insertion of scape; small portion of upper face exposed anteriorly in lateral view (Fig. 6); vibrissa absent; transverse thoracic suture complete; one dorsocentral seta; anterior notopleural seta absent; lateral and ventral katapisternal setae absent; basicosta with one prominent seta and one smaller seta; two antero-apical setae on fore coxa and two lateral seta on mid and hind coxae; discal scutellar seta well-developed.

**Redescription. Head.** Strongly acuminate anteriorly; rounded posteriorly. Pedicel almost as long as scape; with one prominent dorsoapical seta and one smaller ventroapical seta. Scape relatively short, almost as long as wide. Antennal base approximately two thirds length of scape. Anterior fronto-orbital seta absent (except in *T. decemnotatus*). Posterior fronto-orbital seta almost as long as inner vertical seta. Occiput shiny; very short laterally in comparison with eye; without postocular setae or setulae. Gena wide posteriorly and very narrow anteriorly, reaching its narrowest level near anteroventral margin of eye (Fig. 6). Postgena widely rounded; without evident differentiation from lateral occiput; with one prominent line of black setulae posteriorly, toward occipital foramen. **Thorax.** Presutural and postsutural scutum of same length. Katatergite slightly swollen. Scutellum trapezoidal with rounded margins; discal scutellar seta shorter and thinner than apical scutellar seta; apical scutellar seta longer than dorsocentral seta. Fore coxa swollen at base; without prominent anterolateral setae. Male fore first tarsomere approximately two-thirds to one-half of the length of thorax; shape varying from cylindrical to strongly swollen in males (Fig. 7); always cylindrical in females. **Abdomen.** Yellow to dark brown. Syntergite 1+2 setulose, anterior third densely setulose, followed by a medial bare area, and posterior third with slightly lower density of setulae. Epandrium short and cylindrical, varying in length, approxi-



**Figs 1–5.** Representatives of *Telostylus*. 1, 2 – *T. maccus*, female, habitus lateral and dorsal (images © Paul Bertner); 3 – *T. inversus*, male, habitus lateral (image © Kurt Guek); 4, 5 – *T. trilineatus*, male, habitus dorsolateral (images © Krishna Mohan).

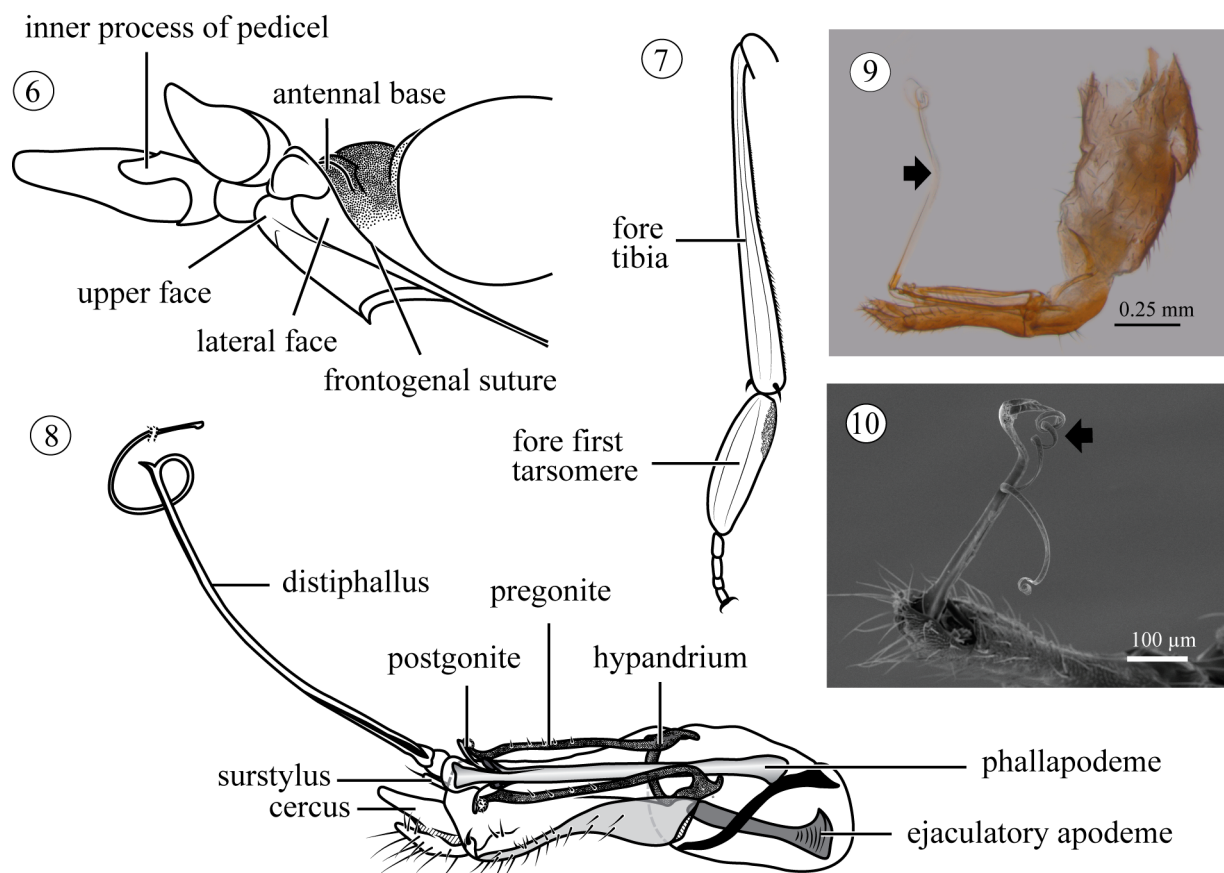
mately 1.2–2.0 times width of sytergosternite 8. Cercus slightly tapering toward apex. Surstylus linear (Fig. 8). Ejaculatory apodeme slightly shorter than sytergosternite 8. Pregonite linear elongate, with sparse ventral setulae. Postgonite with distal rounded plate bearing irregular rows of 5–6 spines. Distiphallus partially sclerotized basally and distally, with median area completely membranous (Fig. 9); distally bifurcated into one sclerotized spine and one flexible membranous tube (Fig. 10); about twice length of epandrium and coiled up at base of epandrium when the genitalia are retracted.

**Remarks.** The number of diagnostic characters of *Telostylus* is increased from three characters of the antenna, as originally proposed by Bigot (1859), to more than fifteen from the head and thorax, including several new antennal characters. Among the characters mentioned by Bigot (1859) as diagnostic of *Telostylus*, we have excluded the elongate pedicel as it is only slightly elongate and different from the conspicuously elongate pedicel in *Gymnonerius* Hendel, 1913, *Longina* Wiedemann, 1830 and *Loxozus* Enderlein, 1922. Species of *Telostylus* are usually pale and have different patterns of contrasting spots along the body. The shape of the antennal base is similar to that found in *Telostylinus*, albeit smaller (as shown in Sepúlveda & de Carvalho, 2019, Figs 7, 8), contrary to Aczél (1961) and Steyskal (1966), who suggest that *Telostylus* lacks a modified antennal base. Sexual dimorphism in species of *Telostylus* is manifested in the shape of the fore first tarsomere, which is swollen in most males and cylindrical in females and some males.

#### Key for identification of the species of *Telostylus*

- 1 Thorax dark brown to black, without differentiated black spots. Frontal vitta mostly black, with anterior third yellow .. 2
- Thorax black and yellow, with variegated black spots, or entirely yellow. Frontal vitta mostly yellow..... 4
- 2 Frontal vitta with small lateral yellow area between posterior fronto-orbital seta and inner vertical seta. Fronto-orbital plate brown. Femora yellow or partially yellow. Pleuron brown or, at most, yellowish near postpronotal lobe and notopleuron. Wing with infuscation on distal third ..... 3
- Frontal vitta without yellow areas posteriorly. Fronto-orbital plate yellow. Femora entirely brown. Pleuron with wide lateral yellow stripe from postpronotal lobe to wing base. Wing without infuscation ..... *T. whitmorei* Sepúlveda & de Carvalho sp. n.
- 3 Anterior margin of frons concave. Femora yellow with brown tip; fore femur yellow with distal third brown; mid and hind femora yellow with brown ring on distal third. Parafracial black without white pruinose spot..... *T. niger* Bezzi
- Anterior margin of frons straight. Femora brown with base yellow; mid and hind femora with apex yellow. Parafracial black with white pruinose spot ventrally .. *T. inversus* Hennig
- 4 Postsutural scutum without lateral black spots on supra-alar area. Pleuron entirely yellow, without black spots ..... 5
- Postsutural scutum with lateral wide black spot between transverse suture and supra alar seta. Pleuron dark yellow or yellow with at least one black spot; if entirely yellow, presutural scutum also yellow (some specimens of *T. trilineatus* from Philippines, Palawan, lack the ventral katepisternal black spot; Fig. 74)..... 7





**Figs 6–10.** Morphology of male *Telostylus*. 6–8 – *T. latibrachium* (specimen MZLU #1955): 6 – head anterolateral; 7 – fore tibia and tarsus lateral; 8 – genitalia lateroventral (specimen NHMUK #1918). 9 – *T. marshalli* sp. n., postabdomen lateral, arrow indicates median membranous area on distiphallus (specimen TAUI #992). 10 – *T. philippinensis*, distiphallus, arrow indicates flexible membranous tube of distiphallus (specimen NHMUK #1960).

- |   |   |   |  |  |                               |
|---|---|---|--|--|-------------------------------|
| 5 | Vertex with ocellar triangle black and an ovate black stripe behind it that ends between postocellar setae. Frontal vitta yellow, without median black stripe near fronto-orbital plate           | – | Vertex and ocellar triangle black, forming a pentagonal black spot from ocellar triangle to medial occipital sclerite. Meron and mediotergite yellow | <i>T. philippinensis</i> Cresson   |                               |
| 6 | – Vertex and ocellar triangle black, forming a pentagonal black spot from ocellar triangle to medial occipital sclerite. Frontal vitta yellow, with median black stripe near fronto-orbital plate |   | 10   | Lateral occiput with wide brown longitudinal stripe on anterior half. Thorax yellow, with wide longitudinal brown stripe anteromedially. Anterior and middle fronto-orbital setae absent | <i>T. maccus</i> Osten-Sacken |
| 6 | Thorax completely yellow, without brown or black spots  |   | –  | Lateral occiput with two pale brown spots, one between posterior margin of eye and outer vertical seta, and one ovate on ventral half. Anterior and middle fronto-orbital setae present  | <i>T. decemnotatus</i> Hendel |
| – | Thorax with presutural black spot above postpronotal lobe   |   |  |  |                               |
| 7 | Presutural scutum with at least one black spot above postpronotal lobe. Proepisternum black. Supracervical setae yellow   |   |  |  |                               |
| – | Presutural scutum without black spots above postpronotal lobe. Proepisternum yellow. Supracervical setae black  |   |  |  |                               |
| 8 | Femora yellow, without brown rings. Pleuron yellow, with variegated black spots. Abdomen yellow to brownish-yellow  |   |  |  |                               |
| – | Femora yellow to dark yellow, with a faint brown ring on distal third. Pleuron blackish-brown, with one dorsal paler stripe from postpronotal lobe to wing base. Abdomen dark brown to black      |   |  |  |                               |
| 9 | Vertex with ocellar triangle black and an ovate black stripe behind it that ends between postocellar setae. Meron and mediotergite black  |   |  |  |                               |

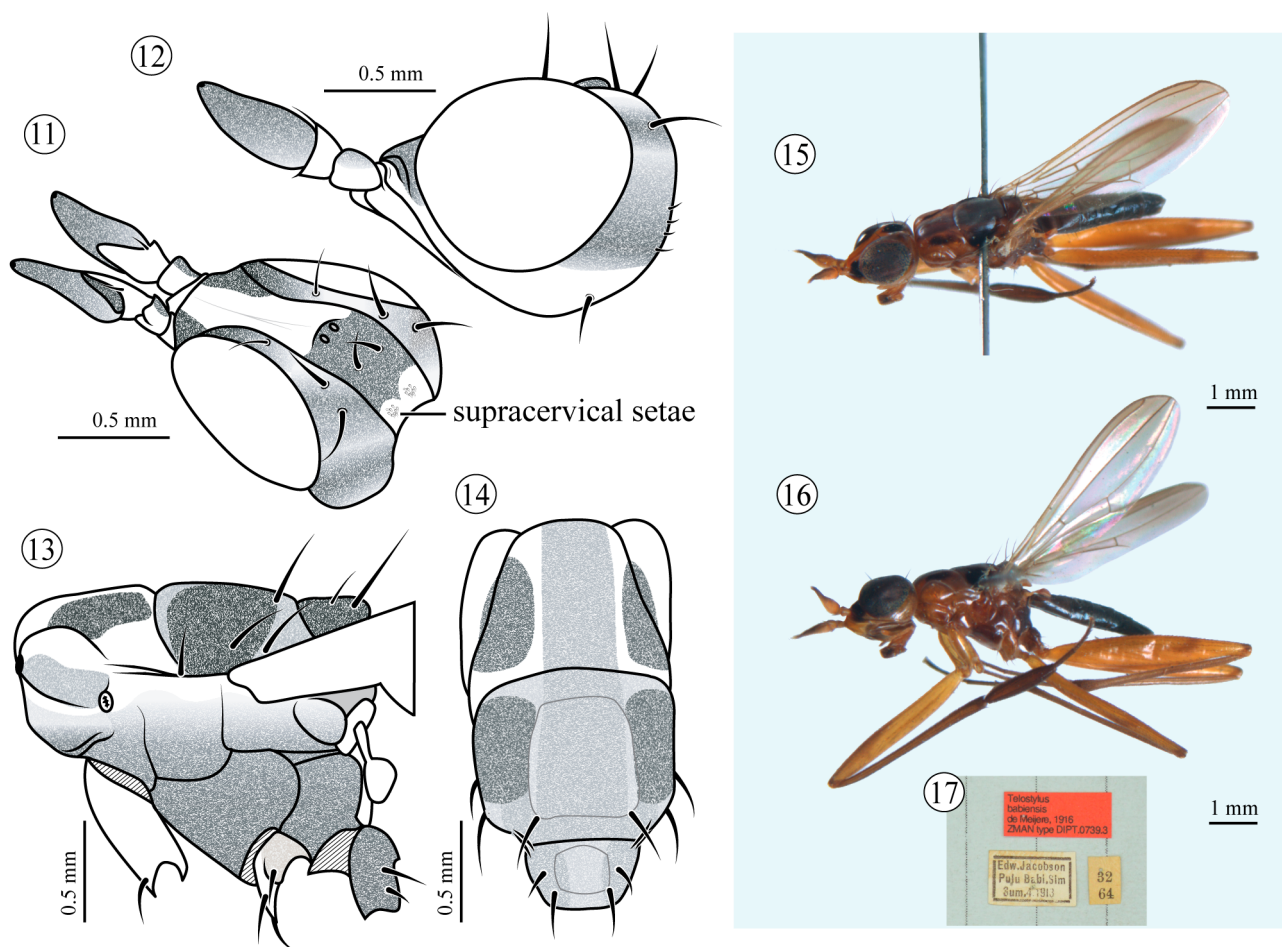
### *Telostylus babiensis* de Meijere, 1916

(Figs 11–17)

*Telostylus babiensis* de Meijere, 1916: 37.

**Diagnosis.** Tegument mostly dark yellow; frontal vitta yellow with anterolateral black spot, without white pruinescence between it and anterior margin of fronto-orbital plate; vertex black from ocellar triangle to dorsal area of median occipital sclerite; supracervical setae yellow (Fig. 11); occiput blackish-brown, without differentiated yellow stripes or spots (Fig. 12); thorax with wide presutural black spot above postpronotal lobe and notopleuron, and wide postsutural black spot from near transversal suture to supra-alar area (Fig. 13); thorax dorsally with wide median blackish-brown stripe from anterior margin of scutum to scutoscutellar suture (Fig. 14); scutellum blackish-brown;





**Figs 11–17.** Morphology of *Telostylus babiensis*. 11–14 – specimen NHMUK #1958, female: 11 – head laterodorsal; 12 – head lateral; 13 – thorax lateral; 14 – thorax dorsal. 15–17 – male lectotype (photographs of Pasquale Ciliberti, RMNH): 15 – habitus dorsal; 16 – habitus lateral; 17 – labels.

fore femur yellowish-brown on apical third; mid and hind femora with incomplete dorsal brown ring on distal third.

**Redescription. Male** (lectotype). Body length 8.0 mm. **Head.** Mainly dark yellow, with several black areas. First flagellomere yellow at base, blackish-brown toward apex. Scape and pedicel yellow. Anterior margin of frons concave and narrow. Fronto-orbital plate black. Ocellar triangle black. **Thorax.** Entirely shiny. Pleuron blackish-brown, with darker areas on katepisternum and meron. Fore coxa yellow. Hind coxa blackish-brown. Fore femur with short thick anteroventral setae. Tibiae blackish-brown. Wing infusate on apical third; length 5.6 mm; width 1.5 mm. Halter stem yellow; knob brown. **Abdomen.** Blackish-brown, shiny.

**Female.** Body length 4.4–6.1 mm. First flagellomere completely black (Figs 11, 12). Anterior margin of frons wider than in male. Thorax with median wide brown stripe. Pleuron without darker areas. Wing infuscation evident only around veins  $R_{2+3}$  and  $R_{4+5}$  distally; length 4.6–5.0 mm; width 1.3–1.5 mm. Oviscape yellow, darkening laterally; length twice its width.

**Variation.** Halter entirely yellow in one female (#1958).

**Type material.** *Telostylus babiensis*, lectotype (here designated) ♂: (1) Edw. Jacobson, Pulu Babi. Slm. 3um.4.1913; (2)

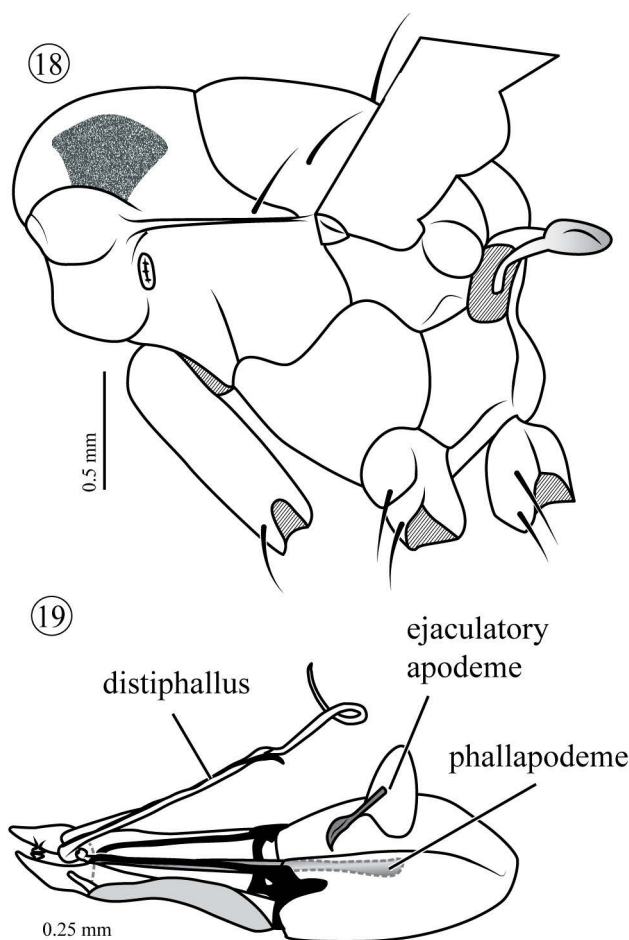
32, 64; (3) *Telostylus babiensis* de Meijere, 1916, ZMAN type DIPT.0739.3 [RMNH] (Figs 15–17).

**Additional material examined** (2 specimens). **Philippines.** 2♀, (1) Mt. Malindang, 8.x.1981, coll. T. Borromeo, B.M. 1982-153 (2) Misamis Occidental, 1000 m [NHMUK #1180, #1958].

**Type locality.** Indonesia, Sumatra, Babi island.

**Distribution.** Indonesia (Aceh, West Sumatra), Philippines\* (Mindanao).

**Remarks.** Since we only examined two female specimens and the undissected male lectotype, male genitalia are not described. According to de Jong (2000), there are two syntypes (sex unknown) of this species housed in the RMNH. However, we only had access to one male from the Babi island (2°7'N, 96°40'E), southern sub-district of Simeulue Regency, Teupah Selatan. The specimens of *T. babiensis* examined by de Meijere (1916) are part of the material collected by the German-born Dutch naturalist Edward Richard Jacobson in 1913 on the Simeulue island and its satellite islet. In the original description of *T. babiensis*, de Meijere (1916) studied at least four specimens: one female from Labuan Badjau and three males from Babi island. The specimen housed in the RMNH, although it lacks any type label, is very likely the specimen examined by de Meijere (1916) because he was clear in declaring that among the three males he examined, the one with the



**Figs 18–22.** Morphology of *Telostylus binotatus*. 18–19 – specimen NHMUK #1994, male: 18 – thorax lateral; 19 – genitalia lateroventral. 20–22 – male lectotype of *Coenurgia remipes*: 20 – habitus dorsal; 21 – habitus lateral; 22 – labels.

swollen fore first tarsomere was the specimen he used to describe the species.

### *Telostylus binotatus* Bigot, 1859

(Figs 18–22)

*Telostylus binotatus* Bigot, 1859: 307.

*Coenurgia remipes* Walker, 1860: 164. Synonymy with *T. binotatus* by Bigot 1881.

**Diagnosis.** Tegument mostly yellow; frontal vitta yellow; vertex with ovate black spot between ocellar triangle and postocellar setae; lateral occiput with one narrow ovate brown spot on ventral half; supracervical setae yellow; scutum mostly yellow dorsally except for one presutural black spot above postpronotal lobe (Fig. 18); pleuron completely yellow; scutellum yellow; all femora yellow with black tips, without brown or black rings; abdomen brownish-yellow; proximal extremity of ejaculatory apodeme expanded, forming flattened fan-like membranous structure (Fig. 19).

**Redescription. Male.** Body length 7.9–8.5 mm. Mainly yellow, with black spots only on presutural scutum and abdomen. **Head.** First flagellomere yellowish-brown, slightly darkening toward apex; twice as long as scape. Scape and pedicel brown. Anterior margin of frons concave. Frontal vitta yellow, with anterolateral black spot and dense white

pruinescence between this and anterior margin of fronto-orbital plate. Fronto-orbital plate yellow, with anterior third brown. Ocellar triangle black. **Thorax.** Coxae yellow. Femora without spine-like seta ventrally. Tibiae brown. Wing with slight infuscation on distal third; length 5.0 mm; width 1.2 mm. Halter stem white; knob blackish (Fig. 18). **Abdomen.** Mostly yellow, with numerous small pale brown spots. Syntergosternite 8 brownish-yellow. Epandrium brownish-yellow; slightly longer than syntergosternite 8, reaching anterior half of abdominal segment 5 ventrally. Surstylus narrow and linear; half the length of cercus. Cercus tapering toward apex (Fig. 19); half the length of epandrium. Phallapodeme without marginal projections.

**Female.** Unknown.

**Variation.** Dorsal half of occiput slightly dark to brownish-yellow. Halter entirely white. Abdomen almost entirely yellow.

**Type material.** *Telostylus binotatus*, syntype ♀ [?MNHN] (not examined).

*Coenurgia remipes*, lectotype (here designated) ♂: (1) SYN-TYPE; (2) Mak; (3) 684; (4) Syntype *Coenurgia remipes* Walker, det. J.E. Chainey, 1995; (5) NHMUK010579866 [NHMUK] (Figs 20–22). Paralectotype ♂ (photographs examined): (1) syntype; (2) Celebes; (3) *remipes*; (4) Syntype *Coenurgia remipes* Walker, det. J.E. Chainey, 1995; (5) NHMUK010579867 [NHMUK].

**Additional material examined.** Papua New Guinea. 1♂, New Britain, Keravat, 23.–30.vii.1965, R.W. Crosskey [NHMUK #1994].

**Type locality.** Indonesia, Sulawesi.

**Distribution.** Thailand, Malaysia, Indonesia (Sulawesi, West Papua, Borneo, Sumatra), Papua New Guinea\*.

**Remarks.** *Telostylus binotatus* was redescribed by Aczél (1955), who distinguished it based on the medial third of the frontal vitta being blackish, a wide black spot in the supra-alar area and that this species only occurred in Borneo. Steyskal (1966) questioned the validity of Aczél's (1955) work, suggesting that the redescription was based on misidentified material, since none of the features he mentions are present in *T. binotatus* and the distribution is incorrect. Today, it is known that *T. binotatus* occurs in Borneo, but the redescription provided by Aczél (1955) is certainly based on a misidentification, since *T. binotatus* has only an ovate black spot on vertex behind the ocellar triangle and an entirely yellow postsutural scutum.

Following Hennig's (1937) classification, Steyskal (1966) provided a key for the species of *Telostylus* based on features extracted from the species' original descriptions, recognizing both *T. binotatus* and *T. remipes* as independent species. The main feature mentioned by Steyskal (1966) differentiating *T. binotatus* from *T. remipes* is the colour pattern on the femora, i.e., dark brown with base and preapical ring yellow in *T. binotatus*, and yellowish with black apex in *T. remipes*. However, by differentiating *T. remipes* from *T. binotatus* based on the colour of the femora, it is clear that Steyskal (1966) misinterpreted the characteristic "*Genubus nigris*" used by Bigot (1859) in the original description of *T. binotatus*. "*Genubus nigris*" refers to the apex of the femora, which is blackish-brown to black.

After examining the type material of *C. remipes* and some additional material of *T. binotatus*, we verified that both species have yellow femora with black tips, without brown or black rings. Moreover, *T. binotatus* and *T. remipes* are the only species of *Telostylus* that have a mostly yellow scutum, except for one presutural black spot above the postpronotal lobe, and an ovate black spot on the vertex between the ocellar triangle and the postocellar setae. Thus, based on these features, we return *C. remipes* to synonymy with *T. binotatus*, as previously proposed by Bigot (1881).

*Telostylus binotatus* is remarkably similar to *T. marshalli* in general morphology. The main differences between these species are the colour pattern on the vertex and femora and the postabdominal morphology. The ejaculatory apodeme in *T. binotatus* is unique amongst the species of *Telostylus*. The expanded proximal extremity of this structure is very similar to species of Micropezidae and it has never been described before in Neriidae.

Additional geographic records in the literature for *T. binotatus* include: Thailand (Papp et al., 2006); Malaysia, Penang (Steyskal, 1966); Indonesia, West Papua (Pitkin, 1989), Borneo (Czerny, 1932) and Sumatra (Enderlein, 1922).

## ***Telostylus decemnotatus* Hendel, 1913**

(Figs 23–27)

*Telostylus decemnotatus* Hendel, 1913: 84.

**Diagnosis.** Tegument mostly yellow; three fronto-orbital setae present (anterior shorter than half length of median fronto-orbital seta, which is two thirds the length of posterior fronto-orbital seta, Fig. 23); lateral occiput with two pale brown spots (one between posterior margin of eye and outer vertical seta, and one ovate on ventral half); frontal vitta yellow; vertex with black ovate narrow spot between ocellar triangle and postocellar setae (Fig. 24); supracervical setae yellow; thoracic prescutellar black spot above postpronotal lobe; one black spot on supra-alar area; pleuron with three black spots (one on proepisternum, one on katapisternum, and one over meron and mediotergite, Fig. 25); scutellum yellow; abdomen brownish-yellow, darkening laterally.

**Redescription. Female** (lectotype). Body length 5.4 mm. Mostly yellow, with black spots on head and thorax. **Head.** First flagellomere lost. Scape and pedicel yellow. Anterior margin of frons concave and wide. Frontal vitta with anterolateral black spot and dense white pruinescence between it and anterior margin of fronto-orbital plate. Fronto-orbital plate brown on anterior third. **Thorax.** Mostly yellow, shiny; without pruinose areas. Coxae yellow. Femora yellow, with brown tips; fore femur lost in lectotype; mid and hind femora without ventral spine-like seta. Tibiae brown. Wing without infuscation; length 4.5 mm, width 1.2 mm. Halter stem white; knob black. **Abdomen.** Pale brown. Oviscape pale brown, shiny; length twice its maximum width.

**Male.** Unknown.

**Type material.** *Telostylus decemnotatus*, lectotype (here designated) ♀: (1) Kankau (Koshun), Formosa, H. Sauer V. 1912; (2) *Telostylus 10-notatus*, det. Hendel; (3) Syntypus; (4) DEI Diptera #300220; (5) Dip – 00410, DEI Müncheberg [SDEI] (Figs 26, 27). Paralectotype ♀: TAIWAN, Kankau, Koshun [NMW] (not examined).

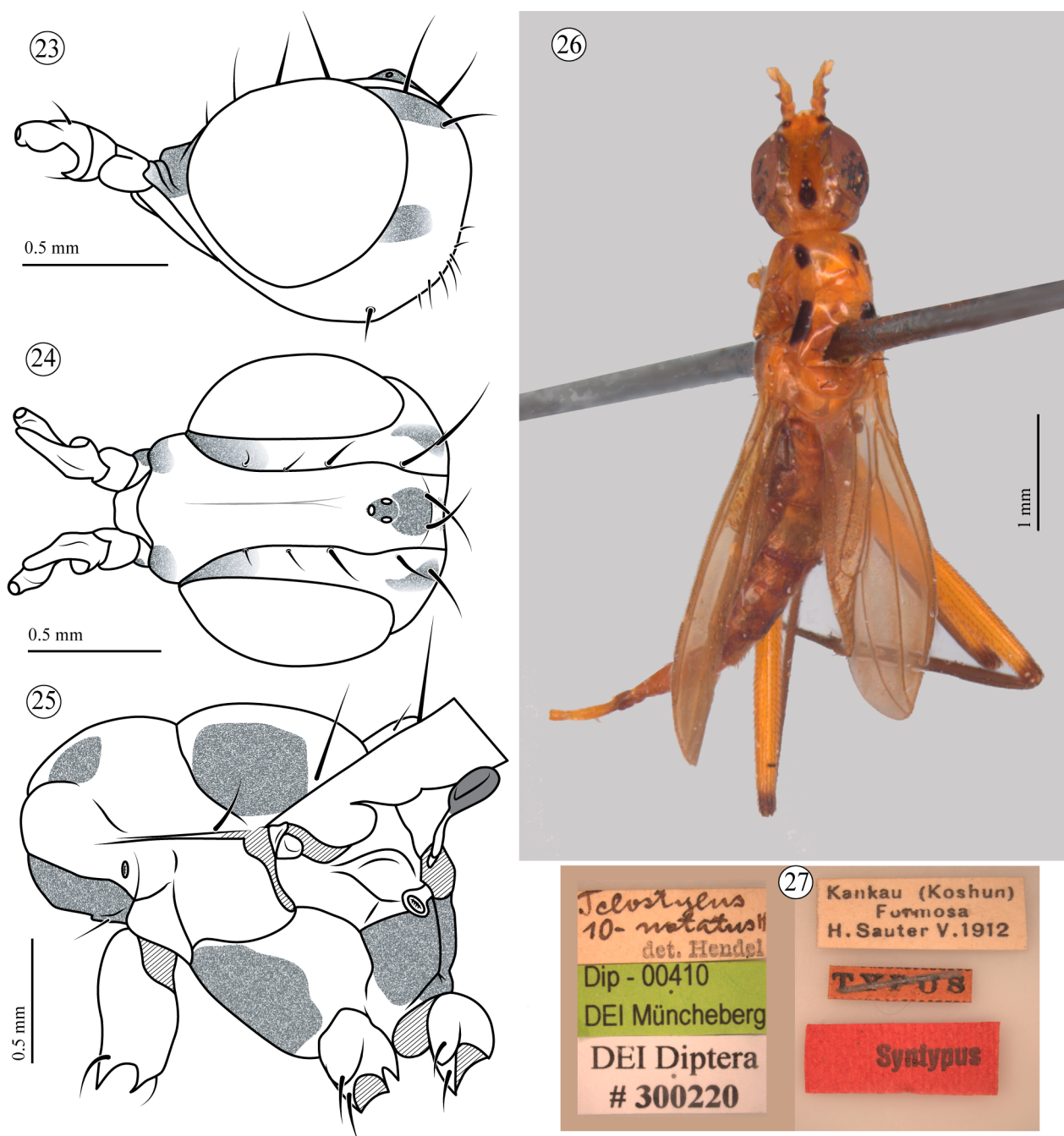
**Type locality.** Taiwan, Koshun.

**Distribution.** Taiwan.

**Remarks.** This species was described by Hendel (1913) based on two female specimens from Taiwan: one is housed in the SDEI (designated here as lectotype) and one in the NMW (not examined in the present study). The label information for the paralectotype was transcribed from the original description published by Hendel (1913).

*Telostylus decemnotatus* is very similar to *T. maccus*, differing mainly as follows: (1) the vertex is completely brown in *T. maccus*, while in *T. decemnotatus* the vertex has an ovate black narrow spot between the ocellar triangle and the postocellar setae; (2) an additional wide median presutural brown stripe is present in *T. maccus*; (3) a black circular presutural spot is present between the suprahumeral black spot and the transverse suture in *T. maccus*; and (4) the scutellum is blackish-brown with a wide median yellow stripe in *T. maccus*, while in *T. decemnotatus* the scutellum is completely yellow.





**Figs 23–27.** Morphology of *Telostylus decemnotatus*, female lectotype. 23 – head lateral; 24 – head dorsal; 25 – thorax lateral; 26 – habitus dorsal; 27 – labels.

### ***Telostylus inversus* Hennig, 1937**

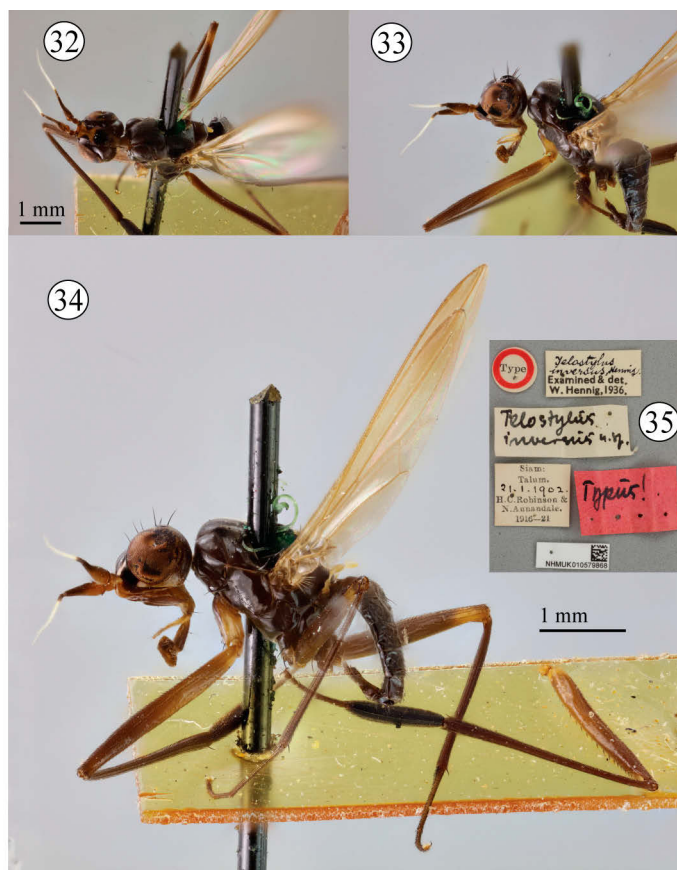
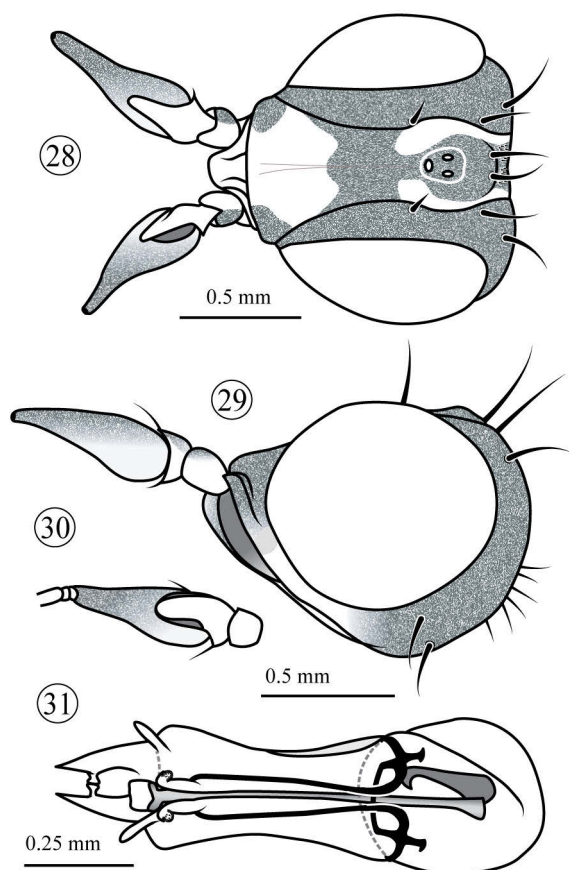
(Figs 3, 28–35)

*Telostylus inversus* Hennig, 1937: 269.

**Diagnosis.** Tegument mostly brown; thorax and abdomen shiny; anterior margin of frons straight (Fig. 28); frontal vitta yellow with black line surrounding fronto-orbital plate between anterior margin and posterior fronto-orbital seta; lateral occiput brown; vertex black from ocellar triangle to median occipital sclerite; supracervical setae black; parafacial black, with white pruinose spot ventrally toward narrowest point of gena; halter yellow; femora brown,

with proximal area yellow; mid and hind femora yellow apically.

**Redescription. Male** (holotype). Body length 5.0 mm. Head and thorax brown, without black spots. **Head.** Round, not elongate anteriorly (Figs 28, 29); mostly dark brown, with fronto-orbital plate brown. First flagellomere lanceolate and elongate, length three times its maximum width (Fig. 30). Frontal vitta and gena yellow anteriorly. Frontal vitta with black spot between anterior margin and fronto-orbital plate, without dense white pruinose spot; median cleft in frontal vitta slightly wider and deeper than in other species of *Telostylus*. Occiput narrow. Face in front of frontogenal suture forming lateral facial plate, brown



**Figs 28–35.** Morphology of *Telostylus inversus*. 28–31 – specimen NHMUK #1903, male: 28 – head dorsal; 29 – head lateral; 30 – antennae, inner margin; 31 – genitalia ventral. 32–35 – male holotype (photographs of Daniel Whitmore, NHMUK): 32 – habitus dorsal; 33–34 – habitus lateral; 35 – labels.

and shiny. **Thorax.** Scutellum brown, sub shiny. Pleuron brown, shiny. Fore coxa pale brown. Mid and hind coxae brown. Fore femur with anteroventral spine-like setae on distal two thirds. Tibiae brown. Wing infusate on distal third; length 5.0 mm; width 1.5 mm. Halter yellow. **Abdomen.** Brown, shiny. Syntergosternite 8 brown, shiny. Epandrium brown, shiny; twice as long as syntergosternite 8, reaching anterior half of abdominal segment 4 ventrally. Surstylus linear and narrow; slightly shorter than half the length of cercus. Cercus elongate, tapering distally with pointed apex; approximately half the length of the epandrium. Phallapodeme without marginal projections (Fig. 31).

**Variation.** Body length 4.7 mm. Wing length 4.1 mm; width 1.2 mm. Black lines on frontal vitta surrounding fronto-orbital plate, fusing together medially. Fore coxa completely yellow.

**Female.** Body length 4.4 mm. Wing length 3.7 mm; width 1.0 mm. Gena mostly yellow. Oviscape brown with apex black; length twice its maximum width. Tergite 6 yellowish-brown.

**Type material.** *Telostylus inversus*, holotype ♂: (1) Type; (2) Siam, Talum, 21.i.1902, H. C. Robonson & N. Annandale 1916-21; (3) *Telostylus inversus*, Hennig. Examined & det. W. Hennig, 1936; (4) *Telostylus inversus* n. sp.; (5) Typus! (6) NHMUK010579868 [NHMUK] (Figs 32–35).

**Additional material examined** (2 specimens). **Malaysia.** 1♂, (1) SARAWAK: 4th Div. Niah, 9–17.x.1976, 3.49°N, 113.46°E,

P.S. Cranston, B.M. 1977-19 (2) ex. rotting fruit [NHMUK #1903 (dissected)]. **Indonesia.** 1♀, SUMATRA: Sibolangit, forest, 3.vi.1985, J.W. Ismay, BM 1986-283 [NHMUK #1868].

**Type locality.** Thailand, Talum.

**Distribution.** Thailand, Malaysia\* (Sarawak), Indonesia\* (Sumatra).

### *Telostylus latibrachium* Enderlein, 1922

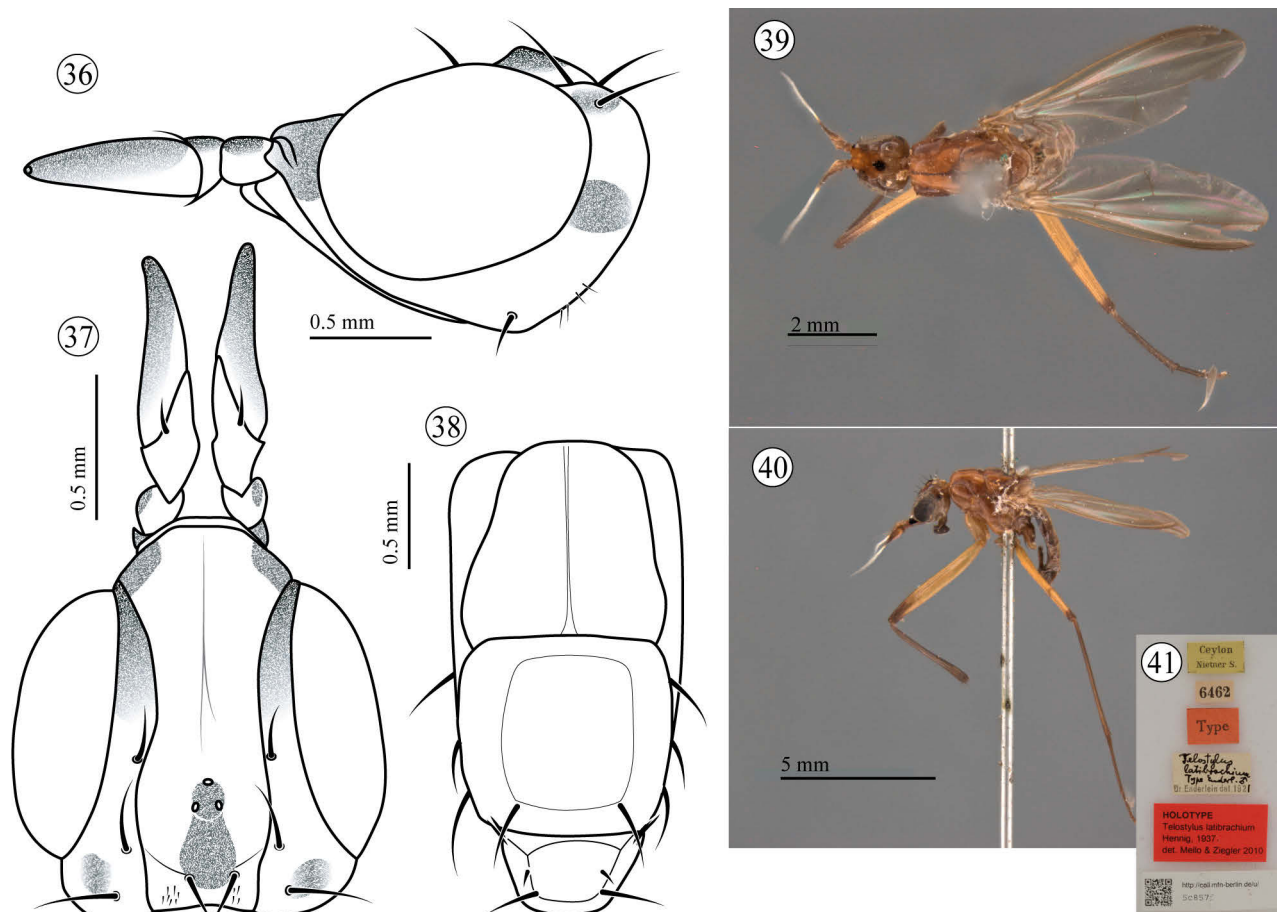
(Figs 6–8, 36–41)

*Telostylus latibrachium* Enderlein, 1922: 142.

**Diagnosis.** Tegument mostly yellow; lateral occiput brownish-yellow, with two spots (one dorsal diffuse brown spot between inner and outer vertical setae and one wide ovate brown spot on ventral half, Fig. 36); vertex with oval black spot between ocellar triangle and postocellar setae; supracervical setae black (Fig. 37); scutum, scutellum and pleuron pale yellow to brownish-yellow, without pruinose or black spots on scutum and pleuron; hind femur with brown ring ventrally incomplete on distal third; abdomen brown.

**Redescription. Male** (holotype). Body length 6.9 mm. Mainly brownish-yellow, with small black spots dorsally on head. **Head.** First flagellomere mostly blackish-brown, with small yellow proximal area; twice the length of scape. Scape and pedicel yellow. Anterior margin of frons concave (Fig. 37). Frontal vitta yellow, with anterolateral black spot and dense white pruinescence between it and





**Figs 36–41.** Morphology of *Telostylus latibrachium*. 36–38 – specimen NHMUK #1924, female: 36 – head lateral; 37 – head dorsal; 38 – thorax dorsal. 39–41 – male holotype (photographs of Sven Marotzke and Bernhard Schurian, ZMHB): 39 – habitus dorsal; 40 – habitus lateral; 41 – labels.

anterior margin of fronto-orbital plate. Fronto-orbital plate yellow, with anterior third brown. Ocellar triangle black.

**Thorax.** Mostly brownish-yellow, shiny. Presutural scutum with narrow median longitudinal blackish-brown stripe (Figs 38, 39). Coxae brownish-yellow. Femora yellow, with brown tips. Fore femur with short anteroventral setae; slightly increasing in size toward apex. Mid femur lost. Hind femur without spine-like seta ventrally. Tibiae brown. Wing slightly infuscate on apical third; length 6.2 mm; width 1.9 mm. Halter yellow. **Abdomen.** Syntergosternite 8 blackish-brown, shiny. Epandrium blackish, subequal to syntergosternite 8, reaching anterior half of abdominal segment 5 ventrally. Surstylus linear and narrow; slightly shorter than half of the length of cercus. Cercus ovate and wide, with pointed apex; almost half of the length of epandrium. Phallapodeme with rounded marginal projection on distal third, near base of postgonite (Fig. 8).

**Variation.** Body length 4.3–6.9 mm. Wing length 3.4–6.2 mm; width 1.0–1.9 mm. Occiput and thorax blackish to pale yellow. Thorax with median presutural longitudinal stripe dark yellow. Mid femur yellow, with brown tip; with incomplete brown ring on distal third.

**Female.** Body length 4.7–5.0 mm. Body setae in general weaker than in males. Femora without prominent anteroventral seta. Oviscape yellow, with small black area distally; length 2.5 times its maximum width.

**Type material.** *Telostylus latibrachium*, holotype ♂ (photographs examined): (1) Ceylon, Nietner S.; (2) 6462; (3) Type; (4) *Telostylus latibrachium*, Type Enderl. ♂, Dr. Enderlein det. 1921; (5) HOLOTYPE, *Telostylus latibrachium*, Enderlein, 1922, det. Mello & Ziegler 2010 [ZHMB] (original designation) (Figs 39–41).

**Additional material examined** (56 specimens). **Sri Lanka.** 2♂ 1♀, (1) In Garden, Luduganga, 4, 5.i.1919 (2) CEYLON. R. Senior White, B.M. 1924-100 [NHMUK #1624, #1914, #1919]; 1♀, (1) Flying round Solanum bushes (2) Luduganga, 11.xi.1918 (3) CEYLON. R. Senior White, B.M. 1924-100 [NHMUK #1925]; 1♂, (1) In Hibiscus, hedge (2) Luduganga, 8.12.1918 (3) CEYLON. R. Senior White, B.M. 1924-100 [NHMUK #1915]; 2♂, (1) Bred from decaying stem (hand written) (2) Luduganga, May, June 1922 (3) MP3 [NHMUK #1909, #1917]; 1♂ 1♀, (1) Kandy, Ceylon, 5-09 (2) Brunetti, B.M. 1927-184 [NHMUK #1628, #1918 (dissected)]; 2♀, (1) Kandy Distr. Peradeniya, 24.11.1974 (2) SRI LANKA (CEYLON): BMNH 1974-624, A. E. Stubbs & P.J. Chandler [NHMUK #1866, #1867]; 1♂ 3♀, (1) Kandy distr. Peradeniya, Mahaweli River, 22 & 24.ii.1974 (2) SRI LANKA (CEYLON): BMNH 1974-624, A.E. Stubbs & P.J. Chandler [NHMUK #1888, #1869, #1921, #1923]; 2♂ 1♀, (1) Peradeniya, Ceylon, x.07 (2) Pres. by E. Brunetti B.M. 1927-184 [NHMUK #1908, #1926, #1956]; 2♂, (1) Kandy distr. Udawat-tekele sanctuary, 23.ii.1974 (2) SRI LANKA (CEYLON): BMNH 1974-624, A.E. Stubbs & P.J. Chandler [NHMUK #1884, #1920]; 1♀, (1) Kan. Distr. Udawattakele Section, Elevation 1800 ft. 23–25.ix.1980 (2) K.V. Krombein, P.B. Karunaratne, T. Wijes-



inhe, L. Jayawickema, V. Gunawardane [USNM #1912]; 3♂ 3♀, (1) Kan. Distr. Udawattakele Section, 1800 ft. 1.–3.ix.1980 (2) K.V. Krombein, P.B. Karunaratne, T. Wijesinhe, L. Jayawickema, V. Gunawardane (3) RESTRICTIONS APPLY, NMNH – Sri Lanka, Agreement #6 [USNM #1870, #1871, #1872, #1911, #1913, #1927]; 1♀, (1) Kandy distr. Karugastota, 24.ii.1974 (2) SRI LANKA (CEYLON): BMNH 1974-624, A.E. Stubbs & P.J. Chandler [NHMUK #1922]; 1♂, (1) Sri Lanka: 500 m Central Prov. Kandy Distr., Talwatte, 21.x.1995, M. Shaffer (2) BMNH(E) 1996-213 [NHMUK #1916]; 1♀, (1) Ceylon, Centr. Prov. Kandy, 12.i.62. Loc. 9 (2) Swept on shrubs in jungle (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1951]; 1♂ 1♀, (1) Colombo Distr. Labugama, 18.ii.1974 (2) SRI LANKA (CEYLON): BMNH 1974-624, A.E. Stubbs & P.J. Chandler [NHMUK #1896, #1924]; 1♂, (1) Gal. Distr. Kanneliya Section, Sinharaja Jungle, 2.–5.x.1980 (2) Collected in Malaise trap (3) K.V. Krombein, P.B. Karunaratne, T. Wijesinhe, L. Jayawickema, V. Gunawardane (4) RESTRICTIONS APPLY, NMNH – Sri Lanka, Agreement #6 [USNM #1910]; 1♂ 3♀, (1) Ceylon, Sabaragamuwa, Prov. Stream at 2500 ft. 5 mls NNW Balangoda, 22.ii.62, Loc. 96 (2) Swept above surface of small stream (3) Ravine (4) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1929, #1936, #1937, #1940]; 1♂, (1) Ceylon, Centr. Prov. Stream, 20 mls E Kandy, 12.iii.62. Loc. 135 (2) Swept on grass in forest (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1952]; 2♂ 1♀, (1) Ceylon, Sabaragamuwa, Prov. Gilimale. Alt. 300ft. 6 mls NE Ratnapura, 20.ii.62, Loc. 93 (2) Ravine with small stream (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1930, #1945, #1946]; 2♂, (1) Ceylon, Sabaragamuwa, Prov. Bopathella Falls, 9 mls NNW Ratnapura, 19.ii.62, Loc. 91:I (2) Swept on vet. at small stream (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1935, #1941]; 1♂ 3♀, (1) Ceylon, Sabaragamuwa, Prov. Deerwood Kuruwita, 6 mls NNW Ratnapura, 18.ii.62, Loc. 90:ii:1 (2) Swept on veg. in jungle ravine (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1928, #1943, #1944, #1947]; 3♂ 1♀, (1) Ceylon, NW. Prov. Andapalakanda, 3 mls. NE Melsiripura, 7.ii.62, Loc. 53 (2) Ravine with small stream (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1931, #1948, #1949, #1950 (dissected)]; 1?, (1) Ceylon, S. Prov. Hemmeliya, 2 mls. E, Baddegama 10 mls. N. Galle 27.i.62, Loc. 26 (2) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm (3) Swept on veg. at small stream [MZLU #1932]; 1?, (1) Ravine with small stream (2) Ceylon, Centr. Prov. Rambukparth Oya, 10 mls NW Hatton, 18.iii.62. Loc. 153 (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1942]; 1♂, (1) Ceylon, Prov. Of Uva, Westminster Abbey, 25 mls ESSE Bibile, 7.iii.62. Loc. 119:II (2) Swept above surface of small stream (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1955]; 1♀, (1) Ceylon, Prov. Of Uva, Ettampitiya, 6 mls SW Badulla, 14.iii.62. Loc. 144 (2) Swept above surface of small stream (3) Lund University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm [MZLU #1953]; 1♂, (1) Ceylon, S. Prov. Galandala, 16 mls. NNE Galle, 27.I.62. Loc. 28 (2) Lung University, Ceylon Expedition 1962, Brinck-Andersson-Cederholm (3) Swept on shrubs/ in jungle [MZLU #1954].

**Type locality.** Sri Lanka.

**Distribution.** Sri Lanka, Indonesia (Java).

**Remarks.** The record from Indonesia (Buitenzorg, Java) is that of Bryan (1932), which is based on material identi-

fied by E.T. Cresson Jr., deposited in the Bernice Pauahi Bishop Museum, Hawaii.

### ***Telostylus maccus* Osten-Sacken, 1882**

(Figs 1, 2, 42–47)

*Telostylus maccus* Osten-Sacken, 1882: 207.

**Diagnosis.** Tegument mostly yellow; wide brown longitudinal stripe on ventral half of lateral occiput (Fig. 42); vertex black between ocellar triangle and postocellar setae (Fig. 43); supracervical setae yellow; two thoracic presutural black spots laterally (one above postpronotal lobe, and one smaller near transverse suture (Figs 44, 46); presutural scutum with wide median brown stripe; wide postsutural black spot in supra-alar area; scutellum brown with wide median yellow stripe (Fig. 47); pleuron with three black spots (one proepisternal, one katepisternal, and one covering meron and mediotergite); halter yellow; abdomen yellow with median brown longitudinal stripe.

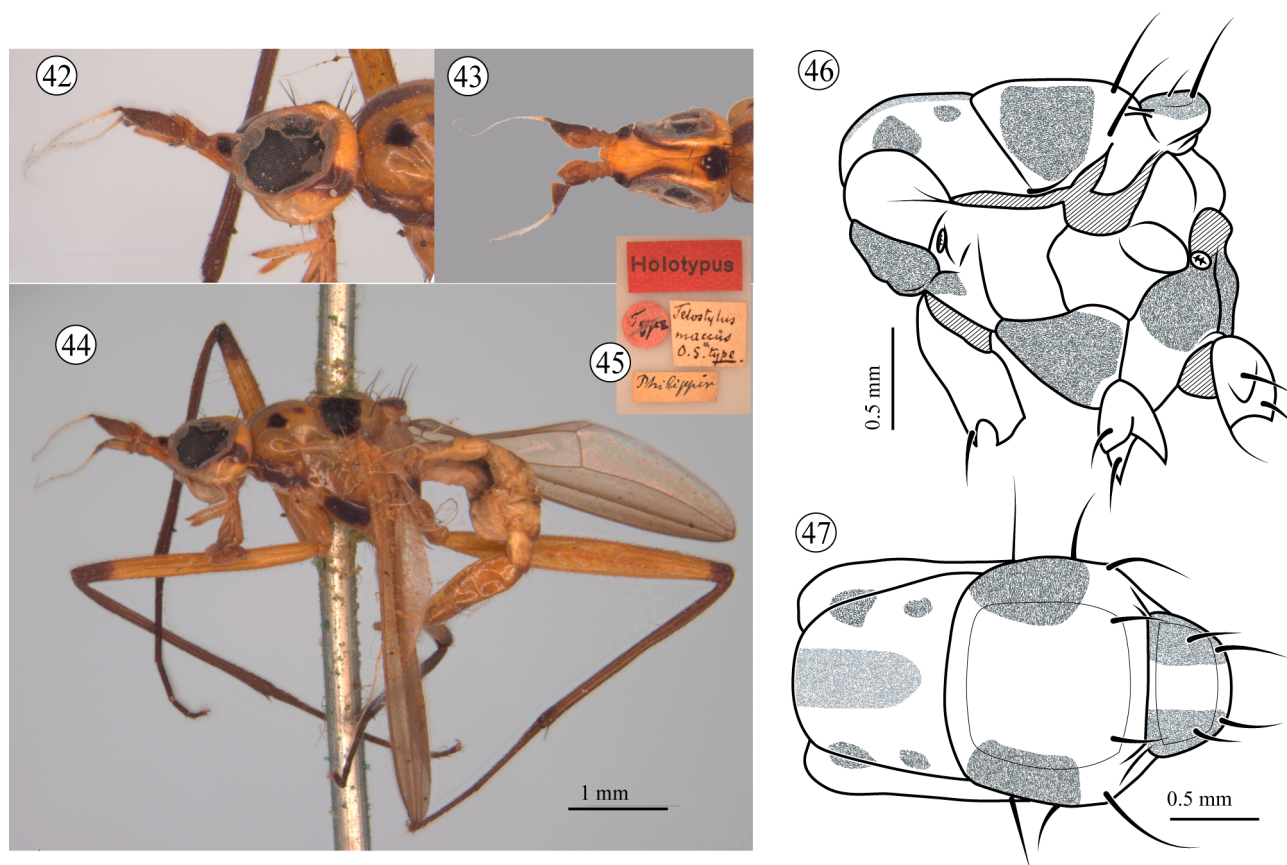
**Redescription. Female** (holotype). Body length 4.9 mm. Mostly yellow, with several brown and black spots dorsally and laterally on head and thorax. **Head.** First flagellomere blackish-brown, darkening towards apex; twice as long as scape. Scape and pedicel yellow. Anterior margin of frons concave. Frontal vitta yellow, with anterolateral black spot and dense white pruinescence between it and anterior margin of fronto-orbital plate. Frontal vitta yellow with black line surrounding fronto-orbital plate between anterior margin and level of posterior fronto-orbital seta. Fronto-orbital plate brown on anterior third. Median occipital sclerite yellow. **Thorax.** Mostly yellow, shiny; without pruinose areas. Coxae yellow. Femora yellow, with brown tips. Fore femur with short anteroventral setae; slightly increasing in width toward apex. Mid and hind femora without spine-like seta ventrally. Tibiae brown. Wing without infuscation; length 4.2 mm; width 1.5 mm. Halter lost. **Abdomen.** Abdomen yellow, with median wide longitudinal brown stripe. Tergite 6 completely yellow. Oviscape yellow, slightly darker than tergites, length twice its maximum width.

**Type material.** *Telostylus maccus*, holotype ♀: (1) Holotypus; (2) Type; (3) Philipin; (4) *Telostylus maccus* Osten-Sacken, Type; (5) Dip – 00409, DEI Müncheberg [SDEI] (original designation) (Figs 42–47).

**Type locality.** Philippines.

**Distribution.** Philippines (Leyte), Indonesia (Java).

**Remarks.** The types of *T. maccus* and *T. decemnotatus* are very similar but can be differentiated by the absence of the anterior and middle fronto-orbital setae in *T. maccus*. We did not have access to male specimens, but Wulp (1896) described a male from Java identified as *T. maccus* (including its terminalia) which shows slight differences from the female described by Osten-Sacken (1882): “male genitalia very long and cercus with several long setae. Mid and hind femora with incomplete median rings and in fore and mid femora, anteroventral setae thickening distally”. One female of *T. maccus* from Lake Danao, Philippines, photographed by Paul Bertner, lacks the third black spot posteriorly on the pleuron (Figs 1, 2).



**Figs 42–47.** Morphology of *Telostylus maccus*, female lectotype. 42 – head lateral; 43 – head dorsal; 44 – habitus lateral; 45 – labels; 46 – thorax lateral; 47 – thorax dorsal.

***Telostylus marshalli* Sepúlveda & de Carvalho, sp. n.**

(Figs 9, 48–52)

ZooBank taxon LSID:

3EE3C593-1F05-44BB-8C5E-5176D647916E

**Diagnosis.** Tegument mostly yellow (Figs 48, 49); lateral occiput yellow, with one ovate brown longitudinal stripe on ventral half (Fig. 50); black spot on posterior third of frontal vitta, covering the vertex through ocellar triangle to behind postocellar setae (Fig. 51); supracervical setae black; scutum dorsally with presutural black spot above postpronotal lobe; coxae yellow; mid and hind femora yellow, with brown ring ventrally incomplete or complete on distal third (Fig. 48); abdomen brown.

**Description. Male** (holotype). Body length 6.9 mm. Mainly yellow, with a few black spots dorsally on head and thorax. **Head.** First flagellomere blackish-brown dorsally, darkening towards apex; three times longer than scape (Fig. 50). Scape and pedicel yellow. Anterior margin of frons concave and wide (Fig. 51). Frontal vitta yellow, with anterolateral and mediolateral black spots and dense white pruinescence between this and anterior margin of fronto-orbital plate. Fronto-orbital plate yellow, with anterior third brown. **Thorax.** Pleuron yellow (Fig. 48). Scutellum yellow (Fig. 49). Coxae yellow. Fore femur yellow, with distal third brown. Femora without spine-like seta ventrally. Tibiae brown. Wing slightly infusate on distal

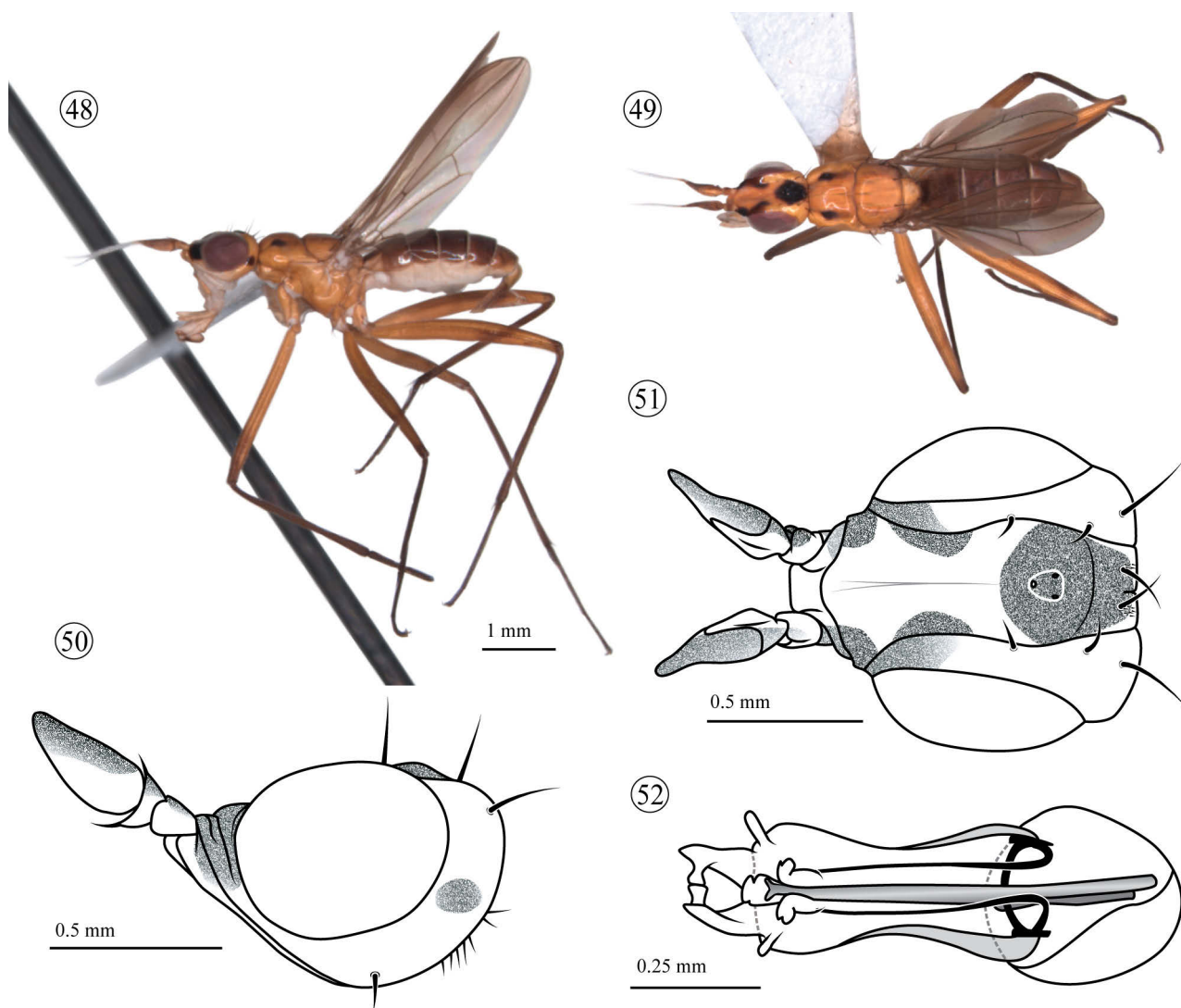
third; length 4.5 mm, width 1.5 mm. Halter yellow. **Abdomen.** Brown, shiny. Syntergosternite 8 blackish-brown, shiny. Epandrium dark yellow; twice as long as syntergosternite 8, reaching anterior half of abdominal segment 5 ventrally. Surstylus linear and narrow; slightly longer than half of the length of cercus. Cercus tapering toward apex; length slightly longer than half of that of the epandrium. Phallapodeme without marginal projections (Fig. 52).

**Variation.** Body 4.3–6.1 mm. Wing length 3.4–5.0 mm; width 1.0–1.5 mm. Supra-alar area slightly blackish, without black spots. Scutellum brownish-yellow to dark yellow, with narrow median yellow stripe. Katepisternum with anteroventral brown spot. Fore femur with brown tip and brown ring on distal third.

**Female.** Body length 4.7–5.0 mm. Setae in general thinner and shorter than in males. Oviscape yellow, with small black area distally; length 2.5 times its maximum width.

**Etymology.** This new species is dedicated to Dr. Steve Marshall in recognition of his many contributions to Diptera systematics.

**Type material** (53 specimens). *Telostylus marshalli*, holotype ♂: (1) BORNEO: SARAWAK sw. Gunung Buda, 64 km s. Limbang, 4°13'N, 114°56'E, 8.–15.xi.1996 MT, S.L. Heydon & S. Fung [UCDC #1876] (Figs 48, 49). Paratypes: **Thailand.** 1♂ 1♀, 162822–162821 BanThamLod, 1 km N, 19°25'N 98°16'E, 725 m, 23.xi.2012, A. FREIDBERG [TAUI #981, #982]; 1♂, 7 km NW of Fang, Horticultural Experimental Station, 30.x–2.xi.1979, Zool. Mus. Copenhagen Exped. [ZMUC #1892]; 6♂ 5♀, 162315–162314, 160341, 160336, 160343, 160344, 160335,



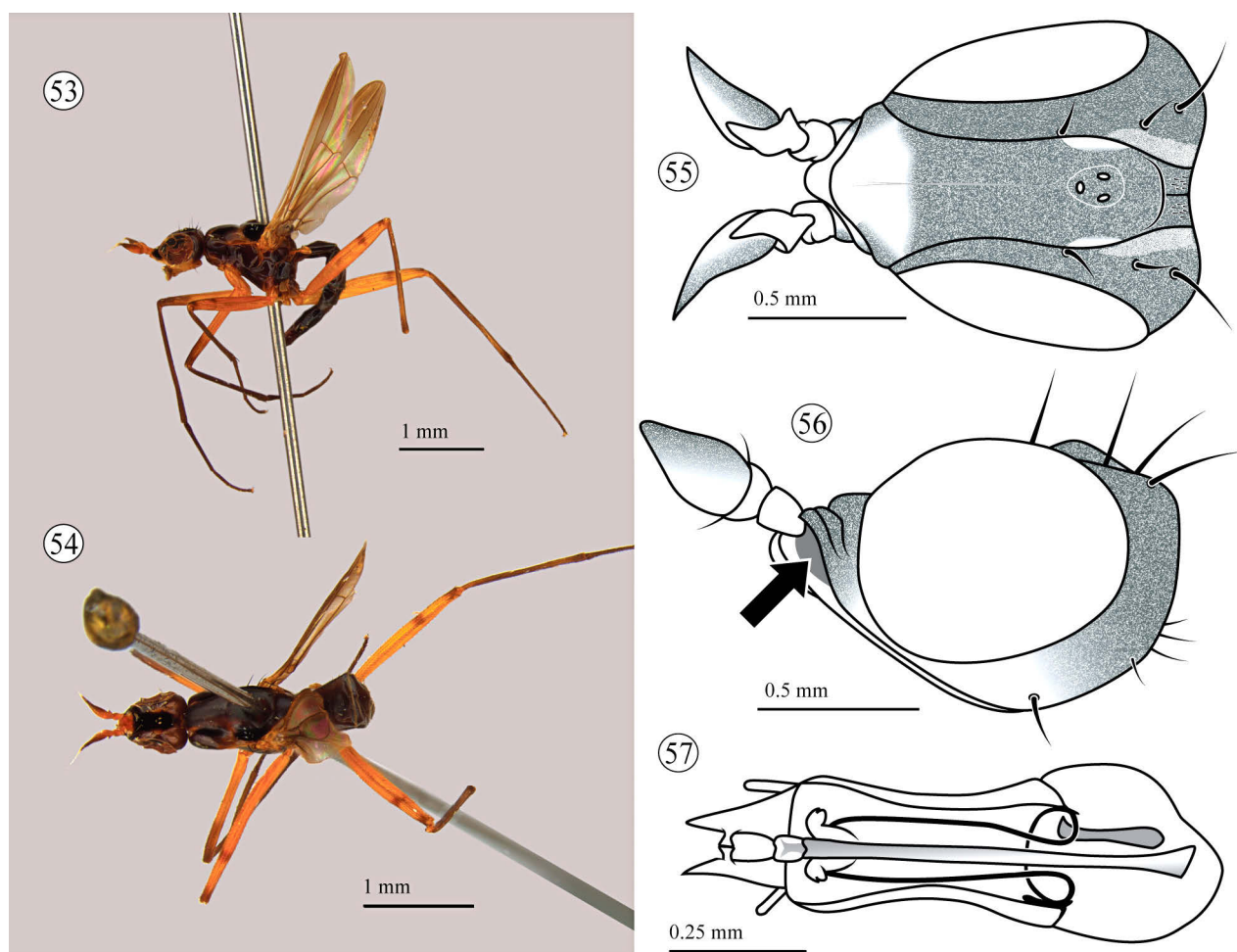
**Figs 48–52.** Morphology of *Telostylus marshalli* sp. n. 43–44 – male holotype: 48 – habitus lateral; 49 – habitus dorsal. 50–52 – specimen NHMUK #1900, male: 50 – head lateral; 51 – head dorsal; 52 – genitalia ventral.

160334, 160339, 160342, 160355 – Soppong, 6 km E, Rt. 1095, 19°30'N 98°17'E, 700 m, 20.xi.2012 – 1.–2.xi, A. FREIDBERG [TAUI #979, #980, #993, #986, #991, #990, #987, #988, #995, #992, #989]; 1♂, 161574. Soppong, Little Eden Guesthouse, Rt. 1095, 19°31'N 98°15'E, 600 m, 11.xi.2012, A. FREIDBERG [TAUI #978]; 1♀, (1) NW: Soppong, 8 km S, Rt. 1095, near Ban Man Rim, 28.–30.x.2002, A. FREIDBERG (2) SMNH-TAUI, 205969 [TAUI #1021]; 1♂ 1♀, (1) NW: Tam Pha Mon Cave, 4 km SE Soppong, 26.x.2002, A. FREIDBERG (2) SMNH-TAUI, 205960–205959– [TAUI #907, #1020]; 1♂, (1) NW: Tam Pha Mon Cave, 4 km SE Soppong, 26.x.2002, A. FREIDBERG (2) SMNH-TAUI, 205958 [TAUI #908]; 4♂ 1♀, (1) NW: Soppong, 5 km SE, 26.x.2002, A. FREIDBERG (2) SMNH-TAUI, 205925–205922, 205924, 205921, 205923 [TAUI #937, #940, #938, #941, #939]; 1♀, Thailand, Doi Suthep-Pui Nat. Park, Konthathan waterfall area, 600 m, 20.–27.x.1979, Zool. Mus. Copenhagen Exped. [ZMUC #1891]; 1♀, 161827. Near Kiew Lom Viewpoint, Rt. 1095, 19°27'N 98°18'E, 1600 m, 1600 m, 16.xi.2012, A. FREIDBERG [TAUI #983]; 1♀, (1) PhayaoProv. 850 m, Phu Sang NP, 10 km N Ban Huak (Rt 1093, km 36) 24.v.2004, Ilan Yarom, N19°42.97', E100°23.83' (2) SMNH-TAUI, 205927 [TAUI #935]; 3♀, S. KhaoLakNatPar. ToneChong Fah Fall, 1000 km N Phuket, 20.x.1993, F. KAPLAN & A. FREIDBERG (2)

SMNH-TAUI, 205889–205888, 205887– [TAUI #1000, #1001, #1002]; 1♀, S. KhaoSokNatRt. 401, 22.x.1993, F. KAPLAN & A. FREIDBERG (2) SMNH-TAUI, 205852 [TAUI #659]. **Malaysia.** 2♀, same data as holotype [UCDC #1874, #1875]; 2♂ 3♀, same data as Holotype, except 16.–21.xi; 22.–28.xi; 23.xi; November. [UCDC #1873, #1878, #1879, #1880, #1881]; 2♂ 1♀, (1) Georgetown, Botanic Gdns. 3.1.1973 (2) W. MALAYSIA: Penang, A.E. Stubbs, BMNH 1974–87 [NHMUK #1886, #1890, #1986]; 2♂, (1) SARAWAK: 4th Div. Niah, 9.–17.x.1976, 3.49'N, 113.46'E, P.S. Cranston, B.M. 1977–19 (2) Malaise in primary forest [NHMUK #1897, #1900]; 1♀, (1) SARAWAK: 1st. Div. Semongoh For. Res., 1.25'N, 110.17'E, 15.–19.xi.1976, P. S. Cranston, B.M. 1977–19 (2) Malaise over stream [NHMUK #1987]; 1♀, (1) 7 miles S of Klang, 28.xii.1972 (2) Selangor, A.E. Stubbs, BMNH 1974–87 [NHMUK #1984]; 2♀ 1♂, Selangor, Ulu Gombak, 800 ft, 10.xi.1983, J.W. Ismay, BM 1986–283 [NHMUK #1178, #1889, #1985]; 1♂ 1♀, SUMATRA: Sibolangit, forest, 3.vi.1985, J.W. Ismay, BM 1986–283 [NHMUK #1179, #1989]. **Singapore.** 1♂ 1♀, (1) Bukit Timah Nature Res. 20.xii.1972 (2) MALAYSIA, Singapore Is., A.E. Stubbs, BMNH 1974–87 [NHMUK #1885, #1988].

**Type locality.** Malaysia, Sarawak, Gunung Buda, 4°13'N, 114°56'E.





**Figs 53–57.** Morphology of *Telostylus niger*. 53, 54 – specimen USNM #1999, female: 53 – habitus lateral; 54 – habitus dorsal. 55–57 – specimen USNM #2002, male: 55 – head dorsal; 56 – head lateral; 57 – genitalia ventral.

**Distribution.** Thailand, Malaysia (Penang, Selangor, Sarawak), Singapore.

### *Telostylus niger* Bezzi, 1913

(Figs 53–57)

*Telostylus niger* Bezzi, 1913: 329.

**Diagnosis.** Thorax and abdomen blackish-brown, shiny (Figs 53, 54); anterior margin of frons concave (Fig. 55); frontal vitta mostly black, with anterior third and lateral area between posterior fronto-orbital seta and inner vertical seta yellow; frontal vitta with dense white pruinescence near anterior margin of fronto-orbital plate; fronto-orbital plate brown, shiny; median sclerite brown; supracervical setae black; lateral occiput brown and narrow; halter yellow; fore coxa yellow; mid and hind coxae brown; fore femur yellow, with distal third brown; mid and hind femora yellow, with tip and ring on distal third brown.

**Redescription. Male.** Body length 5.3 mm. **Head.** Slightly elongate anteriorly; mostly dark brown, with gena yellow near anteroventral margin of eyes towards parafacial. First flagellomere yellow at base, darkening dorsally. Pedicel and scape yellow. Face in front of the frontogenal suture forming lateral facial plate black and shiny (Fig. 56, indicated by the arrow). Occiput with dense white pruines-

cence dorsally and behind the head. **Thorax.** Slightly pruinose dorsally and yellowish on postpronotal lobe, notopleuron and transverse suture. Scutellum brown, sub shiny. Fore femur without anteroventral spine-like setae. Tibiae yellow. Wing infusate on apical third; length 5.0 mm; width 1.2 mm. Halter yellow. **Abdomen.** Syntergosternite 8 brown, shiny. Epandrium cylindrical, about 1.5–2 times longer than syntergosternite 8, reaching posterior half of abdominal segment 4 ventrally. Surstylus linear and short, length shorter than half of that of the cercus. Cercus lanceolate, length about half of that of the epandrium. Phallopodeme without marginal projections (Fig. 57).

**Female.** Body length 4.9–5.5 mm. Wing length 4.5–4.7 mm; width 1.2–1.3 mm. Oviscape blackish-brown, shiny, with brown tip; 2.5 times longer than its maximum width.

**Type material.** *Telostylus niger*, lectotype ♀: (1) Mt. Makiling, PI/Baker; (2) 5264, *Tylostylus niger* n. [MSNM] (Designated by Delfinado 1969: 168) (not examined).

**Additional material examined** (4 specimens). **Philippines.** 1♂, (1) Tawi-Tawi, Tarawakan, north of Batu Batu, 5, 22.oct.1961, Noona Dan Exp. 61–62 (2) *Telostylus niger* Bezzi, D.G. Steyskal'62 [USNM #2002]; 3♀, Tawi-Tawi, Tarawakan, north of Batu Batu, 5, 22.oct.1961, Noona Dan Exp. 61–62 [USNM #1999, #2000, #2001].

**Type locality.** Philippines, Luzon.

**Distribution.** Philippines.

**Remarks.** *Telostylus niger* was described by Bezzi (1913) from a female specimen from Philippines. The author associated *T. niger* with the Neotropical species, *T. vittatus* Cresson. *Telostylus vittatus* was synonymized under *Glyphidops filiosus* Fabricius by Hennig (1937) and, subsequently, revalidated by Sepúlveda et al. (2014) in *Glyphidops* Enderlein, 1922. The association between *T. niger* and *G. vittatus* suggested by Bezzi (1913) must have been a misinterpretation, since the author listed important characteristics for the identification of *T. niger*, clearly different from those of *G. vittatus*: head black with frons velvety black with a yellow spot above the antenna; scutellum black; halter pale yellow; legs yellow with a narrow brown ring; wing as in *T. maccus*, but infusate on apical third.

We did not have access to the type material of *T. niger*. However, the distinct morphology and the dark colour pattern of this species, along with the reference material determined by G. Steyskal, who studied material collected by Backer deposited in the USNM, apparently from the same collection as the holotype (Steyskal, 1966), allowed us to identify this species. *Telostylus niger* can be easily differentiated from the other dark species *T. inversus* by the colour pattern on the femora, which are mostly brown with yellow base in *T. inversus*, and yellow with brown ring on distal third in *T. niger*.

### ***Telostylus philippinensis* Cresson, 1926**

(Figs 10, 58–64)

*Telostylus philippinensis* Cresson, 1926: 258.

**Diagnosis.** Tegument mostly yellow; lateral occiput with two black spots (one on the point of insertion of outer vertical seta and one on ventral half, Fig. 58); vertex with ovate black spot between ocellar triangle and postocellar setae (Fig. 59); supracervical setae yellow; two thoracic presutural black spots laterally (one above postpronotal lobe and a smaller one near transverse suture, Figs 60, 62, 63); wide postsutural black spot in supra-alar area; scutellum yellow (Fig. 63); pleuron mostly yellow, except for a black spot covering the proepisternum; femora yellow, with brown tip, without brown rings (Fig. 62); abdomen yellow.

**Redescription. Female** (holotype). Body length 5.9 mm. Mainly yellow, partially black dorsally on head and thorax. **Head.** First flagellomere yellow at base; blackish-brown at apex. Scape and pedicel yellow. Anterior margin of frons concave. Frontal vitta yellow, with anterolateral black spot; with white pruinescence between anterior margin and anterior margin of fronto-orbital plate. Fronto-orbital plate mostly yellow, with anterior third brown. **Thorax.** Mostly yellow, shiny; without pruinose areas. Coxae yellow. Fore femur without anteroventral line of setae. Mid and hind femora without ventral spine-like setae. Tibiae brown. Wing without infuscation (Figs 62, 63); length 5.3 mm; width 1.2 mm. Halter stem yellow; knob brown. **Abdomen.** Yellow with dark median longitudinal stripe. Oviscape yellow, length twice its maximum width.

**Male.** Body length approximately 4.4–6.1 mm. Fore femur with anteroventral line of prominent setae. Synter-

gosternite 8 brownish-yellow, shiny. Epandrium yellow; 1.5 times longer than syntergosternite 8, reaching posterior half of abdominal segment 4 ventrally. Surstylus linear and narrow; length slightly longer than half of that of the cercus. Cercus tapering toward apex; one third the length of the epandrium. Phallapodeme with rounded marginal projection on distal third, near base of postgonite (Fig. 61).

**Variation.** Body length 4.8–6.8 mm. Wing length 4.6–5.9 mm; width 1.0–1.4 mm. Scape blackish dorsally. Black spot on occiput, near insertion of vertical seta, wide or narrow and very faint in some specimens. Particular variation was observed in specimens from Philippines as follows: presutural scutum with median blackish longitudinal stripe in two specimens from Laguna (Pagsanjan, #1008) and Negros Oriental (Amlan, #1186); posterior presutural brown spot diffuse in two specimens from Masbate (Mobo, #1961 and #1185) and absent in one from Negros Oriental (Amlan, #1967). Presutural spot may also be well defined and joined with anterior spot over postpronotal lobe by narrow dark brown stripe (Fig. 60). Abdomen yellow with brown median longitudinal stripe in specimens from Negros Oriental (Amlan, #1967) and Masbate (Mobo, #1181), or completely pale brown in one female specimen from northern Kalinga (Balbalan, #1883).

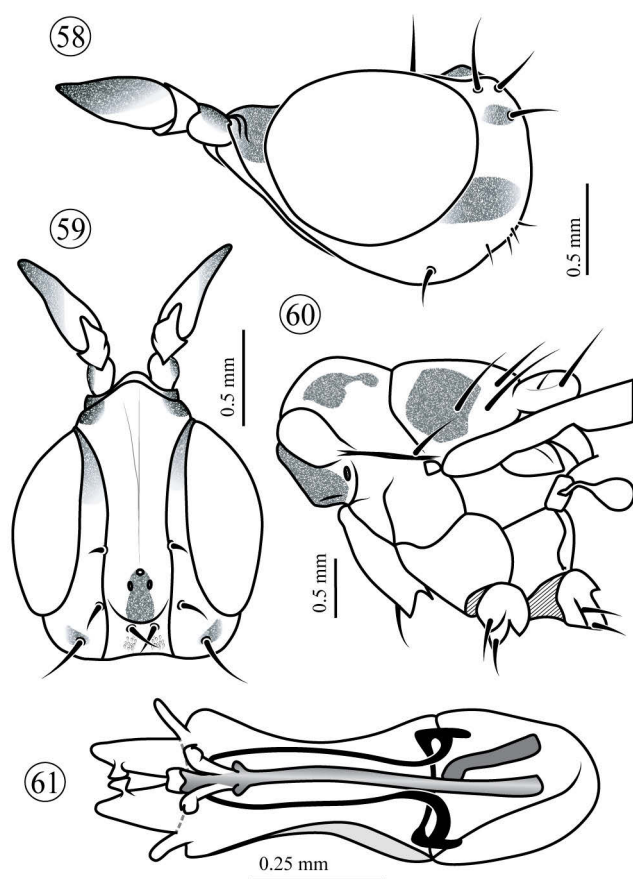
**Type material.** *Telostylus philippinensis*, holotype ♀: (1) Limay, Battan, PG; (2) RCMcGregor, collector; (3) Type No. 29456 U.S.N.M.; (4) Type, *Telostylus philippinensis*, B.T. Cresson, Jr.; (5) *Telostylus philippinensis*, B.T. Cresson, Jr.; (6) USNM 01384607. [USNM] (original designation) (Figs 62–64). Paratype ♀: same data as the holotype [USNM] (not examined).

**Additional material examined** (34 specimens). **Philippines.** 1♂ 3♀ 1?, (1) Luzon, Cavite Providence, Tagaytan, 8.x.2006, 14°6.11'N 120°55.58'E, A. FREIDBERG (2) SMNH-TAUI 205873, 205879, 205878, 205877, 205876 [TAUI #638, #1010 (dissected), #1011, #1012, #1013]; 4♂ 1♀ 1?, (1) Luzon, Laguna Province, Pagsanjan, 14°15.8'N 120°27.9'E, 15.–16.x.2006, A. FREIDBERG (2) SMNH-TAUI, 205874, 205883, 205882, 205881, 205880, 205875 [TAUI #637, #1006, #1007, #1008, #1009, #1014]; 3♂ 4♀, (1) Masbate, Mobo- Mapuyo. 2.–5.x.1980, T. Borromeo & R.I. Vane-Wright. B.M. 1980-458 (2) Mt Oas. 400–500 m [NHMUK #1181, #1182, #1184, #1185, #1960, #1961, #1962]; 2♂ 3♀, (1) Negros Oriental, Amlan Falls. 25.–28.viii.1980, R.I. Vane-Wright. B.M. 1980-458 [NHMUK #1186, #1904, #1966, #1967, #1968]; 1♂ 5♀, Leyte, Baybay, “Visca” grounds. 15.–22.viii.1980, R.I. Vane-Wright. B.M. 1980-458 [NHMUK #1905 (dissected), #1906, #1969, #1970, #1971, #1972]; 1♂, (1) Philipp. Atimonan, 16.8.1915 (2) <http://id.luomus.fi>, GV.32951, PHILLIPINES Luzon, Balbalan, 17.5N, 121.1E, 6.vii.1915, Boettcher, G. leg [LUOMUS #1882 (dissected)]; 1♀, (1) Philipp. Balbalan, 30.11.1917 (2) *Telostylus maccus* O.G. (3) <http://id.luomus.fi>, GV.32950, PHILLIPINES Luzon, Balbalan, 17.5N, 121.1E, 30.xi.1917, Boettcher, G. leg [LUOMUS #1883]. **Indonesia.** 1♂ 1?, (1) Sulawesi, Dumoga Bone National Park, Maze, 29.x.1985 (2) PROJECT WALLACE, BM 1985-10 [NHMUK #1630, #1963]; 1♂, Edwards Camp, 5.xii.1985, B.R. Pitkin (2) INDONESIA, Sulawesi Utara, Dumoga Bone N. P, Project Wallace [NHMUK #1964].

**Type locality.** Philippines, Luzon.

**Distribution.** Philippines, Indonesia\* (Sulawesi).

**Remarks.** *Telostylus philippinensis* is very similar to *T. decemnotatus* and *T. maccus* in general colour and mor-



**Figs 58–64.** Morphology of *Telostylus philippinensis*. 58, 59 – specimen TAU1 #637, female: 58 – head lateral; 59 – head dorsal. 60 – specimen NHMUK #1181, female: thorax lateral. 61 – specimen TAU1 #1010, male: genitalia ventral. 62–64 – female holotype: 62 – habitus lateral; 63 – habitus dorsal; 64 – labels.

phology, but can be readily differentiated by the pattern and number of black spots and blackish areas on the scutum and pleuron. In the description of this species, Cresson (1926) differentiated *T. philippinensis* from *T. decemnotatus* by the absence of katepisternal black spots, and from *T. binotatus* by the presence of supra-alar and proepisternal black spots, but then drew attention to a possible synonymy between these species. While it is true that *T. binotatus*, *T. decemnotatus*, *T. philippinensis* and *T. maccus* are morphologically similar, *T. binotatus* is more similar to *T. latibrachium* and the new species *T. marshalli* in lacking the black postsutural and pleural spots.

#### ***Telostylus trilineatus* de Meijere, 1910**

(Figs 4, 5, 65–84)

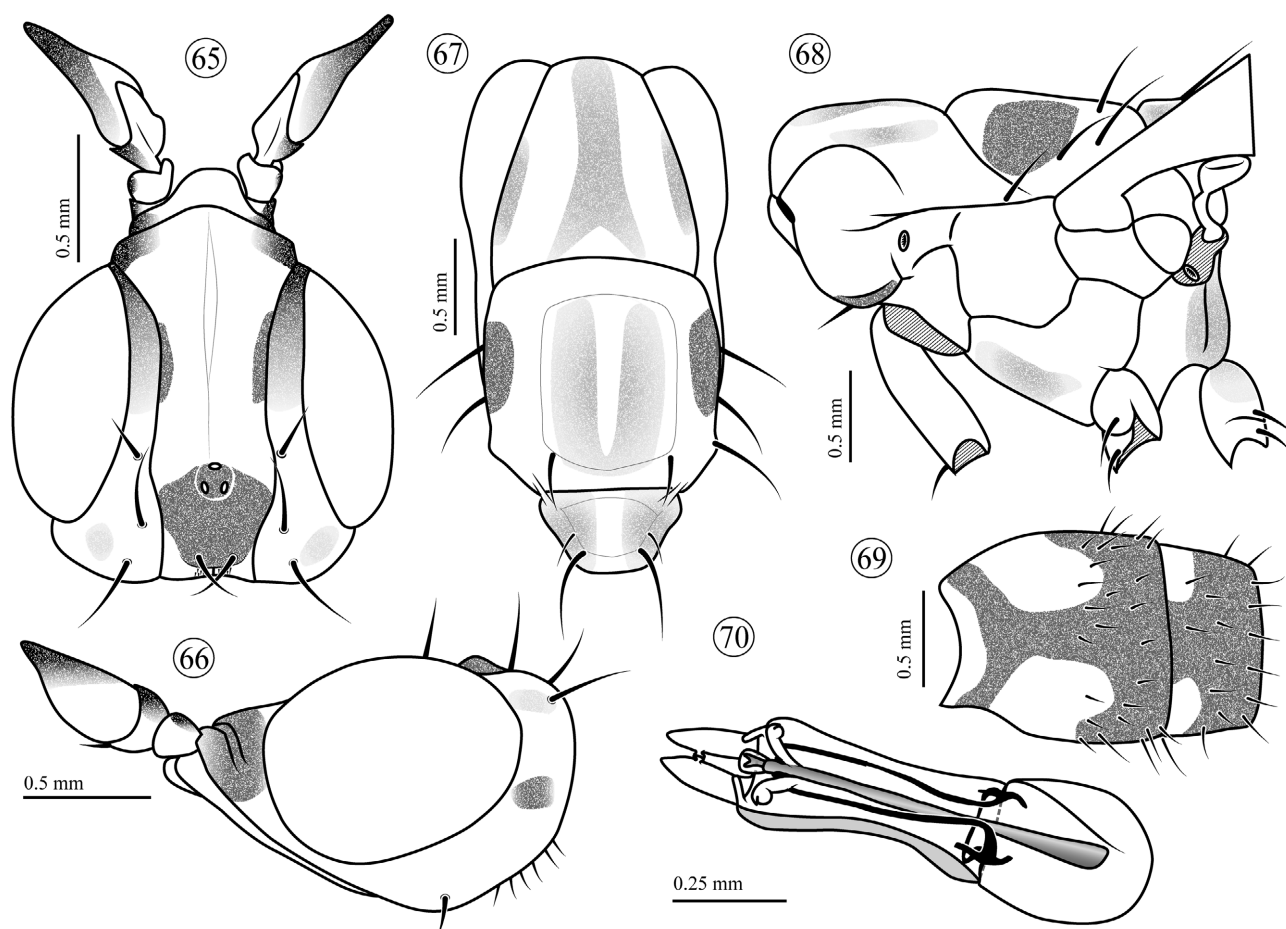
*Telostylus trilineatus* de Meijere, 1910: 113.

**Diagnosis.** Tegument mostly dark yellow; frontal vitta yellow with black line around fronto-orbital plate between anterior margin and level of posterior fronto-orbital seta; vertex black between ocellar triangle and postocellar setae (Fig. 65); lateral occiput with one narrow ovate brown spot on ventral half (Fig. 66); supracervical setae black; presutural scutum without spots (Fig. 67); one black spot laterally between transverse suture and supra-alar seta (Fig. 68); scutellum blackish-brown laterally, with wide median yellow stripe; halter yellow; mid and hind femora with brown ring on distal third.

low stripe; halter yellow; mid and hind femora with brown ring on distal third.

**Redescription. Male** (lectotype). Body length 6.5 mm. Dark yellow, partially blackish dorsally on head and thorax. **Head.** First flagellomere yellow basally; blackish-brown distally. Scape and pedicel yellow. Anterior margin of frons concave and wide (Fig. 65). Frontal vitta yellow, with anterolateral black spot; with white pruinescence between anterior margin and anterior margin of fronto-orbital plate. Fronto-orbital plate brown on anterior third. **Thorax.** Dark yellow. Coxae dark yellow. Femora yellow, with brown tip. Fore femur with diffuse brown ring on distal third. Fore femur with short anteroventral setae; slightly increasing in size toward apex. Mid and hind femora with brown ring on distal third. Tibiae brown. Wing slightly infusate on apical third; length 4.0 mm; width 1.0 mm. **Abdomen.** Blackish-brown, with lateral yellow spot on syntergite 1+2 (Fig. 69). Tergite 6 pale brown. Syntergosternite 8 yellow, shiny. Epandrium dark yellow; slightly longer than syntergosternite 8, reaching posterior half of abdominal segment 4 ventrally. Surstylus linear and short, shorter than half of cercus. Cercus tapering toward apex; length slightly shorter than half of that of the epandrium. Phallapodeme with rounded marginal projection on distal third, between distal margin and base of postgonite (Fig. 70).





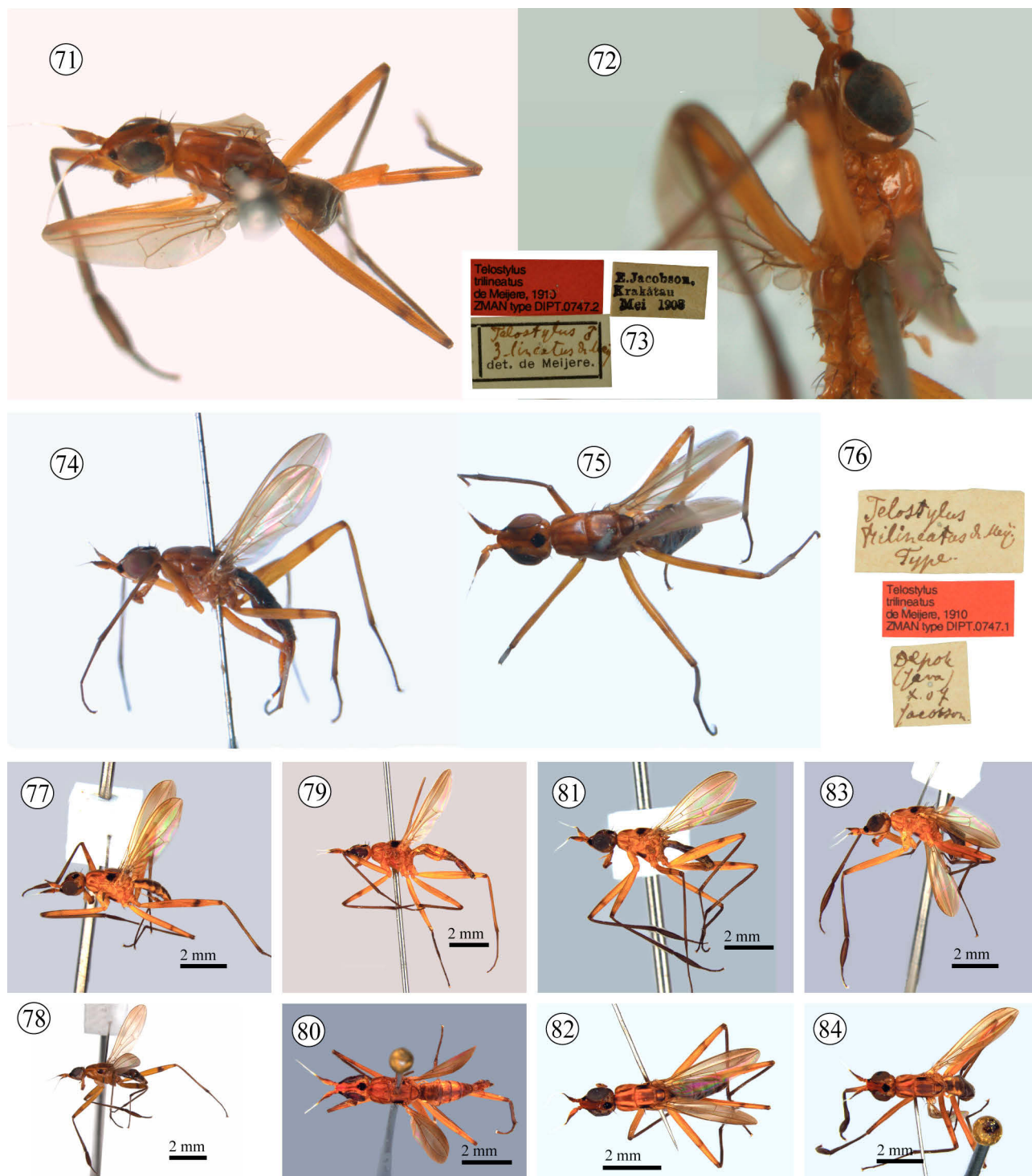
**Figs 65–70.** Morphology of *Telostylus trilineatus*. 65–82 – specimen TAU1 #661: 80 – head dorsal; 81 – head lateral; 82 – thorax dorsal. 83–84 – specimen NHMUK #1887: 83 – thorax lateral; 84 – sintergite 1+2 and tergite 3 dorsal. 85 – specimen NHMUK #1907, genitalia ventral.

**Variation.** Body length 5.5–7.6 mm. Wing length 4.0–5.7 mm; width 1.0–1.5 mm. Tegument with variable tones of dark yellow (Figs 71–84); ventral proepisternal brown stripe very pale or absent; median yellow scutellar stripe narrow. Darkest spots are present on specimens from India, with black spots on thorax wider and dorsal blackish stripes wider and darker (Figs 77, 78). Proepisternum dark yellow, with ventral brown stripe. Katepisternum with ventral brown spot on specimens from Thailand (Figs 81–84), which is usually darker on specimens from India (Fig. 77), and varying from pale to absent on specimens from Philippines (Fig. 79). Additionally, on two specimens from Balabac (#1977, #1997) occipital ovate spot on ventral half absent and neither of the two specimens have brown ventral stripe on proepisternum (Fig. 79). Scutellum yellow on specimens from Philippines (Fig. 80). Halter stem white; knob brown. Abdomen with yellow lateral stripe on syntergite 1+2 extending posteriorly to tergite 6 on two specimens from India (#669 and #680; Fig. 77) and several specimens from Philippines and Palawan (#1975, #1993); abdomens of specimens from Philippines completely yellow, Balabac (#1977, #1997).

**Female.** Same as male, differing in having 5.8–6.6 mm body length. Oviscape yellow to yellowish-brown, darkening towards apex with black tip; length almost three times maximum width.

**Type material.** *Telostylus trilineatus*, lectotype (here designated) ♂: (1) E. Jacobson, Krakatau, Mei 1908; (2) *Telostylus 3-lineatus* det. de Meijere; (3) *Telostylus trilineatus* de Meijere, 1910, ZMAN type DIPT.0747.2 [RMNH]. Paralectotype ♀ (photographs examined): (1) *Telostylus trilineatus* de Meijere, Type; (2) Depok (Java), x.07, Jacobson; (3) *Telostylus trilineatus* de Meijere, 1910, ZMAN type DIPT.0747.1 [RMNH] (Figs 71–76).

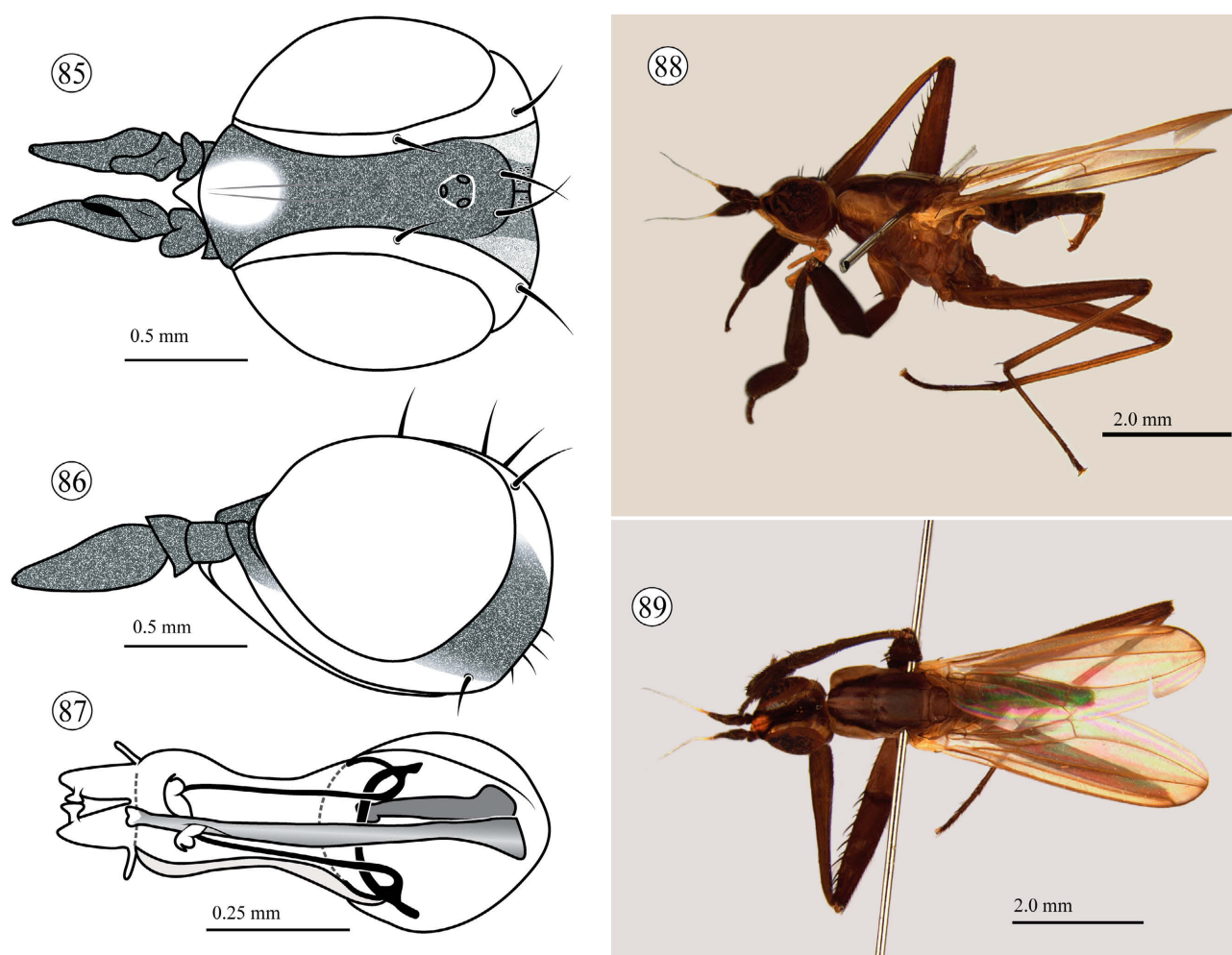
**Additional material examined** (45 specimens). **India.** 3♂, (1) Mizoram, Phaibawkkawn, 40kmE Aizawl, 10.xi.2002, A. FRIEDBERG (2) SMNH TAU1 — 205841, 205840, 205839 — [TAUI #668, #669, #670]; 6♂ 3♀, Meghalaya, Nongpoh Forest, 7.ix.2002, A. FRIEDBERG (2) SMNH TAU1 — 205838, 205836, 205833, 205832, 205843, 205831, 205830, 205827, 205828 — [TAUI #671, #673, #676, #677, #678, #679, #680, #682, #683]; 1♂, Tenmalai 500-800', Travancore, S. India, 11-17.x.38, B.M.C.M. Expdn. to S. India, Sept-Oct., 1938 [NHMUK #1907 (dissected)]; 1♀, Muthikolam 3,000', Coimbatore Dt, S. India, 23-26.ix.38, B. M. -C. M. Expdn. to S. India, Sept-Oct., 1938 [NHMUK #1983]. **Thailand.** 1♀, Doi Suthep-Pui, natn. Park, Konthathan, waterfall area, 600m, 20-27.x.1979, Zool. Mus. Copenhagen Exped. [ZMUC #1891]; 4♂ 3♀, (1) S. KhaoSokNat, Rt. 401, 22.x.1993, F. KAPLAN & A. FRIEDBERG (2) SMNH-TAU1 — 205854, 205853, 205851, 205851, 205849, 205848, 205847 — [TAUI #657, #658, #660, #661, #662, #663, #664]; 3♂ 1♀, (1) South Khlong Ngae, 40kmS Hat Yai, 23.x.2002, A. FREIDBERG (2) SMNH-TAU1 — 205964, 205963, 205962, 205961 — [TAUI #1016 (dissected), #1017, #1018, #1019]. **Malaysia.** 1♀, (1) Yan, S of Yan Kechil, 2.i.1973 (2) W. MALAY-



**Figs 71–84.** Morphology of *Telostylus trilineatus*. 71–73 – male lectotype: 71 – habitus laterodorsal; 72 – head and thorax ventral; 73 – labels. 74–76 – female paralectotype: 74 – habitus lateral; 75 – habitus dorsal; 76 – labels. 77–84 – morphological variation of *T. trilineatus*: 77 – specimen TAU #680, habitus lateral; 78 – specimen TAU #682, habitus lateral; 79–80 – specimen ZMUC #1977: 79 – habitus lateral; 80 – habitus dorsal; 81–82 – specimen TAU #1018: 81 – habitus lateral; 82 – habitus dorsal; 83–84 – specimen TAU #661: 83 – habitus lateral; 84 – habitus dorsal.

SIA: Kedah, A. E. Stubbs, BMNH 1974–87 [NHMUK #1982]; 1♀, (1) Btwn Pokok Sena and Kuala Nerang, 1.i.1973 (2) W. MALAYSIA: Selangor, BMNH 1974–87 [NHMUK #1979]; 1♂ 1♀, (1) Gentig Tea Estate, Gentig Sembah, forest 2000 feet, 24–27.xii.1972 (2) W. MALAYSIA: Selangor, A. E. Stubbs, BMNH 1974–87 [NHMUK #1887, #1978]; 1♀, Btwn Pokok Sena and Kuala Nerang, 1.i.1973 (2) W. MALAYSIA: Selangor, BMNH 1974–87 [NHMUK #1981]; 1♀, (1) Bukit Tinggi forest

1300ft, 26.xii.1972 (2) W. MALAYSIA, Pahang, A. E. Stubbs, BMNH 1974–87 [NHMUK #1980]. **Philippines.** 1♂ 1♀, Balabac, Dalawan Bay, 13.oct.1961, Noona Dan Exp. 61–62 [ZMUC #1977, #1997]; 5♂, Palawan, Mantalingajan, Pinigisan, 600 m, — 31.August.1961; 1.Sept.1961; 7.sept.1961; 28.sept.1961 — Noona Dan Exp. 61–62 [ZMUC #1894, #1895, #1995, #1996, #1998]; 1♂, (1) Palawan, Mantalingajan, Pinigisan 600 m, 23 sept.1961, Noona Dan Exp. 62–62 (2) noondani (hand written)



**Figs 85–89.** Morphology of *Telostylus whitmorei* sp. n., male holotype: 85 – head dorsal; 86 – head lateral; 87 – genitalia ventral; 88 – habitus lateral; 89 – habitus dorsal.

[ZMUC #1973]; 1♂, (1) Palawan, Mantalingajan, Pinigisan 600 m, 1 sept.1961, Noona Dan Exp. 62-62 (2) Caught by light from Petromax [ZMUC #1974]; 1♀, (1) Palawan, Mantalingajan, Pinigisan 600 m, 20 sept.1961, Noona Dan Exp. 62-62 (2) Caught by Malaise trap inside forest [ZMUC #1975]; 1♂, (1) Palawan, Mantalingajan, Pinigisan, 600 m, 28.sept.1961, Noona Dan Exp. 61-62 (2) Caught in Malaise-traps outside forest [ZMUC #1993]; 1♂, (1) Palawan, Brookes Point, Uring Uring, 17.August.1961, Noona Dan Exp. 61-62 (2) delicatus [ZMUC #1893]. 1♂, Palawan, Brookes Point, Uring Uring, 21.August.1961, Noona Dan Exp. 61-62 (2) caught in Malaise-trap [ZMUC #1976 (dissected)].

**Type locality.** Indonesia, Sumatra, Lampung.

**Distribution.** India, Thailand, Malaysia\* (Kedah, Selangor, Pahang), Indonesia (Sumatra, Java), Philippines\* (Luzon).

**Remarks.** We had the opportunity to study males and females of *T. trilineatus* from several localities in the Oriental Region and conclude that it is one of the most variable species of *Telostylus* in terms of colouration. Two structures in particular vary greatly in colour in *T. trilineatus*: the anterior portion of the katepisternum and abdomen. The variation in the black spot on the katepisternum is only comparable with the variation in the spot on the meron and mediotergite of *T. maccus*. In the case of *T. trilineatus* from different localities, it is possible to track these differences

in the colouration of pleural structures, which vary from well-defined to pale and diffuse on continental specimens from India and Thailand, or varying from pale to absent on specimens from Indonesia and Philippines.

***Telostylus whitmorei* Sepúlveda & de Carvalho, sp. n.**

(Figs 85–89)

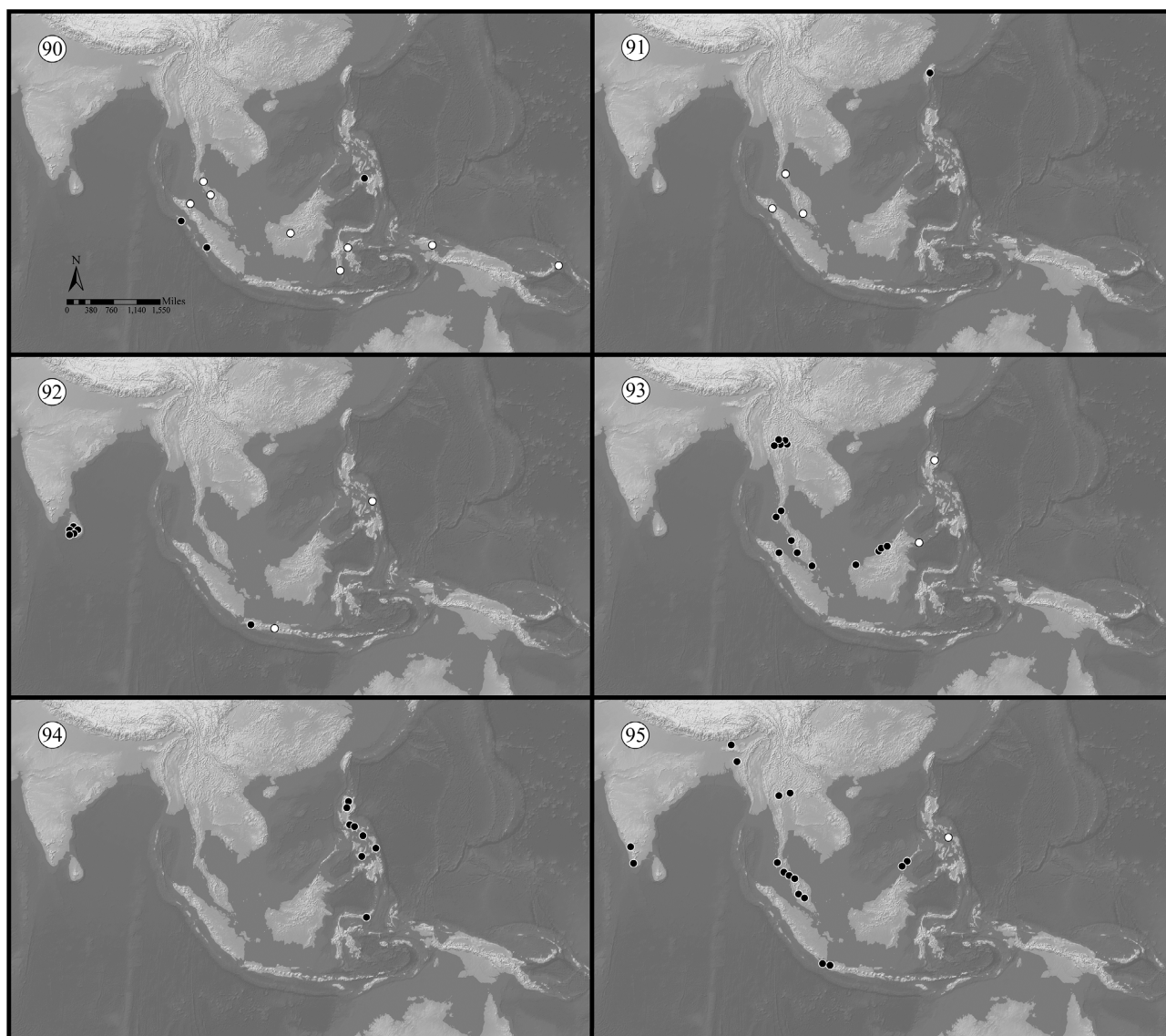
ZooBank taxon LSID:

16690F40-002D-4487-898F-7DA8A531B652

**Diagnosis.** Tegument mostly brown; anterior margin of frons wide and concave (Fig. 85); frontal vitta mostly black, except for circular yellow spot near anterior margin; fronto-orbital plate yellow; supracervical setae black; lateral occiput narrow, with dorsal half yellow and ventral half brown; thorax and abdomen brown, slightly pruinose; thorax with dorsal white pruinescence; proepisternal lobe and notopleuron yellow; halter yellow; femora brown; fore tibia brown; mid and hind tibiae yellow.

**Description. Male** (holotype). Body length 5.3 mm. Wing length 4.3 mm; width 1.2 mm. **Head.** Rounded, not elongate anteriorly (Figs 85, 86); mostly dark brown. Gena yellow toward parafacial. Occiput yellow dorsally. First flagellomere dark brown; three times the length of





**Figs 90–95.** Distribution of the species of *Telostylus*. 90 – *T. babiensis* (black circle), *T. binotatus* (white circle); 91 – *T. decemnotatus* (black circle), *T. inversus* (white circle); 92 – *T. latibrachium* (black circle), *T. maccus* (white circle); 93 – *T. marshalli* sp. n. (black circle), *T. niger* (white circle); 94 – *T. philippinensis* (black circle); 95 – *T. trilineatus* (black circle), *T. whitmorei* sp. n. (white circle).

the scape. Scape and pedicel dark brown. Face in front of the frontogenal suture forming facial plate yellow, shiny. **Thorax.** Brown, sub-shiny; with slight dorsal pruinescence; yellowish-brown on postpronotal lobe, notopleuron and transverse suture. Scutellum brown, pruinose dorsally. Coxae brown. Fore femur with long anteroventral spine-like setae. Wing without infuscation on distal third. **Abdomen.** Blackish-brown, shiny. Syntergosternite 8 yellowish-brown. Epandrium cylindrical, subequal to syntergosternite 8, reaching anterior half of abdominal segment 5 ventrally. Surstylus linear, length shorter than half of that of the cercus. Cercus ovate, tapering toward apex; length one third that of the epandrium. Phallapodeme without marginal projections (Fig. 87).

**Variation.** Wing length 4.3–4.7 mm; width 1.2–1.3 mm.

**Female.** Body length 4.9–5.5 mm. Fore femur without anteroventral spine-like setae. Oviscape brown, shiny; three times longer than maximum width.

**Etymology.** The species name honours Dr. Daniel Whitmore (Staatliches Museum für Naturkunde Stuttgart, SMNS), in acknowledgement of his support of our studies on Neriidae, which made this publication possible.

**Type material.** (4 specimens). *Telostylus whitmorei*, holotype ♂: (1) Philippines: Masbate, Mobo-Mapuyo. 2.–5.ix.1980, T. Borromeo & R.I. Vane-Wright, B.M. 1980-458; (2) Mt. Oac. 400–500 m [NHMUK #1990] (Figs 88, 89). Paratypes 2♂ 1♀, same data as the holotype [NHMUK #1901, #1902, #1991].

**Type locality.** Philippines, Masbate, Mobo, Mapuyo.

**Distribution.** Philippines.

**Remarks.** *Telostylus whitmorei* sp. n. is one of the most distinct species in the genus. Morphologically similar to other dark species, *T. inversus* and *T. niger*, this new species can be easily differentiated by yellow bands contrasting with the dark brown tegument. Moreover, *T. whitmorei* is the only species of *Telostylus* with sub shiny tegument and a yellow fronto-orbital plate, and males have long anteroventral setae on the fore femur.

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## REFERENCES

- ACZÉL M.L. 1955: Neriidae von Indonesien. — *Treubia* **23**: 19–40.
- ACZÉL M.L. 1961: A revision of American Neriidae (Diptera, Acalyptratae). — *Stud. Entomol.* **4**: 257–346.
- BEZZI M. 1913: Studies in Philippine Diptera. I. — *Philipp. J. Sci. (D)* **8**: 305–332.
- BIGOT J.-M.-F. 1859: Dipterorum aliquot nova Genera. — *Rev. Mag. Zool.* **11**: 305–315.
- BIGOT J.-M.-F. 1881: XXVII – Notes et corrections. — *Ann. Soc. Entomol. Fr.* **1**: 372–374.
- BRYAN E.H., JR. 1932: Micropezidae (Diptera) from the Indo-Pacific Region. — *Proc. Hawaii. Entomol. Soc.* **8**: 33–34.
- CRESSON E.T., JR. 1926: Descriptions of new genera and species of Diptera (Ephydriidae and Micropezidae). — *Trans. Am. Entomol. Soc.* **52**: 249–274.
- CUMMING J.M. & WOOD D.M. 2017: Adult morphology and terminology. In Kirk-Spriggs A.H. & Sinclair B.J. (eds): *Manual of Afrotropical Diptera, Vol. 1*. South African National Biodiversity Institute, Pretoria, pp. 89–133.
- CZERNY L. 1932: Tyliden und Neriiden des zoologischen Museums in Hamburg (Dipt.). — *Stett. Entomol. Ztg.* **93**: 267–302.
- DELFINADO M.D. 1969: Some type specimens of Philippine Diptera described by M. Bezzi in the Museo Civico di Storia Naturale, Milano. — *Pac. Insects* **11**: 165–173.
- DE JONG H. 2000: *The Types of Diptera Described by J.C.H. de Meijere*. Backhuys, Leiden, 271 pp.
- DE MEIJERE J.C.H. 1910: Studien über südostasiatische Dipteren. IV. Die neue Dipterenfauna von Krakatau. — *Tijdschr. Entomol.* **53**: 58–194.
- DE MEIJERE J.C.H. 1916: Fauna Simalurensis – Diptera. — *Tijdschr. Entomol. (Suppl.)* **58**: 1–63.
- ENDERLEIN G. 1922: Klassifikation der Micropeziden. — *Arch. Naturgesch. (A)* **88**: 140–229.
- EVENHUIS N.L. 2019: *The Insect and Spider Collections of the World Website*. URL: <http://hbs.bishopmuseum.org/codens/>.
- HENDEL F. 1913: H. Sauter's Formosa-Ausbeute. Acalyptratae Musciden (Dipt.) II. — *Suppl. Entomol.* **2**: 77–112.
- HENNIG W. 1937: Übersicht über die Arten der Neriiden und über die Zoogeographie dieser Acalyptraten-Gruppe (Diptera). — *Stett. Entomol. Ztg.* **98**: 240–280.
- KOCH N.M., SOTO I.M. & RAMÍREZ M.J. 2014: First phylogenetic analysis of the family Neriidae (Diptera), with a study on the issue of scaling continuous characters. — *Cladistics* **31**: 1–24.
- OSTEN-SACKEN C.R. 1882: Diptera from the Philippine Islands brought home by Dr. Carl Semper [Heft II]. — *Berl. Entomol. Z.* **26**: 187–252.
- OVSHINNIKOVA O.G. & GALINSKAYA T.V. 2017: The male abdominal, genital and pregenital sclerites and musculature in *Neria commutata* (Czerny, 1930) (Diptera, Micropezidae). — *Entomol. Rev.* **97**: 282–287.
- PAPP L., MERZ B. & FÖLDVÁRI M. 2006: Diptera of Thailand: A summary of the families and genera with references to the species representations. — *Acta Zool. Acad. Sci. Hung.* **52**: 97–269.
- PITKIN B.R. 1989: Family Neriidae. In Evenhuis N.L. (ed.): *Catalog of the Diptera of the Australasian and Oceanian Regions*. Bishop Museum, E.J. Brill, Honolulu, pp. 468–469.
- SEPÚLVEDA T.A. & DE CARVALHO C.J.B. 2019: *Chaetonerius* Hendel (Neriidae: Diptera) from the East African islands with description of four new species from Madagascar and the Comoros. — *Zootaxa* **4567**: 130–146.
- SEPÚLVEDA T.A., WOLFF M.I. & DE CARVALHO C.J.B. 2014: Revision of the New World genus *Glyphidops* Enderlein (Diptera: Neriidae). — *Zootaxa* **3785**: 139–174.
- STEYSKAL G.C. 1966: Notes on flies captured in treetops in Malaya (Diptera: Empididae, Neriidae, Platystomatidae, Sepsidae, Muscidae). — *Proc. U. S. Natl. Mus.* **120**: 1–16.
- STEYSKAL G.C. 1977: Family Neriidae. In Delfinado M.D. & Hardy D.E. (eds): *A Catalog of the Diptera of the Oriental Region, Vol. III, Suborder Cyclorhapha (Excluding Division Aschiza)*. University Press of Hawaii, Honolulu, pp. 8–11.
- WALKER F. 1860: Catalogue of the dipterous insects collected at Makassar in Celebes, by Mr. A.R. Wallace, with descriptions of new species [concl.]. — *J. Proc. Linn. Soc.* **4**: 145–172.
- WULP F.M. VAN DER 1896: Aanteekeningen betreffende Oost-Indische Diptera [Notes on Diptera of the East Indies]. — *Tijdschr. Entomol.* **39**: 95–114, Pl. II. [in Dutch].

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