

## A new species of *Prionosolus* JÄCH & KODADA from Palawan, Philippines (Coleoptera: Elmidae)

H. FREITAG

### Abstract

*Prionosolus palawanus* sp.n. (Coleoptera: Elmidae) is described from Palawan Island, Philippines. The new species is characterised by distinct lateral aedeagal protuberances. Its inter-population variability is briefly discussed.

**Key words:** Coleoptera, Elmidae, Macronychini, *Prionosolus*, Palawan, Philippines, Southeast Asia, AQUA Palawana, taxonomy, water beetles.

### Introduction

The riffle beetle genus *Prionosolus* JÄCH & KODADA, 1997 was known so far only from three islands in Southeast Asia: Luzon, Borneo and Siberut (see JÄCH & KODADA 1997). Three species, *P. bobae* JÄCH & KODADA, 1997, *P. ciampori* JÄCH & KODADA, 1997 and *P. venatorcapitis* JÄCH & KODADA, 1997, have been described.

Field work in the course of the AQUA Palawana program yielded a new species from Palawan Island, which is described below.

### Material and methods

All specimens of the new species described herein were collected by the author in the St. Paul National Park, Puerto Princesa City, Palawan, Philippines (Fig. 1). Specimens of the new species described herein were collected at the following sites:

CR2: 10°09'47"N, 118°50'37"E; Cabayugan District; Cabayugan River, near Nagsatayan Creek, S of Martarpi; 37 m a.s.l., headwater in secondary forest.

CR4: 10°09'28"N, 118°53'26"E; Cabayugan District; Cabayugan River, near "Inflow" into subterranean course, S of Manturon; 28 m a.s.l., small river in primary forest.

LS4: 10°09'29"N 118°53'30"E; Cabayugan District; tributary of Cabayugan River near "Inflow" into subterranean course, SE of Manturon; 28 m a.s.l., karst spring in primary forest.

More detailed information on the collecting sites in the National Park were published by FREITAG (2004, 2005).

The types of *Prionosolus bobae*, *P. ciampori* and *P. venatorcapitis*, all deposited in NMW, were examined.

The morphological terminology used herein follows mainly KODADA & JÄCH (2005).

### Depositories:

MTD Museum für Tierkunde Dresden, Germany

NMW Naturhistorisches Museum Wien, Austria

UPLB University of the Philippines Los Baños, Museum of Natural History, Entomological Collection, Philippines

## Abbreviations of morphological characteristics:

CL	Calculated length (PL + EL)	ID	Interocular distance
EL	Elytral length	MW	Maximum pronotal width
EW	Elytral width	PL	Pronotal length
HW	Head width		

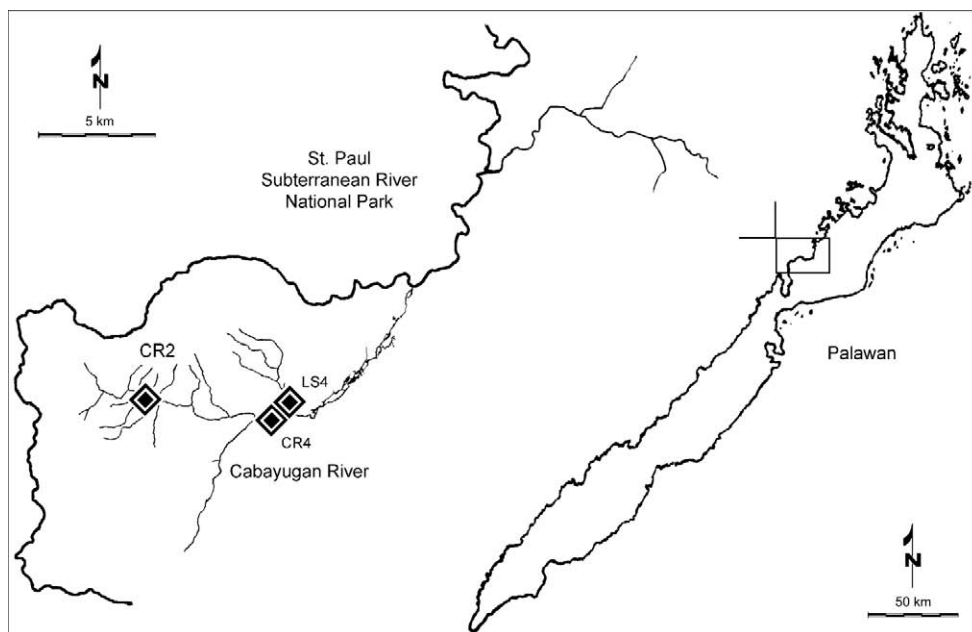


Fig. 1: Distribution of collecting sites of *Prionosolus palawanus* in the St. Paul National Park, Palawan, Philippines.

***Prionosolus palawanus* sp.n.**

**TYPE LOCALITY:** Cabayugan River, Puerto Princesa City, central Palawan, Philippines.

**TYPE MATERIAL:** **Holotype** ♂ (NMW): "PHIL.: Palawan, P. Princesa S Manturon, Cabayugan R. 'Inflow' 10°09'28"N 118°53'26"E 25.5.2001, leg. Freitag (CR4)D[rift]", dissected (terminal parts of abdomen and aedeagus glued separately). **Paratypes:** 1 ♂ (MTD), 2 ♀♀ (NMW, UPLB): "PHIL.: Palawan, P. Princesa S Martarpi, Cabayugan R. 10°09'47"N 118°50'37"E 15.6.2001, leg. Freitag (CR2)D[rift]"; 1 ♂, mutilated (UPLB), 1 ♀ (MTD), 1 ex., mutilated, terminal parts of abdomen incl. genitalia missing (NMW): "PHIL.: Palawan, P. Princesa, Cabayugan SE Manturon, Karst spring 10°09'29"N 118°53'30"E 25.5.2001, leg. Freitag (LS4)D[rift]".

**DESCRIPTION:** Body 1.2–1.3 mm long (CL), 0.53–0.57 mm broad (EW), 2.3 times as broad as wide (CL/EW). Body form oblong.

**Colouration** (Fig. 2) entirely gold to dark brown (frons, clypeus, and pronotum in some specimens slightly darker than rest of the body).

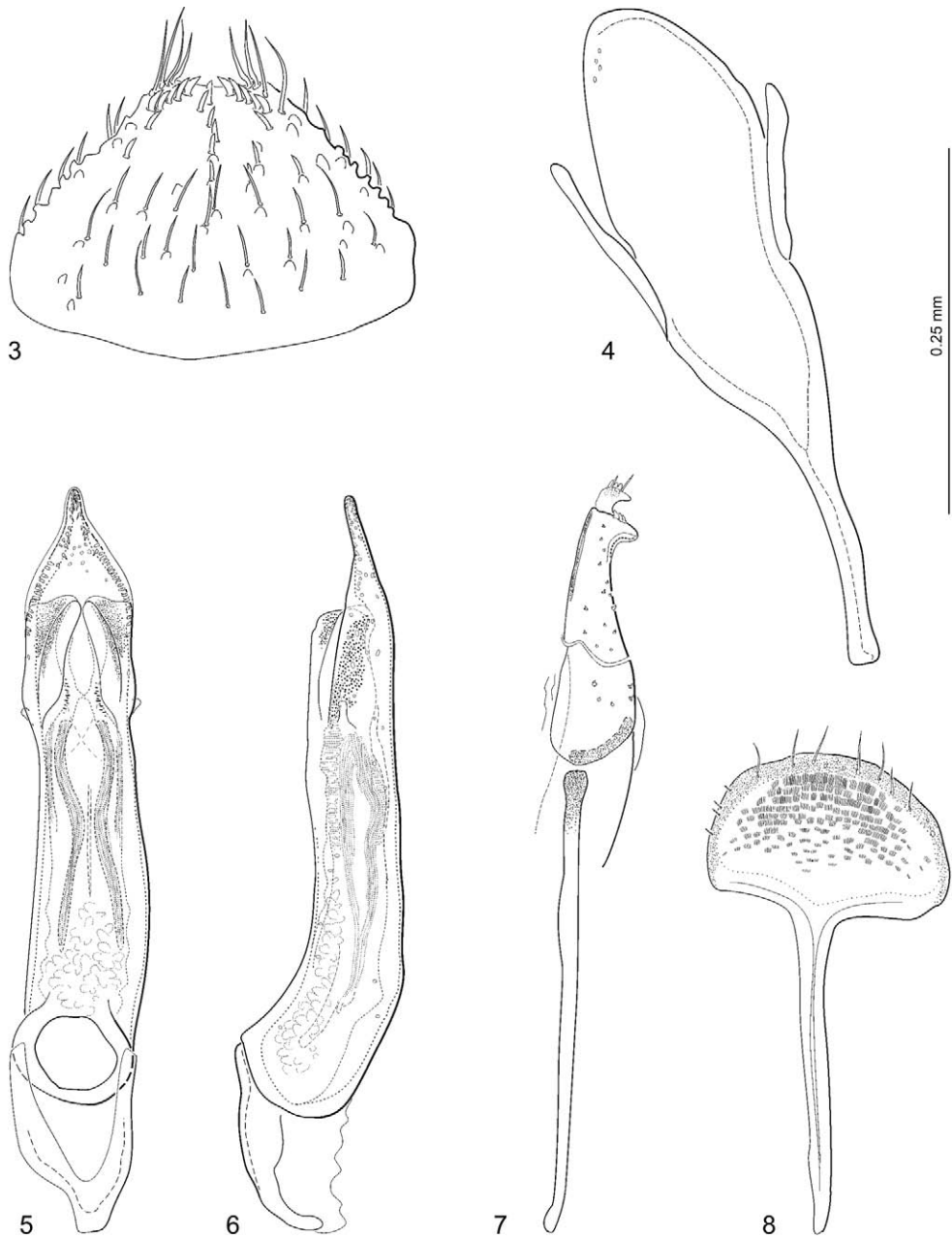
Plastron well developed between carina of 5<sup>th</sup> elytral interval and lateral margin, and on pronotum (except basal margin); hardly discernible with stereoscopic microscope in other areas.



Fig. 2: Habitus of *Prionosolus palawanus*, holotype.

Head 0.26–0.29 mm broad (HW); ID 0.11–0.14 mm; partly retractable; frons and clypeus finely punctate, moderately densely pubescent; frontoclypeal suture slightly arcuate, indistinctly impressed. Eyes slightly protruding. Antennae very short, last segment distinctly enlarged.

Pronotum 0.40–0.42 mm long (PL), 0.43–0.47 mm broad (MW), slightly wider than long (PL/MW), widest at about posterior 0.4, narrower than elytra, anteriorly moderately attenuate; anterior margin medially straight; anterior angles acute, produced ventro-cranially; posterior margin distinctly bisinuate, posterior angles acute; lateral margin crenulate, arcuate; sublateral pronotal carinae vestigial; pronotal disc evenly vaulted; median groove very narrow and faintly developed, pronotal surface densely micropunctate except prescutellary area; moderately densely covered with solitary setae, hypomeron micropunctate. Prosternum long, almost flat; prosternal process subtriangular, posterior margin roundly truncate.



Figs. 3–8: *Prionosolus palawanus*; 3) male ventrite 5; 4) male sternite IX; 5–6) aedeagus in ventral and lateral view; 7) ovipositor in ventral view (right half); 8) male sternite VIII.

Scutellum oval, glabrous. Elytra roundly elongate, strongly convex dorsally, 0.85–0.90 mm long (EL), ca. 1.5–1.6 times as long as wide (EL/EW), posteriorly acuminate, apices more or less conjointly rounded; with seven longitudinal, not distinctly impressed rows of punctures, punctures quite regular in rows 1–2, less regular in lateral rows; punctures large and deeply impressed; interstices and intervals glabrous between suture and crenulate carina on 5<sup>th</sup> interval, microreticulate between 5<sup>th</sup> interval and margin (plastron area). Carina on 7<sup>th</sup> interval short (reaching less than anterior 0.2) and rather inconspicuous. Lateral margin distinctly serrate, serration increasingly denser towards apices; epipleura moderately broad, concealing posteriad, reaching ca. posterior 0.1. Mesoventrite distinctly grooved medially and behind procoxae. Metaventrite distinctly micropunctate and uneven, row of coarse groove-like punctures at posterior margin appearing as an arcuate sulcus. All specimens examined wingless.

Ventrites 1–2 almost glabrous medially, lateral parts of ventrites 1–2 and entire ventrites 4–5 densely covered with short adpressed setae; ventrite 5 (Fig. 3) gently excised apically, moderately densely covered with adpressed setae and tubercles, discal setae moderately long, lateroapical setae long; apically with some scattered and one median and lateral rows of short stout spines, apically and laterally patterned with groups of microsetae (plastron).

Tergite VIII weakly sclerotized, broader than long, subcrescentic, with apical fringe of trichoid setae.

Legs slightly longer than elytra; pro- and mesocoxae large, globular; metacoxae rather flat, somewhat elongately oval; femora, tibiae, and tarsi entirely moderately densely covered with trichoid setae, face adjacent to body with fringe of short, knob-like spines (including one spine on each tarsomere); claws well developed, moderately curved, without basal teeth.

Sternite IX (Fig. 4) ca. 450  $\mu$ m long; apical margin evenly rounded; paraprocts distinctly not reaching apical margin.

Aedeagus (Figs. 5–6) ca. 500  $\mu$ m long, ca. 85  $\mu$ m broad. Median lobe 3.5 times as long as phallobase, ca. six times as long as broad, subapically abruptly tapering, basal 0.65 slightly broadened and with distinct lateral protuberances; tip elongate, directed slightly ventrad (lateral view), with numerous distinct microtube-like structures; ventral sac quite regularly shaped and well developed. Phallobase asymmetrical; ventral margin strongly sclerotized. Parameres absent.

Ovipositor (Fig. 7). Total length ca. 480  $\mu$ m. Stylus short, stout, hook-like bent outwards, with heterogeneous sensilla (elongate and trichoid). Coxite rather short, with several very short, acute setae, and apical sensilla; distal portion distinctly hook-like produced, inner margin distinctly pubescent; basal portion ca. 0.8 times as long as distal portion. Valvifer almost twice as long as coxite; fibula basally curved inwards, cranially widened, subtruncate.

Secondary sexual characters. Sternite VIII weakly sclerotized; in male (Fig. 8) with rather long median strut with acute apex, posterior portion sub-semicircular; in female posterior portion rather trapezoidal, median strut very long with slightly broadened and truncate apex. Ventrite 5 in male (Fig. 3) rather sub-trapezoidal; in female somewhat rounder and more sub-semicircular. Metaventrite in female flatter, in male more uneven and grooves more distinct. Tarsi not conspicuously varying between male and female.

VARIABILITY: The pronotum varies in width-length ratio from 1.1 to 1.2. In males with the broadest pronotum from site CR2 the pronotal disc is additionally somewhat flatter. In a few specimens the pronotal median groove is rather inconspicuous. One female from site CR2 has a faint narrow groove or sulcus dividing the rather glabrous pronotal disc from the prescutellary pronotal portion. Furthermore, the elytra slightly vary in width, vaulting and the conspicuousness and extent of the carina of the seventh interval. The bending of the claws is somewhat variable.

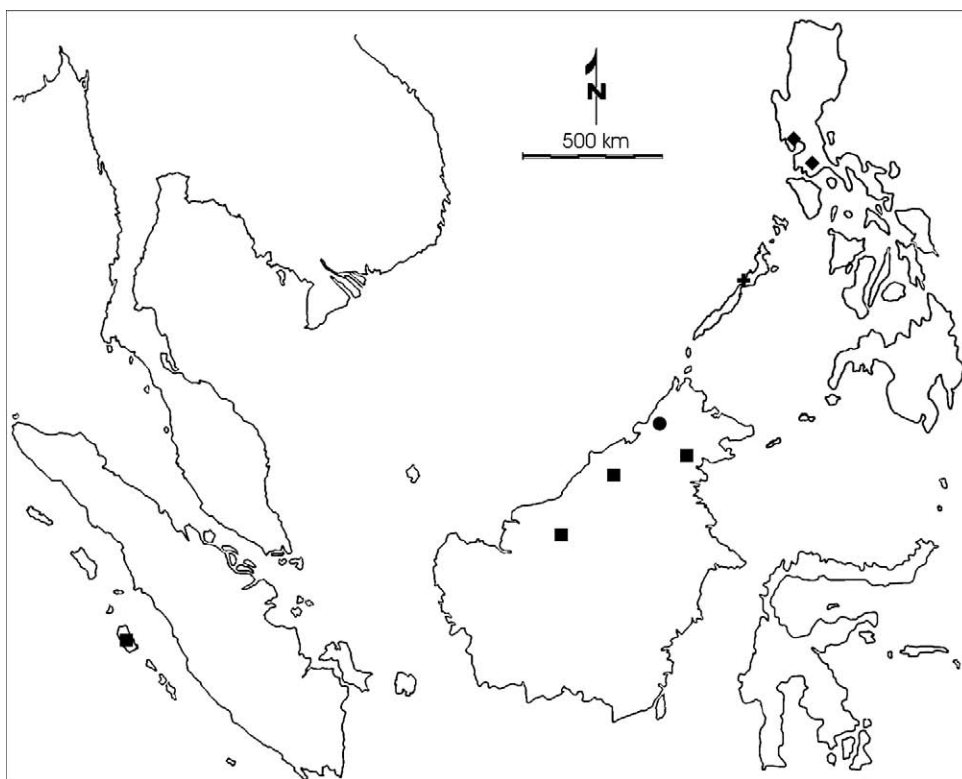


Fig. 9: Geographical distribution of *Prionosolus* species in Southeast Asia; ◆ *P. bobae*; ● *P. ciampori*; + *P. palawanus*; ■ *P. venatorcapitis*.

**DIFFERENTIAL DIAGNOSIS:** The aedeagal characters, in particular the presence of lateral protuberances, clearly distinguish *Prionosolus palawanus* from all other known representatives of the genus. The external habitus of this species somewhat resembles *P. ciampori* by the short elytral carina of the seventh interval, the densely micropunctate pronotum and the lack of a tarsal sexual dimorphism. It can be distinguished externally from the latter by less deeply impressed elytral punctures (specially rows five to seven), the lack of a hump-like discal elytral vaulting and the presence of distinct knob-like spines on femora and tarsi.

**DISTRIBUTION:** The species is only known from the Cabayugan River system in central Palawan (Fig. 2).

**ETYMOLOGY:** This species is named after Palawan, in reference to the type locality.

### Discussion

Although more than eighty streams have been sampled and thousands of elmids have been collected on Palawan Island in the course of the AQUA Palawana program, no additional specimens of *Prionosolus* could be recorded. All of these specimens were collected by drift net collections as described in FREITAG (2005). No material could be retrieved, neither from emergence trap sampling, colonization traps, nor from kick sampling or from screening submerged wood litter and stones. This might be due to very low population density, inhomogeneous

geneous distribution, or due to the fact that the species inhabits a particular microhabitat which was insufficiently monitored by the aforementioned methods.

*Prionosolus palawanus* is the first species of the genus recorded from Palawan Island. The evidence of the presence of the genus on Palawan bridges a gap in the distribution area of the genus (Fig. 9).

The male genitalia display a morphological gradient of rather short and simply outlined aedeagi of the known species from the Sunda Islands (*P. ciampori*, *P. venatorcapitis*) towards long aedeagi with lateral projections in the Philippine species (*P. bobae*). Within this gradient *P. palawanus* exhibits an average aedeagus length, and conspicuous lateral protuberances.

### Acknowledgements

The author wishes to express his deep gratitude to Dr. M.A. Jäch of the World Water Beetle Collection & Research Centre at the Vienna Natural History Museum, Austria, for providing excellent working facilities and reference collections. Financial support for a visit to the NMW was kindly provided by Synthesys (Application AT-TAF-3655).

Field sampling in the St. Paul National Park was made possible by Gratuitous Permits and underlying permission from the indigenous Tagbanua community in Cabayugan (CADC), from the Puerto Princesa National Park Management Board, the Palawan Council for Sustainable Development Staff (PCSDS), and from the Bureau of Fisheries and Aquatic Resources, Manila.

Thanks are also due to the Rufford Maurice Laing Foundation providing the AQUA Palawana program with a Rufford Small Grant.

### References

- FREITAG, H. 2004: Composition and longitudinal patterns of aquatic insect emergence in small rivers of Palawan Island, the Philippines. – International Revue of Hydrobiology 89: 375–391.
- FREITAG, H. 2005: Longitudinal zonation patterns and determinants in Decapoda (Crustacea) in rivers of Palawan Island, the Philippines. – Archiv für Hydrobiologie, Supplement 151: 243–268.
- JÄCH, M.A. & KODADA, J. 1997: *Prionosolus* and *Podonychus*, two new genera of Macronychini (Coleoptera: Elmidae). – Entomological Problems 28: 9–23.
- KODADA, J. & JÄCH, M.A. 2005: 18.2. Elmidae Curtis, 1830, pp. 471–496. – In: Beutel, R.G. & Leschen, R.A.B. (eds.), Handbook of Zoology, Volume IV (Part 38), Coleoptera, Beetles, Volume 1: Morphology and Systematics (Archostemata, Adephaga, Myxophaga, Polyphaga partim). – Berlin: Walter de Gruyter.

Dr. Hendrik FREITAG

State Collections of Natural History Dresden, Zoological Museum, Koenigsbruecker Landstrasse 15, D – 01109 Dresden, Germany (hendrik.freitag@snsd.smwk.sachsen.de)

# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Koleopterologische Rundschau](#)

Jahr/Year: 2008

Band/Volume: [78\\_2008](#)

Autor(en)/Author(s): Freitag Hendrik

Artikel/Article: [A new species of \*Prionosolus\* JÄCH & KODADA from Palawan, Philippines \(Coleoptera: Elmidae\) 297-303](#)