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## Three new species of Paederinae from Northeast India (Coleoptera: Staphylinidae)

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**A b s t r a c t :** Three species of Paederinae from Assam and Meghalaya in Northeast India are described and illustrated: *Oedichirus depravatus* nov.sp. (Meghalaya), *O. bicuspidatus* nov.sp. (Assam), and *Paederus borailicus* nov.sp. (Assam). The distributions of the new species are mapped.

**K e y w o r d s :** Coleoptera, Staphylinidae, Paederinae, *Oedichirus*, *Paederus*, India, Oriental region, taxonomy, new species.

### Introduction

The genus *Oedichirus* ERICHSON 1839 has a mainly circumtropical distribution and currently includes approximately 320 species (HERMAN 2013). HERMAN (2010) provided a list of species. According to SMETANA (2004) and an update of this catalogue (SCHÜLKE unpubl.), *Oedichirus* is represented in the Palaearctic region by 15 species.

The speciose genus *Paederus* FABRICIUS 1775 comprises more than 600 species worldwide (NEWTON et al 2001). The subgeneric concept currently in use is doubtful; the same applies to the systematic status of some genera that have been separated from *Paederus* based on conspicuous autapomorphies.

In his monograph of the Staphylinidae of British India, Sri Lanka, and Burma, CAMERON (1931) listed and keyed eight species of *Oedichirus* and forty-two of *Paederus*. No additional species have been described from Assam, Meghalaya, and adjacent regions since 1931 (HERMAN pers. comm.). The current state of knowledge of the staphylinid fauna of Northeast India is relatively poor, particularly owing to collecting restrictions and risks.

Aside from several interesting records and novelties of other paederine genera that have been – or will be – treated elsewhere, three species of *Oedichirus* and one of *Paederus* from Assam and Meghalaya were found while browsing unidentified Staphylinidae in the collections of the Muséum d'Histoire Naturelle, Geneva. A study of this material revealed that all the species are undescribed. One of the *Oedichirus* species, however, is represented only by a female, so that a description does not seem advisable.

## Material and methods

The material treated in this study is deposited in the following public and private collections:

MHNG ..... Muséum d'Histoire Naturelle, Genève (G. Cuccodoro)

cAss..... author's private collection

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). A digital camera (Nikon Coolpix 995) was used for the photographs. The map was created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles to the posterior margin of the elytra, head length from the anterior margin of the frons to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

## Species descriptions and new records

### *Oedichirus depravatus* nov.sp. (Figs 1-5, Map 1)

**Type material:** Holotype ♂: "India: Meghalaya #2b, West Garo Hills dist., Trail Tura - Tura Peak, summit, 800 m, 14.X.2004, 25°30'12"N, 90°40'07"E / Leg. G. Cuccodoro, C. Carlton, R. Leschen & D. Erne / Holotypus ♂ *Oedichirus depravatus* sp.n. det. V. Assing 2013" (MHNG). **Paratypes:** 1 ♂: same data as holotype (cAss); 1 ♀: "India: Meghalaya #4, road Rongram - Phulbari, ca. 5 km W Rongram, 450 m, 16.X.2004, 25°36'15"N, 90°14'27"E / Leg. G. Cuccodoro, C. Carlton, R. Leschen & D. Erne" (MHNG).

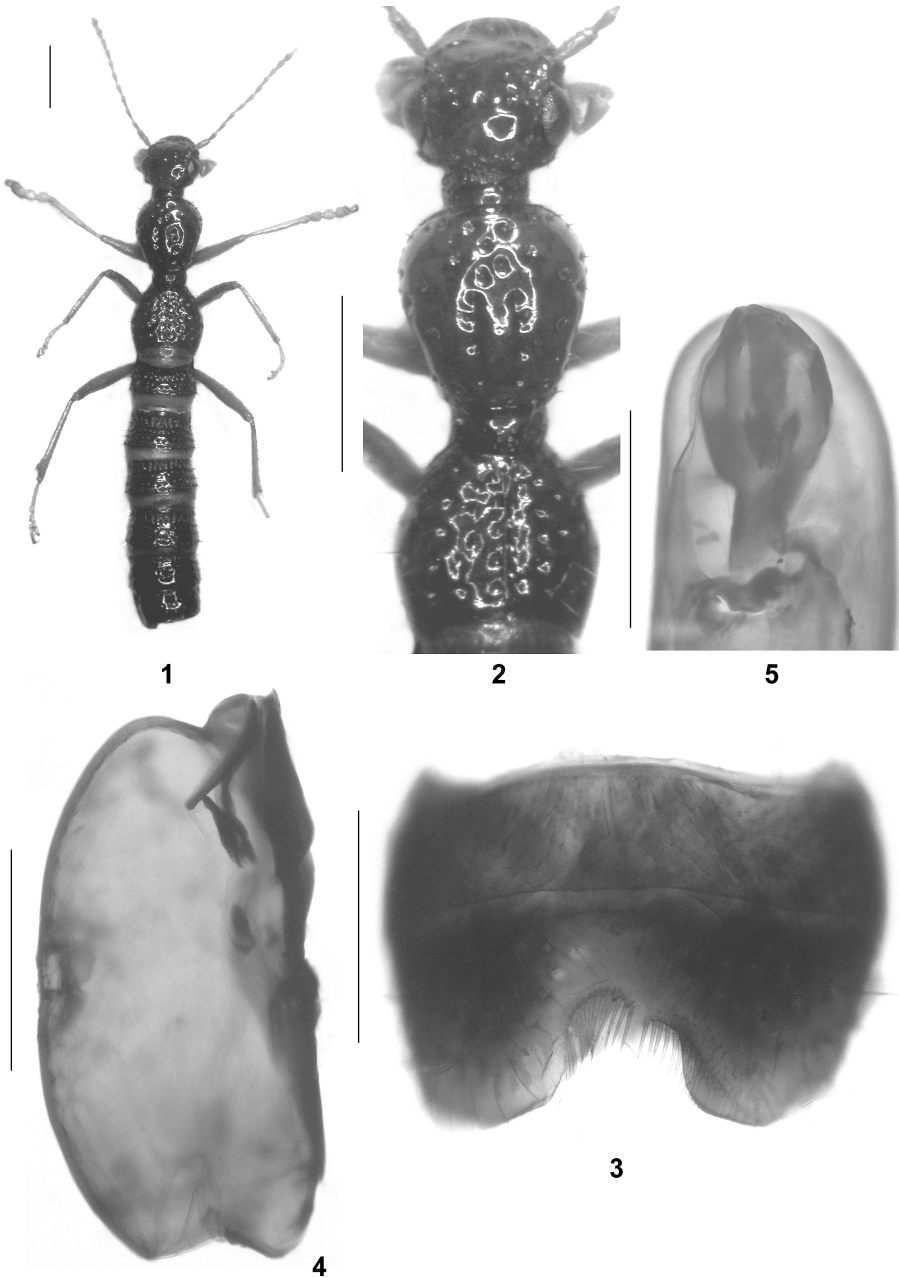
**E t y m o l o g y :** The specific epithet is the past participle of the Latin verb depravare (to deform) and alludes to the distinctly asymmetric male sternite VIII.

**D e s c r i p t i o n :** Body length 7.5-9.0 mm; length of forebody 2.8-3.4 mm. Habitus as in Fig. 1. Coloration: body reddish, with abdominal segments VII-X black; legs and antennae dark-yellowish.

Head (Fig. 2) transverse, approximately 1.2 times as broad as long, broadest across eyes; posterior angles sharply marked by a small setiferous projection; dorsal surface with few coarse punctures, the median ones arranged in a transverse oval or rectangle, near posterior margin with a transverse row of densely set punctures. Eyes strongly convex, almost reaching posterior margin of head. Antenna 2.2-2.4 mm long.

Pronotum (Fig. 2) approximately 1.1 times as long as broad and 1.1 times as broad as head, widest in anterior half and distinctly tapering posteriorly; punctuation very coarse, coarser than that of head, somewhat irregularly spaced in anterior third and forming a dorsal series of 4-5 punctures on either side of middle in posterior two thirds of pronotum.

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**Figs 1-5:** *Oedichirus depravatus* nov.sp.: (1) habitus; (2) forebody; (3) male sternite VIII; (4) aedeagus in lateral view; (5) apical portion of aedeagus in ventral view. Scale bars: 1-2: 1.0 mm; 3-5: 0.5 mm.

Elytra (Fig. 2) short, approximately 0.65 times as long as pronotum, widest in posterior half; humeral angles completely obsolete; punctuation very coarse. Hind wings completely reduced.

Abdomen approximately as broad as elytra; anterior impression of tergite III with normal punctuation, impressions of tergites IV-VI with numerous longitudinal keels separated by small impressions; remainder of tergal surfaces with coarse punctures arranged in two (tergite III) or three (tergites IV-VII) transverse rows; punctures on tergite VII distinctly less coarse than those on tergites III-VI; posterior margin of tergite VII without palisade fringe.

♂: sternite VIII (Fig. 3) with distinctly asymmetric posterior excision, this excision furnished with modified stout yellowish setae; aedeagus (Figs 4-5) 1.3 mm long and somewhat asymmetric.

**Comparative notes:** Using the key in CAMERON (1931), *O. depravatus* would key out at couplet 6, together with *O. rufotestaceus* BERNHAUER 1902 (Sri Lanka), from which it differs by larger size (*O. rufotestaceus*: 7 mm) and by the different punctuation of the pronotum and of the elytra (*O. rufotestaceus*: pronotum with fine punctuation; elytral punctuation arranged in distinct rows). The male sexual characters of *O. rufotestaceus* are unknown.

**Distribution and natural history:** The type specimens were collected in two geographically close localities in Meghalaya, Northeast India (Map 1), at altitudes of 450 and 800 m.

***Oedichirus bicuspidatus* nov.sp.** (Figs 6-10, Map 1)

**Type material:** Holotype ♂: "India: Assam #7c, North Cachar Hills dist., Mt. Borail, "Pharmai" hunting camp, 1250 m, 18.x.2005, 25°06'02"N, 93°03'39"E / sifting litter in mixed broadleaved forest, leg. G. Cuccodoro & A. Marletta #7c / Holotypus ♂ *Oedichirus bicuspidatus* sp.n. det. V. Assing 2013" (MHNG).

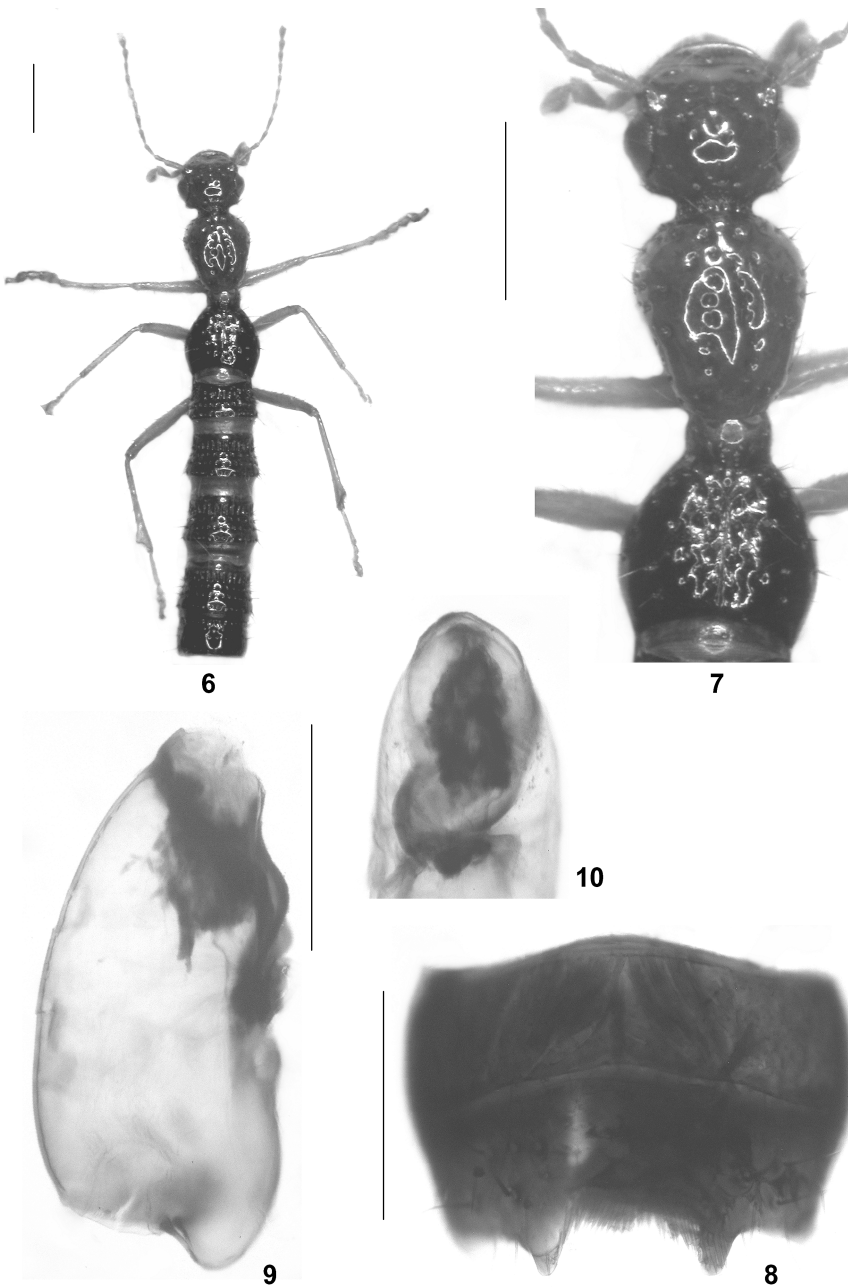
**Etymology:** The name (Latin, adjective: with two apices) alludes to the shape of the male sternite VIII.

**Description:** Body length 8.5 mm; length of forebody 3.2 mm. Habitus as in Fig. 6. Coloration: head and pronotum reddish; elytra blackish; abdomen bicoloured, with segments III-VI reddish and segments VII-X black; legs and antennae dark-yellowish.

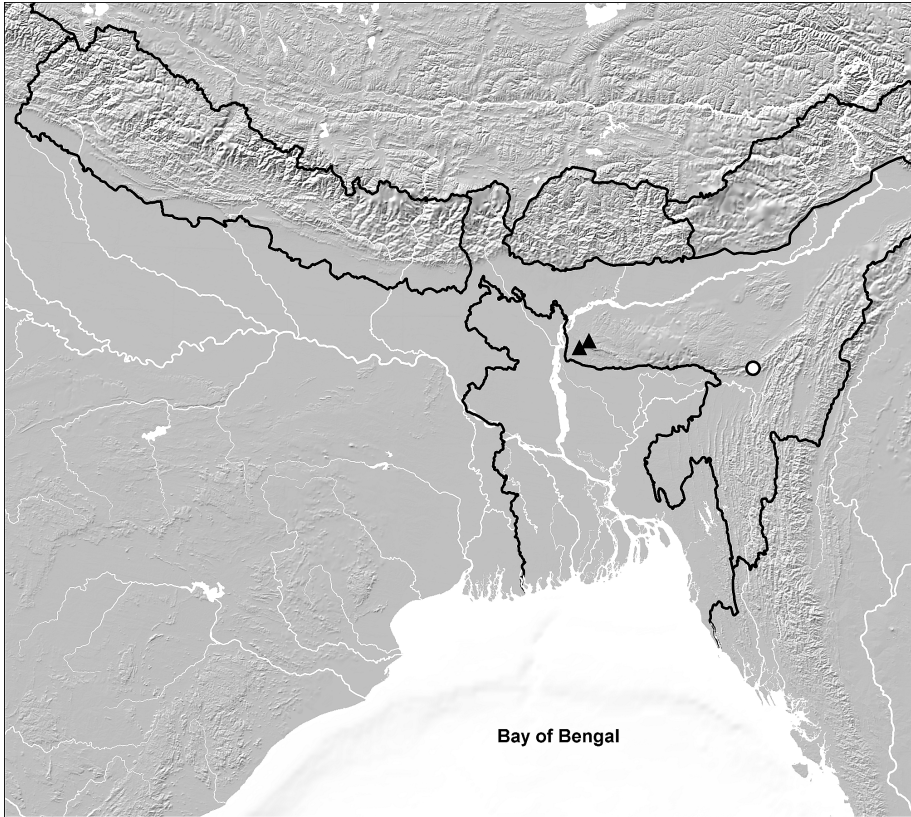
Head (Fig. 7) transverse, approximately 1.25 times as broad as long, broadest across eyes; posterior angles sharply marked by a small setiferous projection; median dorsal surface with three coarse punctures in triangular arrangement; frons with seven coarse punctures arranged in two anteriorly converging rows each composed of three punctures and a median puncture; at posterior margin with a short transverse row composed of three coarse punctures. Eyes strongly convex, almost reaching posterior margin of head. Antenna 2.5 mm long.

Pronotum (Fig. 7) 1.2 times as long as broad and approximately as broad as head, widest in anterior half and distinctly tapering posteriorly; punctuation as in *O. depravatus*.





**Figs 6-10:** *Oedichirus bicuspidatus* nov.sp.: (6) habitus; (7) forebody; (8) male sternite VIII; (9) aedeagus in lateral view; (10) apical portion of aedeagus in ventral view. Scale bars: 6-7: 1.0 mm; 8-10: 0.5 mm.



**Map 1:** Distributions of *Oedichirus depravatus* nov.sp. (triangles), *O. bicuspidatus* nov.sp. (circle), and *Paederus boraillicus* nov.sp. (circle).

Elytra (Fig. 7) short, 0.55 times as long as pronotum, widest in posterior half; humeral angles completely obsolete; on either side of suture with a row of four conspicuously coarse punctures, disc with additional, less coarse punctures. Hind wings completely reduced.

Abdomen approximately as broad as elytra; anterior impression of tergite III with two median keels and additional, more irregular sculpture; impressions of tergites IV-VI with numerous longitudinal keels separated by small impressions; remainder of tergal surfaces with coarse punctures arranged in two (tergite III) or three (tergites IV-VII) transverse rows; punctures on tergite VII distinctly less coarse than those on tergites III-VI; posterior margin of tergite VII without palisade fringe.

♂: sternite VIII (Fig. 8) transverse, posterior margin with pair of conspicuous tooth-like processes, between these processes with fringe of dense yellowish setae; aedeagus (Figs 9-10) 1.1 mm long and slightly asymmetric.

**Comparative notes:** *Oedichirus bicuspidatus* is readily distinguished from all the species keyed by CAMERON (1931) by its coloration pattern alone. It differs from the geographically close *O. depravatus* by the black elytra, the more slender pronotum, the punctuation of the head, the shorter elytra (in relation to pronotum), the different shape of the male sternite VIII, and by the smaller and differently shaped aedeagus.

**Distribution and natural history:** The type locality is situated in Assam province, Northeast India (Map 1). The specimen was sifted from leaf litter in a mixed broadleaved forest at an altitude of 1250 m.

***Oedichirus* sp.**

**Material examined:** India: 1♀, Assam, North Cachar Hills district, road Umrangso-Gunrong, 25°26'N, 92°55'E, 550 m, 27.X.2004, leg. Cuccodoro et al. (MHNG).

**Comment:** The above female probably represents an undescribed species. It is of similar coloration as *O. niger* CAMERON 1914 from South India, but is smaller (body length 7.0 mm; length of forebody 2.6 mm), has shorter elytra (0.6 times as long as pronotum), and a different punctuation.

***Paederus borailicus* nov.sp.** (Figs 11-17, Map 1)

**Type material:** Holotype ♂: "India: Assam, North #8a, Cachar Hills dist., Mt Borail, Borail Peak, 1700 m, 19.x.2005, 25°06'43"N, 93°03'11"E / sifting bamboo #8a, leaf litter in mountain rain forest, Cuccodoro & Marletta / Holotypus ♂ *Paederus borailicus* sp.n. det. V. Assing 2013" (MHNG). Paratype ♀: "India: Assam, North #9d, Cachar Hills dist., Mt Borail, Borail Peak-Notun Leikul, 1550 m, 20.x.2005, 25°06'51"N, 93°03'07"E / sifting moist broadleaf litter in mixed forest, Cuccodoro & Marletta" (cAss).

**Etymology:** The specific epithet is an adjective derived from the name of the mountain where the species was discovered.

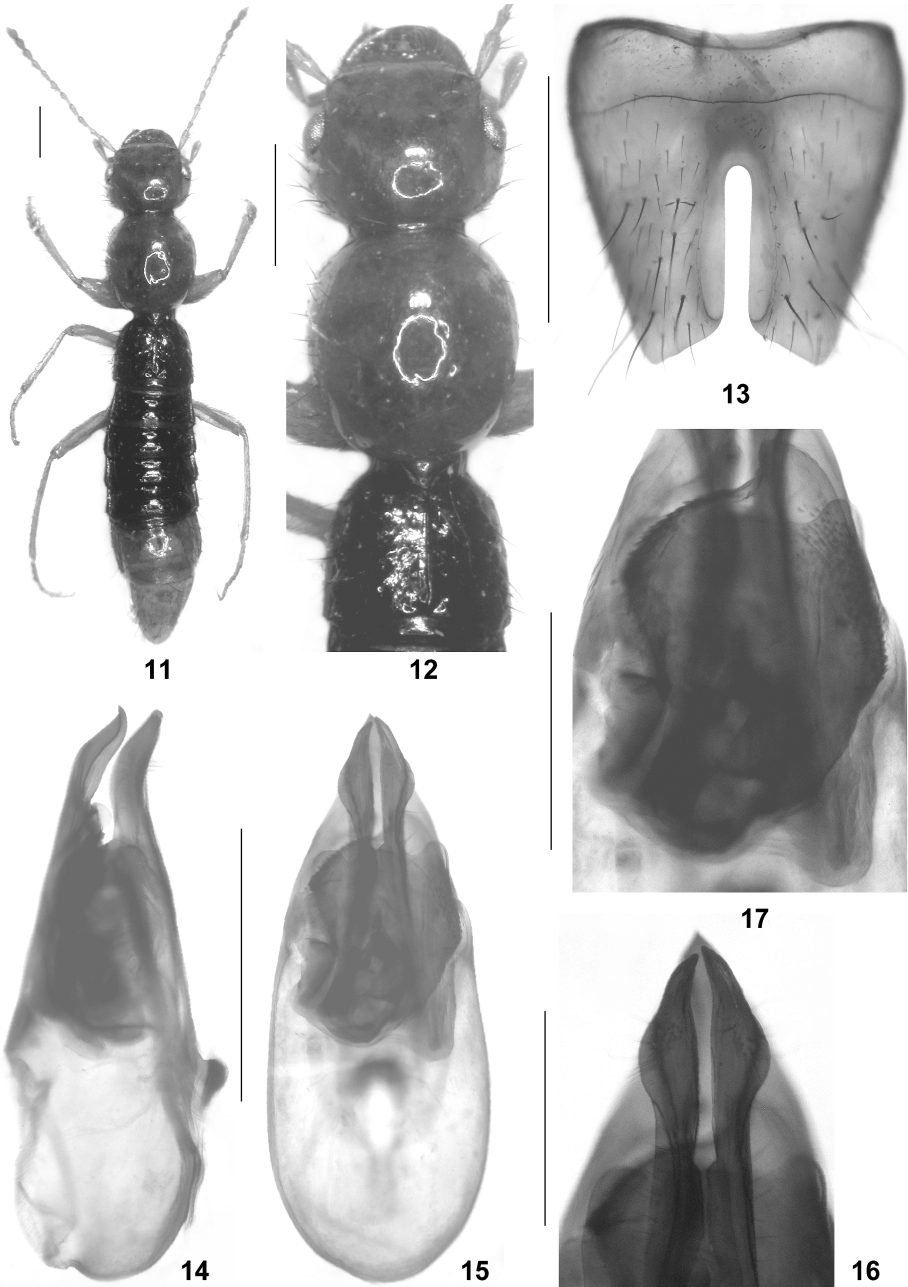
**Description:** Body length 9.5-10.5 mm; length of forebody 4.5-4.8 mm. Habitus as in Fig. 11. Coloration conspicuous: head and pronotum bright reddish; elytra blue with metallic hue; abdomen bicoloured, with segments III-VI black and VII-X reddish (except for infusate apices of the hemitergites IX); legs and antennae dark-yellowish, apices of femora and tibiae not infusate.

Head (Fig. 12) transverse, shape apparently sexually dimorphic, 1.23 (male) or 1.10 times (female) as broad as long, widest across eyes; punctuation rather fine and very sparse. Eyes distinctly convex, but rather small, as long as, or slightly longer than half the distance from posterior margin of eye to posterior constriction. Antenna 3.0-3.1 mm long.

Pronotum (Fig. 12) globulous, strongly convex in cross-section, 1.05-1.07 times as long as broad, 1.05-1.07 times as broad as head, and approximately 1.1 times as broad as elytra; lateral suture indistinct in anterior half and obsolete in posterior half; punctuation similar to that of head, very sparse.

Elytra (Fig. 12) short, half as long as pronotum; punctuation coarse, defined, and rather sparse. Hind wings completely reduced. Metatarsomere I slightly longer than combined length of II and III.

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**Figs 11-17:** *Paederus borailicus* nov.sp.: (11) habitus; (12) forebody; (13) male sternite VIII; (14-15) aedeagus in lateral and in ventral view; (16) apical portion of ventral process of aedeagus in ventral view; (17) internal structures of aedeagus in ventral view. Scale bars: 11-15: 1.0 mm; 16-17: 0.5 mm.

Abdomen distinctly broader than elytra; punctation very sparse; interstices with shallow microsculpture, glossy; posterior margin of tergite VII without palisade fringe; posterior margin of tergite VIII strongly convex.

♂: sternite VII unmodified; sternite VIII (Fig. 13) transverse and with deep and narrow posterior incision; aedeagus (Figs 14-17) symmetric (except for the internal structures), 2.1 mm long, without parameres; ventral process deeply bifid, apically acute and with numerous thin setae; dorsal plate large and apically acute.

**Comparative notes:** *Paederus borailicus* is readily distinguished from other micropterous, geographically close congeners of similar size by its coloration pattern alone. In addition, it is characterized by the morphology of the aedeagus. Using the key in CAMERON (1931), it would key out at couplet 11, together with *P. setifer* CAMERON 1914 from Sri Lanka, from which it differs by even shorter elytra and the different coloration of the abdomen (*P. setifer*: segments III-VI red and VII-VIII black).

**Distribution and natural history:** The type specimens were collected in two adjacent localities in Assam province, northeastern India (Map 1), in the same mountain as *Oedichirus bicuspidatus*. They were sifted from bamboo and tree leaf litter in a mixed forest and in a mountain rain forest at altitudes of 1550 and 1700 m.

### Acknowledgements

I am indebted to the colleagues indicated in the material section for the loan of material under their care. Joachim Willers (Berlin) critically reviewed the description of *Paederus borailicus*. Benedikt Feldmann (Münster) proof-read the manuscript.

### Zusammenfassung

Drei Paederinenarten aus Assam und Meghalaya (Nordostindien) werden beschrieben und abgebildet: *Oedichirus depravatus* nov.sp. (Meghalaya), *O. bicuspidatus* nov.sp. (Assam) und *Paederus borailicus* nov.sp. (Assam). Die Verbreitung der Arten wird anhand einer Karte illustriert.

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