

*Paradiplatys kubani* sp. nov. from Laos  
(Dermaptera: Diplatyidae)

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**Abstract.** A new species of the genus *Paradiplatys* Zacher, 1910, *Paradiplatys kubani* sp. nov., is described based on material from Laos. The habitus and diagnostic characters are illustrated, and the taxonomic position is discussed.

**Key words.** Dermaptera, Diplatyidae, taxonomy, description, new species, Laos, Oriental Region

### Introduction

Diplatyidae unite morphologically well characterised earwigs with slender body, long walking legs, elongate cylindrical abdomen terminated by a simple and short forceps. They are distributed in the Oriental, sub-Saharan and Neotropical regions (and a single species occurs in Egypt) (BRINDLE 1987, STEINMANN 1986, SRIVASTAVA 1988). The family is divided into two subfamilies: *Cylindrogastrinae*, with the single genus *Cylindrogaster* Stål, 1855 characterised by a specific male genitalia with external parameres short and broad, and *Diplatyinae* with four genera separated also by the morphology of male genitalia. *Nanopygia* Dohrn, 1863 comprises species with conspicuously bilobed external parameres with a deep cleft along the axis dividing it into two lobes; *Diplatys* Audinet-Serville, 1831 contains species with external parameres internally armed with one or more teeth, often separated by a deep cavity or emargination; species of *Paradiplatys* Zacher, 1910 have simple external parameres with a small single moveable epimere apically, which is smaller than the external parameres; whereas *Circodiplatys* Steinmann, 1986 has bilobed and biarticulated small epimeres; *Haplodiplatys* Hincks, 1955 comprises species with only simple, not bilobed (single lobed) external parameres (SAKAI 1985, 2000; STEINMANN 1986; SRIVASTAVA 1988, 1993, 2003).

The genus *Paradiplatys* Zacher, 1910 was described as a subgenus of *Diplatys*, and Sakai (1982) raised it to generic rank, making *Lobodiplatys* Steinmann, 1974 its junior synonym. At present, the genus *Paradiplatys* comprises 14 species distributed in the Oriental and Ethiopian regions (BRINDLE 1982, 1987; STEINMANN 1986; SRIVASTAVA 1988, 1993, 2003; SAKAI 2000; CHEN & MA 2004). In the Oriental fauna, it is represented by only two known species, *P. salvazae*

(Burr, 1917) distributed in Vietnam and China, and *P. gladiator* (Burr, 1905) distributed in India (SRIVASTAVA 1988, SAKAI 2000, CHEN & MA 2004).

Diplatyidae specimens are found in tree canopies therefore they are rarely collected, and usually just in a single or a few specimens (SRIVASTAVA 1988). Allegedly, the canopy is their preferred habitat, but a comprehensive review of their habitats is missing. Thus, the majority of species are known only from the type locality. A new species, *Paradiplatys kubani* sp. nov. from Laos, is described here, based on material from the National Museum, Praha.

## Materials and methods

Nomenclature and morphological terminology follows that used by STEINMANN (1986). The specimen of *Paradiplatys kubani* sp. nov. was dry-mounted, examined and photographed with an Olympus SZ61 stereomicroscope (20–40× magnification) equipped with an ocular grid and an Olympus E-410 camera. Micrographs of 10 layers of focus of the same specimen were combined with Quick Photo Camera 2.3 software. Male genitalia were studied and photographed with usage of differential interference contrast with an Olympus BX53 microscope with (40× magnification) equipped with an Olympus E-410 camera. The type specimen was mounted on a board, and a dissected body part (penultimate sternite) was mounted with methylcellulose glue on the same board as the specimen. A genital armature was mounted in dimethyl hydantoin formaldehyde resin (DMHF, a water-soluble mounting medium) on the same board as the specimen.

The specimen studied is deposited in the National Museum, Praha, Czech Republic (= NMPC).

## Taxonomy

### *Paradiplatys kubani* sp. nov.

(Figs. 1–3)

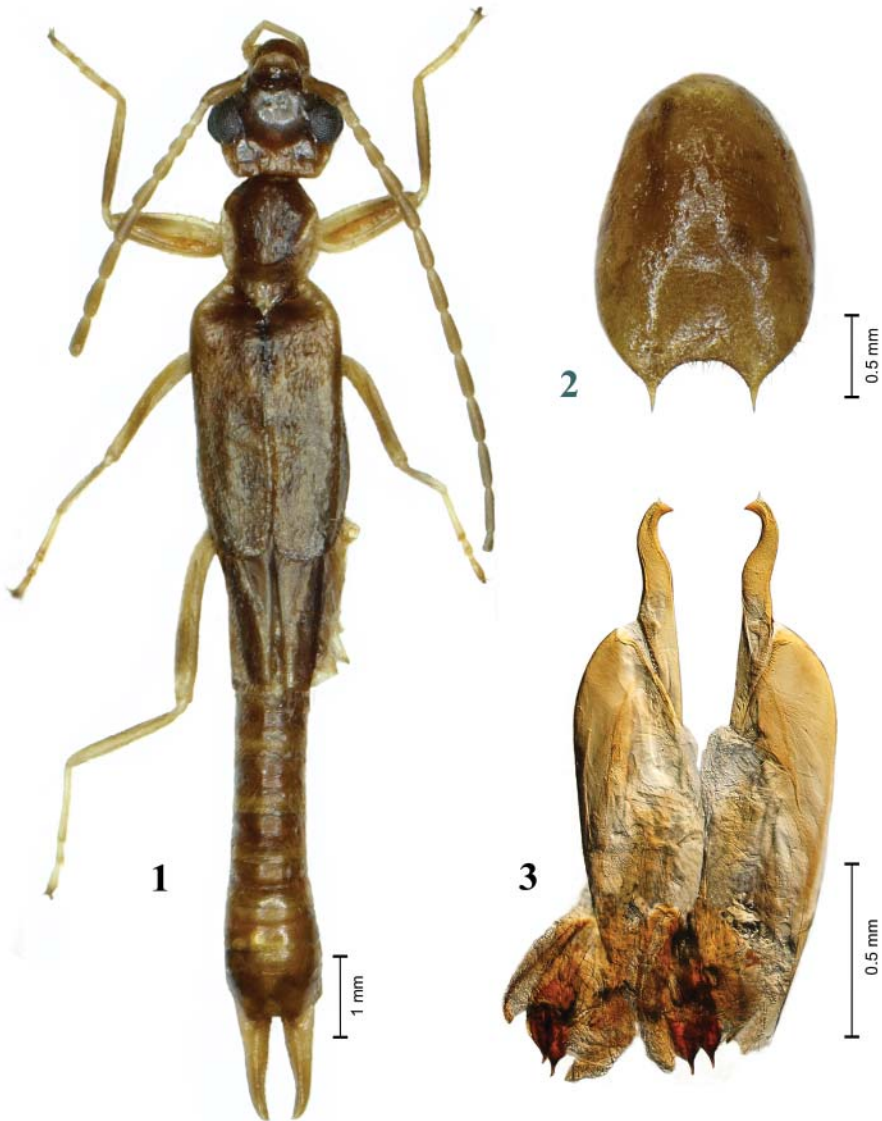
**Type locality.** Laos, Houa Phan province, Ban Saluei → Phou Pane Mt., 20°12'–20°13.5'N, 103°59.5'–104°01'E, 1340–1870 m a.s.l.

**Material examined.** HOLOTYPE: ♂, 'LAOS-NE, Houa Phan prov., / 20°12-13.5'N 03°59.5'-104°01'E, / Ban Saluei → Phou Pane Mt., / 1340-1870 m, 22.iv.-15.v.2008, / Vit. Kubán & Lao coll. leg. // Primary mountain forest, / individual collecting. / Laos 2008 Expedition / National Museum Prague, / Czech Republic.' (NMPC). The specimen is provided with additional printed red label: 'HOLOTYPUS / *Paradiplatys / kubani* sp. n. / det. P. Kočárek 2012'.

**Description.** Body yellowish brown with head slightly darker; body finely pubescent with longer hairs on margin of pronotum, legs and sides of abdomen. Cuticle punctured, shiny; tegminae and wings fully developed. Length without forceps 12.4 mm, length of forceps 1.3 mm.

Head (Fig. 1) as wide as long, smooth, frons convex, vertex depressed, laterally behind eyes raised with distinct postocular carina, sutures except for median one obsolete, hind margin slightly emarginate. Eyes blackish brown, prominent, longer than length of head behind eyes. Antennae of holotype male with 15 joints (incomplete); joint 1 stout, expanded apically, slightly shorter than distance between antennal bases, joint 2 transverse, joint 3 long and slender, equal to 5<sup>th</sup> and longer than 4<sup>th</sup>, 6<sup>th</sup> onwards slender and gradually increasing in length.

Pronotum (Fig. 1) about as long as broad, anteriorly convex, lateral margins rounded, slightly tapering posteriorly with angles and posterior margin truncate. Median sulcus fine but distinct. Sternal plates typical for the genus. Tegmina and wings well developed. Tegmina convex posteriorly, axillary angles rounded, showing small triangular scutellum; wing scales tapering to the end and truncate posteriorly. Legs typical with laterally flattened femora and tibiae; arolia black, half-length of claws.



Figs. 1–3. *Paradiplatys kubani* sp. nov. 1 – habitus of male (holotype); 2 – male penultimate sternite, ventral view; 3 – male genitalia.

Abdomen (Fig. 1) long, slender, gently expanded posteriorly, convex, sides of segment rounded. Penultimate sternite large, feebly depressed in middle, posteriorly with two prominent teeth terminating the depression (Fig. 2). Ultimate tergite weakly convex, sloping backwards, gently tapering posteriorly, hind margin tri-sinuate, laterally oblique. Median longitudinal furrow absent. Pygidium absent. Forceps with branches depressed, tapering apically, almost straight, apices gently hooked and tips pointed, bases with small triangular crest in middle, internal margin finely crenulate.

Male genitalia (Fig. 3) with oval, comparatively wide parameres with shallow concavity internally; median incision of anterior margin deep, extending between genital lobes; external parameres long, narrow, S-shaped, apically pointed, with small epimere on outer margin of the top. Genital lobes relatively short, with conspicuous bidentate sclerotized plate at the tips.

**Differential diagnosis.** *Paradiplatys kubani* sp. nov. differs from the other species of *Paradiplatys* in characteristic S-shaped external parameres in combination with feebly medially depressed penultimate sternite, with two prominent teeth terminating the depression (Figs. 2, 3). Male genitalia are similar to *Haplodiplatys orientalis* Steinmann, 1974 occurring in China, but the external parameres of this species do not contain any epimerite. Remarkable diagnostic character is the shape of penultimate sternite (Fig. 2), not occurring in other species of *Paradiplatys*, nor in any of *Haplodiplatys* species.

**Etymology.** The species is dedicated to one of the collectors of the type specimen, Vítězslav Kubáň (National Museum, Praha).

**Bionomy.** The specimen was collected in a primary mountain forest in the canopy of blossoming *Castanopsis* trees (Fagaceae) (Kubáň, pers. comm.).

**Distribution.** Laos: Houa Phan province.

### Key to *Paradiplatys* species recorded from the Oriental region (based on males)

- 1 (2) External parameres S-shaped, pincer-like. .... *P. kubani* sp. nov.  
 2 (1) External parameres straight, not S-shaped.  
 3 (4) Epimere on outer margin of external parameres large, apically wider than apex of external parameres. .... *P. salvazae* (Burr, 1917)  
 4 (3) Epimere on outer margin of external parameres small, apically narrower than apex of external parameres. .... *P. gladiator* (Burr, 1905)

### Discussion

Diplatyidae are morphologically uniform group of earwigs, but current phylogenetic analyses considered it to be paraphyletic (HAAS 1995, HAAS & KUKALOVÁ-PECK 2001). Currently used generic classification is based on a single character – the morphology of external parameres, while genera are distinguished by the absence or presence of their bifurcation, or by a degree and kind of this bifurcation (SRIVASTAVA 1993). Especially validity of the genera *Paradiplatys* and *Circodiplatys* is disputable, because the presence of epimeres shows close

relationships with *Nanopygia*, since it appears to be a derivative of outer lobe of external parameres. According to the current taxonomic status of the genera within Diplatyidae (SRIVASTAVA 1993, SAKAI 2000), *P. kubani* sp. nov. belongs to *Paradiplatys*. However, there evidently is a similarity between this species and *Haplodiplatys orientalis* with similar, specific S-shaped external parameres and similarly formed genital lobes with conspicuous bidentate sclerotized plates. Remarkable difference is the presence of very small epimeres on external parameres, the only diagnostic character for differentiation of these two genera. Thus, taxonomic placement of *P. kubani* sp. nov. is unresolved, and its transitional position indicates close relationship of both genera. Since other, non-genitalic characters are mutually contradictory in all Diplatyidae, a rigorous phylogenetic analysis of the family based on molecular evidence is necessary. It would be pertinent to the issue of how the genera are related to find autapomorphies to circumscribe the Diplatyidae as a family first.

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