

Three new species of *Paederus* and related genera from Thailand, Vietnam and South China (Coleoptera: Staphylinidae)

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Three new species of *Paederus*, *Paederidus* and *Pachypaederus* from Thailand, Vietnam and South China are described. The occurrence in S China (Yunnan) of the genus *Pachypaederus*, hitherto known from the Afrotropical Region only, is discussed.

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Introduction

Material for determination belonging to the collections of Zoological Institute, St. Petersburg, Russia (ZISP), Museum of Natural History, Geneva, Switzerland (MHNG), Natural History Museum, Basle, Switzerland (NHMB) and Natural History Museum, Vienna, Austria (NHMW) contained three undescribed species of the genus *Paederus* and related genera, which are treated below. Some paratypes are retained in Natural History Museum, Erfurt, Germany (NME).

Although the large complex *Paederus* s. l. already includes 1204 species group names (693 of them are considered as valid), still single specimens or series belonging to undescribed taxa are discovered in collections. Especially in SE Asia the abundance of undescribed species seems to overwhelm greatly the number of those described species, which have to be rejected as synonyms.

Up to now it was only Fagel (1958) who suggested a satisfactory intrageneric arrangement of this large group for the Afrotropical fauna. Regarding Eurasian (Palaeartic and Oriental) faunas, a new generic concept remains to be developed since the one of Scheerpeltz (1957a, 1957b) must be refused (Frank, 1988; Willers, 1999).

Specimens from China (ZISP) have three labels, in Chinese, Cyrillic and Latin characters. The labels in Chinese are used as the main source of information, as the other labels contain misspellings

***Paederus solodovnikovi* sp. n.**
(Figs 1-3, 11, 14)

Holotype. ♂, **Thailand**, Chiang Mai, Samoeng, 18°51'45.2"N, 98°43'18.73"E, 2.1.1998 (NHMB).

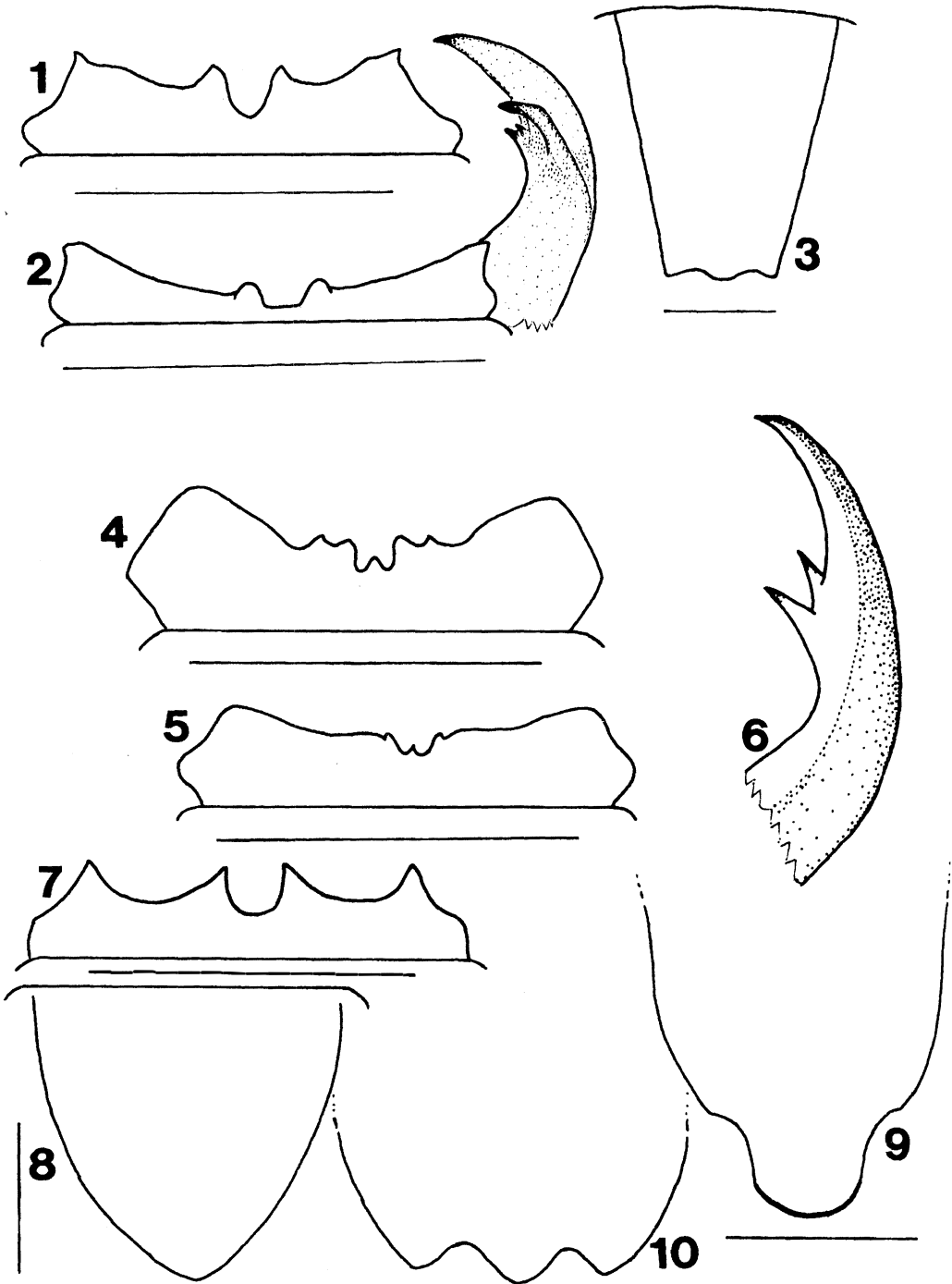
Paratypes. **Thailand**: 5 ♂, 16 ♀, with the same data as

holotype (NHMB); 2 ♂, 1 ♀, with the same data (NME); **China, Yunnan**: 2 ♂, 1 ♀, valley of Salween, W of Baoshan (25°N), 800 m, 9.V.1965, Kryzhanovskij (ZISP).

Description. Measurements (n = 28, mean value, standard deviation): length of body (labrum to tergite 6): 9.21, 0.67; length of forebody (including elytra): 4.43, 0.23; length of head: 1.33, 0.06; width of head: 1.31, 0.05; index length of head by width of head: 1.01, 0.03; length of eyes: 0.44, 0.03; distance between inner margins of eyes: 0.93, 0.04; length of temples: 0.46, 0.03; length of pronotum: 1.44, 0.06; width of pronotum: 1.20, 0.04; index length of pronotum by width of pronotum: 1.20, 0.03; length of elytral suture: 1.23, 0.05; width of elytra: 1.28, 0.10; index length of elytral suture by width of elytra: 0.97, 0.07; length of aedeagus: 1.24, 0.06; width of aedeagus: 0.40, 0.02; index length of aedeagus by width of aedeagus: 3.10, 0.16.

Gracile; head and apex of abdomen black; pronotum red-orange; elytra blue-black with metallic lustre; first four basal uncovered abdominal segments yellow-orange. Antennae and legs yellowish red, apically darkened. Length of body: 9.2 mm. Winged species.

Head slightly longer than wide, widest across eyes; temples slightly longer than eyes, with straight (♂) or slightly rounded (♀) lateral margins. Surface of frontal area shining; vertex from middle to hind margin with strong transverse microreticulation. Loosely covered with punctures of different width and depth, and with thin and fine, as well as strong, erect bristles. Labrum of ♀ (Fig. 1) laterally from median oval excision with two projections on each side: an acute inner projection and a smooth outer one. Labrum of ♂ (Fig. 2) similar, but median excision and inner teeth much smaller. Antennae slender; first three segments and base of the fourth one yellowish red.



Figs 1-10. 1-3. *Paederus solodovnikovi* sp. n.: 1, labrum, F, paratype, Chiang Mai; 2, labrum and right mandible, M, paratype, Yunnan; 3, sternite 6, F. 4-6, *Paederidus perroti* sp. n.: 4, labrum, F, paratype, Tonkin; 5, labrum, M, holotype; 6, right mandible, M, holotype. 7-10. *Pachypaederus pallitarsis* sp. n.: 7, labrum, F, paratype; 8, tergite 6, M, holotype, 9, tergite 6, F, paratype; 10, sternite 6, F, paratype. Setae omitted. Scales in: (1) 0.45 mm, (2) 0.53 mm, (3) 0.35 mm, (4) 0.38 mm, (5, 6) 0.43 mm, (7) 0.46 mm, (8) 0.45 mm, (9, 10) 0.65 mm.

lowish red; apex of fourth and fifth to tenth segments dark brown to black; the last segment reddish brown. Mandibles dark red to brown, in ♂ (Fig. 2) with very strong additional middle tooth directed diagonally upwards. Palpi reddish yellow; apex of penultimate and squamiform last segment of maxillary palpus slightly darkened.

Pronotum oval, longer than wide, at its widest part (ca. end of first quarter) narrower than head. Fine lateral border, extending from anterior margin, disappears behind the first fifth of pronotal length. Surface smooth and shining. Punctures and hairs similar to those on head, but distinctly sparser, arranged in rows laterally from smooth median part of pronotum.

Scutellum reddish with darkened apex, strongly transversely reticulated, inconspicuously punctured and finely pubescent.

Elytra longer than wide, slightly narrower than pronotum, with weakly developed shoulders and nearly parallel, slightly convex sides. Punctuation deep and moderately dense; interspaces slightly larger than diameters of punctures, with smooth and shining surface. Pale, fine hairs more or less directed backwards intermixed with strong, erect, black tactile bristles.

Legs. Anterior and middle coxae yellowish red; posterior coxae dark brown to black. Trochanters and basal parts of femora (approximately up to middle) of all legs reddish yellow; apical parts of femora as black as tibiae and tarsi.

Abdomen distinctly parallel-sided, covered with unequal large punctures; interspaces clearly transversely microsculptured; pubescence similar to that on elytra. Basal transverse furrows of the first four uncovered tergites deep; first furrow with deep, dense, wrinkled punctures. Hind margin of sixth tergite rounded, in ♂ more acutely, in ♀ more obtusely. Basal sternites of ♂ simple; sixth visible sternite with deep parallel-sided excision typical of all *Paederus* s. l.; sixth visible sternite of ♀ (Fig. 3) with double curved excision on hind margin.

Aedeagus (Fig. 11) small, oblong oval. Parameres entirely narrow, fused with median lobe along most of their length, slightly converging. Their free apical portions with fine erect pubescence dorsally. An S-shaped curved internal thorn is rising from ventral plate between apical portions of parameres; dorsal plate of median lobe ends in thin hooked tip. Laterally, apical portions of parameres appear to be hooked ventrad.

Differential diagnosis. Based on the similarity of the aedeagi and on the presence of the additional tooth directed upwards in the middle of mandible of ♂, the new species is closely related to *Paederus szechuanus* (Chapin), *P. yunnanensis* Willers and *P. bursavacua* Willers, the latter two species described from China in Willers (2001b).

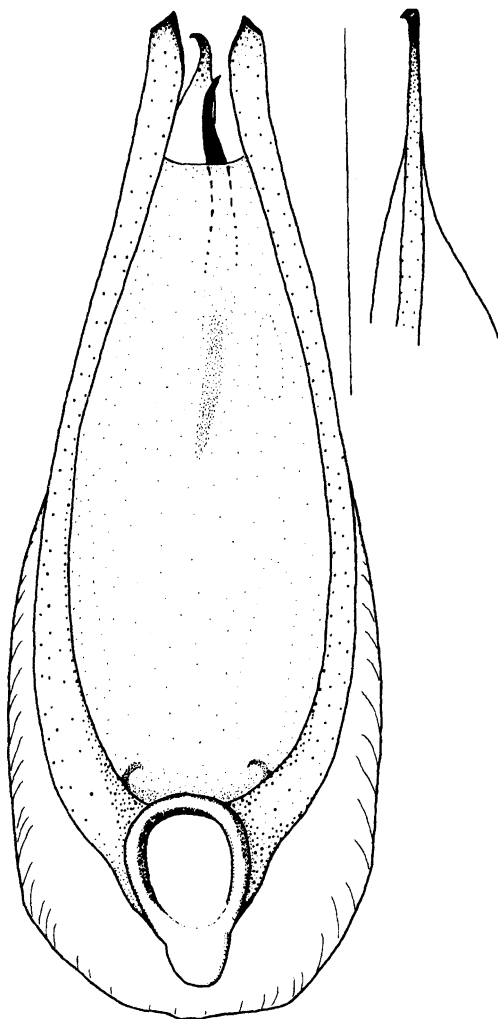


Fig. 11. *Paederus solodovnikovi* sp. n., holotype, aedeagus ventral, apex lateral. Setae omitted. Scale: 0.4 mm.

However, the winged *P. solodovnikovi* can be easily distinguished from all three mentioned apterous species by the shape of elytra, which are longer and with distinct shoulders. Moreover, compared with *P. bursavacua* and *P. yunnanensis*, the new species has less robust habitus; whereas from the most similar gracile *P. szechuanus* it differs in the coloration of legs and antennae, which are not entirely testaceous.

Biology/ecology. Imagines have been collected in January and May in the mountains from 800 to ca. 1200 m. No further information is known.

Distribution. The type series consists of the specimens from two different localities: Samoeng

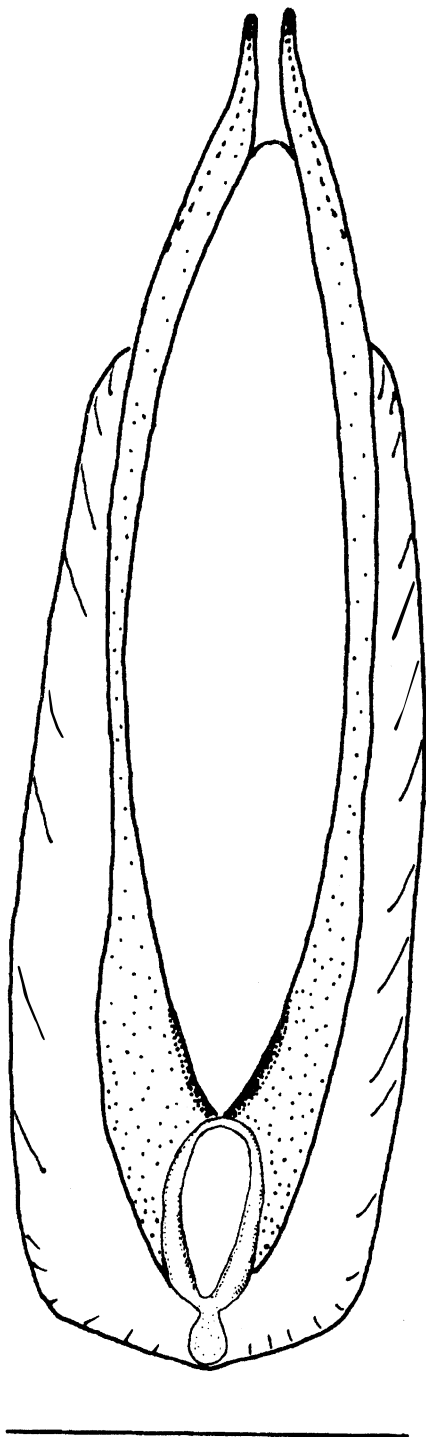


Fig. 12. *Paederus perroti* sp. n., holotype, aedeagus ventral. Setae omitted. Scale: 0.33 mm.

at Chiang Mai in Thailand and west of Baoshan in Yunnan/China (Fig. 14). The collecting sites have a distance of about 700 km between. Since the species is winged and presumably has strong dispersal ability, it may be largely distributed in the tropics of Indochina.

Etymology. The species is named in honour of my dear colleague Dr. Alexey Y. Solodovnikov, St. Petersburg, for his friendly help with the provision of material and with several inquiries.

***Paederus perroti* sp. n.**
(Figs 4-6, 12, 14)

Holotype. ♂, **Vietnam:** "Chobo Tonkin H. Perrot", "General H. Perrot don.", "Cotyus *Paederus perroti* Bernhauer" [pink label], "ex coll. Scheerpeltz" [blue label] (NHMW).

Paratypes. **Vietnam:** 1 ♀, with the same data (NHMW); 1 ♂, "Chobo Tonkin H. Perrot", "*Paederus perroti* n. sp. d'apres Bernh.", "General H. Perrot don.", "Cotyus *Paederus perroti* Bernhauer" [red label], "ex coll. Scheerpeltz" [blue label] (NHMW); 1 ♂, 2 ♀, "Chobo Tonkin H. Perrot" (MHNG); 1 ♀, "Chobo Tonkin H. Perrot", "*Paederus* n. sp." (MHNG); 3 ♂, 1 ♀, "Tam Dao Tonkin H. Perrot", "Coll. J. Ochs in Coll. M. Curti MHNG-1991" (MHNG); 1 ♂, 1 ♀, with the same data (NME); **China, Yunnan:** 1 ♂, Jingdong [ca. 24°30'N, 100°50'E], 1200 m, 26.IV.1957, A. Monchadskiy (ZISP).

Description. Measurements (n = 13, mean value, standard deviation; see also the Table): length of body (labrum to tergite 6): 7.13, 0.29; length of forebody (including elytra): 4.09, 0.17; length of head: 1.16, 0.08; width of head: 1.10, 0.03; index length of head by width of head: 1.06, 0.06; length of eye: 0.39, 0.02; distance between inner margins of eyes: 0.73, 0.04; length of temple: 0.39, 0.02; length of pronotum: 1.22, 0.04; width of pronotum: 0.97, 0.05; index length of pronotum by width of pronotum: 1.26, 0.03; length of elytral suture: 1.30, 0.06; width of elytra: 1.35, 0.09; index length of elytral suture by width of elytra: 0.97, 0.04; length of aedeagus: 1.08, 0.06; width of aedeagus: 0.28, 0.03; index length of aedeagus by width of aedeagus: 3.91, 0.47.

Entirely black, blue-metallic, slightly shining, with distinct silvery-white pubescence; winged. Length of body 7.1 mm.

Head very slightly longer than wide, widest across moderately prominent eyes; temples as long as eyes, nearly straightly converging backwards. Interspaces among densely situated punctures of different width, smooth and shining, near eyes very densely to wrinkly punctured, punctuation becoming sparser towards clypeus. Densely covered with erect, silvery-white pubescence. Labrum of ♀ (Fig. 4) with deep excision and small triangular tooth in the middle; laterally, on each side with two obtuse teeth, rounded projection at the front margin and very obtuse lateral tooth. Labrum of ♂ (Fig. 5) very similar, but with

less obtuse lateral tooth. Mandibles reddish brown, darkened to the outer margin, with two single teeth (Fig. 6) typical of *Paederidus*. All segments of antennae longer than wide, third being the longest, first clearly thickened.

Pronotum elongate oval, widest at the end of anterior third of its length, narrower than head, laterally unbordered. Punctuation and pubescence as on head, but slightly less dense and with impunctate area as broad as anterior tibia along the middle. Surface smooth and shining.

Scutellum strongly microreticulated, finely punctured and finely setose.

Elytra longer than wide, wider than head, parallel-sided. Punctures larger and deeper than those on head and pronotum; interspaces slightly larger than diameters of punctures, surface glossy. Pubescence as on head and pronotum, but directed obliquely backwards and outwards.

Legs as rest of the body entirely black, covered with silvery-white hairs.

Abdomen parallel-sided, narrowed apically. Basal transverse furrows of first four uncovered tergites distinctly deepened and with slight callous oblong keel in the middle. Surface of furrows with sparser punctuation, shinier than finely punctured apical parts of tergites. Tergites very superficially, widely and transversely reticulated. Pubescence typical of *Paederidus*: in the middle of sternites directed obliquely inwards, at lateral margins obliquely outwards. Hind margin of sixth uncovered tergite in both sexes simple, rounded oval.

♂. Sixth uncovered sternite with excision typical of *Paederus* s. l., but here relatively small. Preceding sternite very slightly sinuate at hind margin. Aedeagus (Fig. 12) small, narrow, parallel-sided, very flat. Parameres beginning at relatively large basal pore, fused together with median lobe up to their apical fifth, diverging basally and converging by their free apical portions, the latter dorsally and ventrally furnished with row of erect hairs. Ventral plate of median lobe with blunt apex; dorsal plate more ovally acute. In lateral view completely flat, apical fifth of its length very slightly bent dorsad.

Differential diagnosis. *Paederidus perroti* sp. n. cannot be confused with any other species of the genus from Asia, since all of the latter have red pronotum. We know two black species from Madagascar, *Paederidus chalybaeus* (Er.) and *P. pseudochalybaeus* Lecoq, as well as some species from African continent, which are most similar to the new species. In shape and colour of the body, the new species is most similar to *P. usambarae* Fauvel from Congo area, but differs in darker first two articles of antennae and stronger and paler pubescence.

Biology/ecology. It is only the label of one

paratype from the collection in ZISP providing some details about the altitude (1200 m) and the month (April), when the beetle was collected.

Distribution (Fig. 14). Most specimens of the type series come from Tonkin (Vietnam): from Tam Dao ca. 50 km NW, and from Chobo ["Cho'bo"] ca. 70 km SW of Hanoi respectively. A single specimen comes from Yunnan (Jingdong). Presumably this winged species is distributed in a larger area.

Etymology. The new species is named after its collector, H. Perrot. We use the same name as M. Bernhauer used on the labels, since he recognised the novelty of this species, but never described it.

***Pachypaederus pallitarsis* sp. n.** (Figs 7-10, 13, 14)

Holotype. ♂, **China, Yunnan**, Menghai [ca. 22°N, 100°35'E], 1300 m, 28.II.1957, Liu Da-hua (ZISP).

Paratypes. **China:** 2 ♂, with the same data (ZISP); 1 ♀, env. of Menghai, Nannuoshan, 1400 m, 1.III.1957 (ZISP).

Description. Body and legs black; tarsi, second and three last articles of antennae and last article of palpi pale to reddish yellow; body completely covered with long erect setae. Length of body about 9 mm. Apterous species.

Head slightly longer than wide, widest across small eyes, which are distinctly shorter than equally rounded temples. Punctuation very scattered; interspaces smooth and shining. Pubescence black, long, erected. Labrum of ♀ (Fig. 7) with deep U-shaped median excision and, on each side, with two pointed projections; lateral margin roundly step-like. Labrum of ♂ as in ♀, but with less protruding teeth.

Pronotum roundly oval, widest behind anterior margin, slightly narrower than head, not bordered laterally. Punctuation, pubescence and interspaces as on head.

Scutellum strongly transversely microreticulated. Elytra short, trapezoid, with rectilinear diverging sides. Shoulders entirely reduced, so that base of elytra very narrow. Interspaces among coarse, scattered punctures slightly wavy and covered with diffuse microreticulation.

Abdomen widened towards end of its fifth segment, apically narrowed. Its surface transversely reticulated, with meshes much larger than those on scutellum. Punctuation scattered, although finer and slightly denser than on elytra. Hairs as on forebody. Basal transverse impressions on first four uncovered tergites clearly deepened. Sixth uncovered tergite of ♂ (Fig. 8) ovally rounded, apically slightly blunt. Corresponding sternite with deep excision, preceding sternites simple. Sixth tergite of ♀ (Fig. 9) laterally from its apex

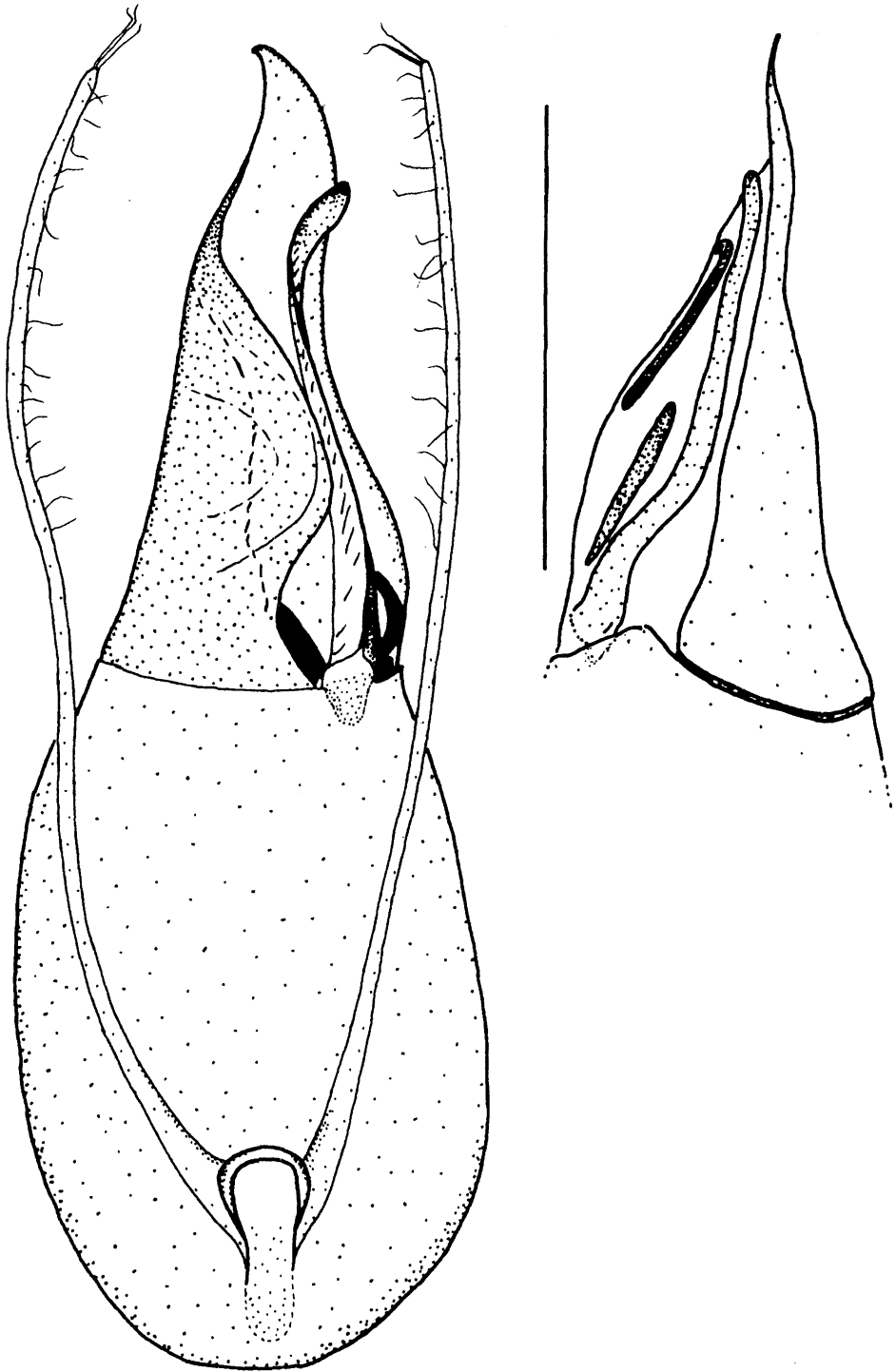


Fig. 13. *Pachypaederus pallitarsis* sp. n., paratype, aedeagus ventral, apex lateral. Scale 0.95 mm.



Fig. 14. Collecting sites of *Paederus solodovnikovi* sp. n. (O) and *Paederidus perroti* sp. n. (+). Scale: 500 km.

with curved excision and apically extended into broad lobe. Corresponding sternite (Fig. 10) with blunt median projection on each side and obtuse excision.

Aedeagus (Fig. 13) very voluminous, apically pointed in slightly asymmetrical curve. Parameres filiform, fused with median lobe only at basal pore, furnished with thin hairs in their apical half and not widened apically but evenly thin. The basally compact median lobe with complicate internal structures.

Differential diagnosis. Externally, the new species is similar to the black Japanese species of *Megalopaederus*, e.g. *M. wadai* Scheerpeltz, but differs from the latter in the darker legs and antennae. From *Paederus capillaris* Fauvel from India and Indochina (for discussion about the generic placement of this species see Willers, 2001a), which sometimes has darkened abdomen, *P. pallitarsis* sp. n. can be easily distinguished by the entirely black body (in *P. capillaris*, pronotum is reddish brown).

Biology/ecology. In addition to the altitudes (from 1300 to 1400 m), only the season when imagines were collected (end of February to be-

ginning of March) is known. Based on the reduced wings, small eyes, and well-developed pubescence of the new species, a humid litter layer of tropical forests is assumed as its habitat.

Distribution. Probably, this flightless species is endemic within a restricted area in southern Yunnan.

Etymology. The name (*palleo*, lat.: to be pale, bleach) refers to the distinctly pale tarsi.

Remarks. All specimens of the type series are more or less damaged. One specimen of the examined series consisting only of head (with appendages), pronotum and anterior legs is not included in the type series.

Discussion. Although discoveries of yet undescribed species from the relatively well-known genus *Paederus* are not surprising in the tropics, the occurrence of *Pachypaederus* Fagel (the genus so far known only from the Afrotropical Region) in SE Asia is, however, remarkable. In addition to this finding, *Paederus capillaris* Fauvel, known from tropical Indian to Chinese areas already has been transferred to *Pachypaederus* (Willers, 2001a). Also, in several collections there exist single specimens of some

further undescribed *Pachypaederus* species demonstrating the same distributional pattern. These zoogeographical connections, unknown up to now, probably can be explained by the theory of continental drift. In this connection, there is an interesting detail concerning such character as the shape of the parameres. Almost all of the African species of *Pachypaederus* (20 species) have the apical portions of the parameres more or less flat and widened, whereas the hitherto known two *Pachypaederus* species from tropical Asia possess parameres with simple, thin apical portions. However, there is one African species from Madagascar, *P. anita* Janak (Janak, 1998), which, similarly to *Pachypaederus* species from tropical Asia, also has thin and simple apical portions of the parameres. Probably, this fact could be interpreted as an additional evidence of the correspondence between the development of landmasses and the degree of relationships of the taxa evolving on them.

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