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Two new species and new records of *Quedius* from Nepal

(Coleoptera: Staphylinidae: Staphylininae)

With 7 figures and 1 table

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Zusammenfassung

Zwei neue *Quedius*-Arten aus Nepal werden beschrieben: *Quedius (Microsaurus) lamjung* sp. n. und *Quedius (Raphirus) tingra* sp. n. Der Syntypus von *Quedius (Raphirus) aureiventris* BERNHAUER wird untersucht und die nicht typenbasierende Identifikation dieser Art in der Revision von SMETANA (1998) wird als korrekt nachgewiesen. Zusätzlich zu den zwei neuen Arten werden neue Funde von elf der im Nepal Himalaya verbreiteten *Quedius* präsentiert.

Summary

Two new species of *Quedius* are described from Nepal: *Quedius (Microsaurus) lamjung* sp. n. and *Quedius (Raphirus) tingra* sp. n. Syntype of *Quedius (Raphirus) aureiventris* BERNHAUER is examined and the non-type based identification of this species in the revision of SMETANA (1998) is proved to be correct. In addition to two new species, new records are provided for eleven species of *Quedius* distributed in Nepal Himalayas.

Key words

Quedius, new species, syntype, new records, Nepal, Himalayas

1. Introduction and conventions

Quedius of Nepal were revised by SMETANA (1988, 1992). This revision opened great opportunities for further studies of the genus in this region. Present study is based on the material on 221 *Quedius* specimens recently collected at 15 localities from three neighboring provinces (Gandaki, Bagmati and Janakpur) of eastern Nepal. Examination of this sample revealed 13 species of *Quedius*, two of which are new for science and are described here.

The collecting sites of the material studied are briefly described and partly illustrated in the 'Localities' section. Records for the new and known species are summarized in Table 1. The new species are described and illustrated following the standard by SMETANA (1988), except we consider the parameral side of the aedeagus as dorsal.

Most of the material of the present paper belongs to the collection of A. KLEEGERG. Some specimens are kindly donated by that author to the collection of the Field Museum of Natural History (FMNH). The types of the described two species are deposited in the FMNH, collection of A. SMETANA in Ottawa (cSm), and collection of A. KLEEGERG (cKle) as specified in the corresponding sections of the 'Taxonomic part' below.

Measurements of the specimens are given in mm. They were taken and abbreviated as follows: HL - length of head (from base of labrum to neck constriction); HW - width of head (maximal); PL - length of pronotum (along medial line); PW - width of pronotum (maximal); EL - length of elytra (from acute humerus to most distal apical margin; best taken from lateral view of the elytron); EW - combined width of both elytra (maximal, when elytra closed along suture). Length of the body as a whole was measured from tip of mandibles to tip of abdomen. Measurements of *Quedius tingra* are given in the format: min - max (average).

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2. Localities

Gandaki Province:

[a] Annapurna Mts., Ghorepani, 2800 m, 14.VI.1993, leg. D. AHRENS; cloud forest: *Rhododendron arboreum* - *Quercus semecarpifolia* - forest of the middle cloud forest terrace.

[b] Annapurna Mts., Lamjung Himalaya, W Taunja Dada, 5 km NE Sikles, 2200-3000 m, 19.V.1993, leg. J. SCHMIDT; *Rhododendron*-oak cloud forest of the lower and middle cloud forest terrace.

[c] Annapurna Mts., S Lamjung Himalaya, Khudi Khola, 4000 m, 25.V.1993, leg. J. SCHMIDT; cloud forest: *Rhododendron campanulatum* - elfin forest of the middle cloud forest terrace.

[d] Annapurna Mts., Pisang, E Manang, 3200 m, 31.5.1993, leg. SCHMIDT; dry valley of the upper Marsiangdi Khola (river). *Pinus wallichiana* - heath, strongly grazed, run through by brooks, locally brackish spring fens.

[e] Annapurna Mts., Kali Gandaki Valley near Tukche, 10.VI.2600 m, 10.V.1993, leg. J. SCHMIDT; dry valley of the Kali Gandaki river. *Pinus wallichiana* - *Juniperus* - heath, and anthropogenic semi-desert, strongly grazed, run through by brooks, locally brackish spring fens.

Bagmati Province:

[f] NE Kathmandu Valley, 6.V.1993, leg. A. KLEEGER, NW of Kathmandu, near Jalkini at 1745 m [27°48' N, 85°16' E]. Lower montane with remainders of indo-malayan rain forests; leaf litter from the edge of a brook was sifted.

Janakpur Province:

[g] Rolwaling Himal, W of Daldung La Pass, 3300 m, 29.V.2000, leg. A. KLEEGER; [27°52' N, 86°15' E] upper cloud forest terrace, mainly *Rhododendron* leaf litter.

[h] Rolwaling Himal, upper Simigaon, 2600-2800 m, 31.05.-1.06.2000 [27°52' N, 86°14' E] leg. A. Kleeberg; 10.IX.1999, 2.VI.2000, 1.VI.2001, leg. J. SCHMIDT; middle cloud forest terrace, mainly *Rhododendron* leaf litter.

[i] Rolwaling Himal, Rolwaling Valley, Nyimare 3300 m, 19.V.2000, leg. A. KLEEGER; [27°54' N, 86°21' E]. A larger plateau in the Rolwaling river valley, upper cloud forest terrace (*Rhododendron campanulatum* and *Juniperus recurva*). Sampling materials were (mainly *Rhododendron*) leaf litter, woody debris covered by epiphytic moist liver mosses (*Herbertus* spp.). *Quedius* were found together with *Sepedophilus* spp., *Stenus montosus* Puthz as well as *Nazeris* sp. and various Tachyporinae.

[j] Rolwaling Himal, NE slopes of Daldung La Pass, 27.V.2000, leg. A. KLEEGER, at 3700 m, [27°52' N, 86°16' E], upper cloud forest terrace. Stream-edge organic material was sifted at a small brook; *Quedius* together with *Stenus* and *Lathrobium* spp.

[k] Rolwaling Valley Dugong Kharka, 2700-2900 m, 17.V.2000, leg. J. SCHMIDT; [27°54' N, 86°20' E]. Middle cloud forest terrace with *Quercus semecarpifolia* and *Abies spectabilis*, both covered by epiphytic mosses, at steep valley slope, run through by brooks. The location represents the typical summer (cattle) pasture.

[l] Rolwaling Valley near Beding village, 3300 m, 19.V.2000, leg. J. SCHMIDT [27°54' N, 86°21' E] at the middle cloud forest terrace; an anthropogenically cleared fir forest (*Abies spectabilis*) with brooks.

[m] Near Shivalaya, bank of Khimti Khola, 02.05.1993, leg. A. KLEEGER, at 1750 m [27°35' N, 86°14' E]. An older, but still moist flash-flood stack was sifted. *Quedius* were found together with *Rugilus*, *Tachyporus*, *Ochtheophilus* spp., as well as *Tachinus striatulus* ULLR., *Dianous lobigerus* CHAMP., *Tolmerinus simulans* CAM., *Craspedomerus bernhaueri* CAM., *Paederus nigricornis* BERNH., and *Gabrius deceptor* (CAM.).

[n] Near Junbesi, 20.04.1993, leg. A. KLEEGER, at 2675 m [27°35' N, 86°31' E]. A hay-stack was sifted; *Quedius* with various *Philonthus* and *Sepedophilus* spp., as well as *Stenus sikkimensis* CAM.

[o] Near Sete, pond (leaves), 19.04.1993, Solu, at 2575 m [27°35' N, 86°26' E], leg. A. KLEEGER; small pond surrounded by different *Rhododendron* trees. Moist leaf litter was sifted; *Quedius* were collected together with *Craspedomerus bernhaueri* CAM., *Rugilus luteipennis* KR., *Gabrius taplejungensis* (SCHILLHAMMER), and *Osorius* spp.

3. Taxonomic part

Quedius (Raphirus) aureiventris BERNHAUER, 1915

The revised identity of this species in SMETANA (1988, 1992) was based on the non-type material. In the original description (BERNHAEUER, 1915) nothing is said about the number of types. One specimen (female, with the labels as follows: 'Binsar / Kumaon / 7900 f [all three labels in handwriting] / 25-5-1912 A.D. Imms [printed + handwriting label] / For Zool. Coll. [printed label] / 51 [label in handwriting] / *aureiventris* Bernh. Typus [label in BERNHAUER's handwriting] / Chicago NHMus M. BERNHAUER Collection [printed label]'), kept in the collection of the Field Museum of Natural History, therefore is considered to be a syntype. Its identity confirms that the identification of that species in SMETANA's revision (1988, 1992) is correct. Since the only now available syntype is a female, we refrain from the lectotype designation.

Quedius (Microsaurus) lamjung SOLODOVNIKOV & KLEEBERG, sp. n.

Material examined: Nepal: Gandaki Prov.: Holotype: ♂, Nepal-Himalaya, Anapurna Mts. Lamjung Himal, W Taunja Dada, 5 km NE Sikles, 2200-3000 m, 19.V.1993, leg. J. SCHMIDT (FMNH)

Description

Body brown: head darker, pronotum, elytra and appendages paler; abdomen and ventro-posterior sides of all tibiae dark with strong metallic iridescence. Body length: 10 mm.

Head before neck constriction of rounded shape, slightly wider than long ($HL/HW = 0.90/1.02 = 0.88$), with moderately large eyes protruding from lateral contours of head; temples distinctly shorter than length of eyes seen from above; posterior angles of head indistinct. Chaetotaxy of dorsum of head on each side as follows: one seta at base of clypeus; one seta near antennal insertion; two setae along inner margin of eye, of them one (anterior frontal) closer to anterior margin of eye, another (posterior frontal) closer to posterior margin of eye; two setae near neck constriction. Temple with one large seta (temporal) which is closer to posterior margin of eye than to neck constriction, and with few smaller setae in sparse irregular arrangement. Surface of head with dense and well-distinct microsculpture of irregular transverse waves with longitudinal connections, these becoming more numerous laterally and anteriorly so that microsculpture along eyes appears as longitudinal, and (in anterior part of frons) as mostly isodiametric. Antenna moderately long: segment 3 slightly longer than segment 2; segment 4 longer than wide, following segments gradually becoming shorter and wider, segments 8-10 about as wide as long; last (11th) segment shorter than two preceding segments combined.

Pronotum slightly wider than long ($PL/PW = 1.13/1.25 = 0.90$), widest at middle, converging stronger anteriorly and weaker posteriorly, with rounded but distinct posterior angles. Dorsal rows each of three setae; sublateral rows each with three setae (two near anterior margin of pronotum, one far behind), posterior seta situated distinctly behind level of large lateral seta. Microsculpture of pronotum similar to that on vertex but slightly weaker. Scutellum impunctate. Elytra short ($EL = 0.97$), slightly narrower than pronotum ($EW/PW = 1.20/1.25 = 0.96$); their punctation moderately dense and coarse,

slightly asperate, surface between setiferous pores (punctures) very shiny with extremely fine microscopic irregularities. Wings reduced.

Abdomen with tergite VII without apical seam of palisade setae; punctation of abdominal tergites at base about as dense as punctation of elytra, punctures becoming sparser towards apex of abdomen.

Male. Anterior tarsi dilated (their maximal width distinctly wider than apex of tibia). Apical margin of sternite VIII with broad and shallow emargination. Sternite IX strongly asymmetrical (Fig. 3). Aedeagus (Figs. 1, 2, 4) strongly curved dorso-ventrally; apical portion of median lobe with longitudinal keel behind ('k' in Fig. 1) and flat lobes laterally from median orifice ('l' in Fig. 2), with obtusely pointed apex and pair of dorsal teeth directed basad ('t' in Fig. 4); paramere broad with curved lateral contours, without sensory peg setae, with median incision and four pairs of long setae at the apex.

Female unknown.

Comparison

Based on external characters and general plan of the structure of the aedeagus, *Q. lamjung* sp.n. is closely related to *Q. goropanus* SMET., *Q. tanderi* SMET. and *Q. kailo* SMET. From all these externally very similar species the new species can be easily distinguished by structure of the aedeagus, especially by its characteristic ventral keel and flat lobes of median lobe, wide paramere with curved lateral contours and lack of sensory peg setae.

Distribution

Annapurna mountains (Gandaki Province, eastern Nepal).

Bionomics

The collecting site for *Q. lamjung* is an *Rhododendron*-oak forest of the lower and middle cloud forest terrace at elevations of 2200-3000 m.

Etymology

The name is derived from the geographic term 'Lamjung Himal' where the type locality of that species is from. The word 'lamjung' is used as noun in apposition.

Quedius tingra SOLODOVNIKOV & KLEEBERG, sp. n.

Material examined: Nepal: Tanakpur Prov.: holotype: ♂, Ost-Nepal, Rolwaling Himal, oberh. [upper] Simigaon, 2700-2800 m, 31.V. – 1.VI. 2000, leg. A. Kleeberg (FMNH); paratypes: 1 ♂, 2 ♀♀, same data as in holotype (FMNH); 1 ♂, 2 ♀♀, same data as in holotype (cKle); 1 ♂, 2 ♀♀, same data as in holotype (cSm).

Description

Head and abdomen (except paler apical margins of abdominal segments) dark brown; pronotum (especially along its margins) and elytra paler than head and abdomen, brown; appendages pale, yellowish-brown; abdomen iridescent. Overall degree of darkness of coloration varies. Body length: 6.5-7.5 mm. Other measurements (n=10): HL = 0.72-0.76 (0.74); PL = 0.98-1.04 (1.00); EL = 0.95-1.09 (0.99); HW = 0.87-0.93 (0.89); PW = 1.02-1.10 (1.06); EW = 1.12-1.24 (1.19).

Head before neck constriction rounded, wider than long [HL/HW = 0.71-0.77 (0.74)]; eyes very large and convex, temples much shorter than length of eyes seen from above. Chaetotaxy of dorsum of head on each side as follows: one seta near base of clypeus; one seta near antennal insertion; one seta (anterior frontal) near inner margin of eye closer to eye's anterior margin; one seta (posterior frontal) near inner margin of eye at eye's posterior margin; one seta near neck constriction, slightly closer to the latter than to posterior frontal puncture. Temple with large seta (temporal) at posterior margin of eye and with several very short setae (structure of head as in Fig. 421 in Smetana, 1988). Surface of head with dense and very fine microsculpture of irregular transverse waves with sparse longitudinal connections, which become gradually more numerous anteriorly. Antenna moderately long: segment 3 slightly narrower and as long as segment 2; segment 4 and 5 very distinctly longer than wide; segments 6-8 longer than wide, gradually becoming shorter and wider; segments 9-10 about as long as wide; last segment (11th) shorter than segment 9 and 10 combined.

Pronotum almost as long as wide [PL/PW = 0.91-0.98 (0.95)], widely arcuate basally, slightly narrowed anteriorly. Dorsal rows each with three setae; sublateral rows each with two setae and, occasionally, with third (posterior) shallow puncture (without seta!), posterior seta being situated far before level of large lateral puncture. Microsculpture of pronotum as on head. Scutellum with few setae on apical half. Elytra short, their punctation dense, moderately coarse, surface between setal sockets very shiny, with extremely fine microsculpture. Wings reduced.

Abdomen with tergite VII without apical seam of palisade setae. Punctation of abdominal tergite III same as on elytra, punctation of the following tergites becoming sparser towards apex of abdomen; each tergite with distinct patch of denser yellowish setae on either lateral portion.

Male. Front tarsi dilated, their maximal width equal to width of tibial apex. Abdominal sternite VIII and segments IX and X do not distinctly vary from those structures in similar species (*Q. tikta* SMET., *Q. toglu* SMET. and *Q. pharak* SMET., and others). Aedeagus as in Figs. 5-7: median lobe gradually tapering apically, with obtusely pointed apex (in dorsal view), with one median dorsal tooth close to the apex (best seen from lateral view); paramere very slightly shorter than median lobe, lanceolate (dorsal view), with about 30 sensory peg setae on its internal side arranged in two rows diverging basally from parameral apex, with four pairs of longer setae at the apex, and three to four pairs of significantly smaller setae basally from those.

Female. Front tarsi dilated, but less distinct than in males, narrower than tibial apex. Structure of abdominal segments IX and X as in other similar species (*Q. tikta*, *Q. toglu*, *Q. pharak* and others).

Comparison

The new species belongs to the SMETANA'S (1988) *Q. muscicola*-species group where it is most similar with *Q. tikta* SMET., *Q. tonglu* SMET. and *Q. pharak* SMET. From all of these species, *Q. tingra* can be reliably distinguished by structure of the aedeagus only. Unlike *Q. tikta*, the new species has lanceolate paramere with basally diverging rows of peg setae (in *Q. tikta* rows of peg setae are basally converging), and more obtuse apical part of median lobe (best seen from dorsal view). Unlike *Q. tonglu*, *Q. tingra* has less expanded lateral contours of the apical portion of median lobe and much more apical position of

its dorsal median tooth. From *Q. pharak* the new species differs in shape of the paramere (narrow, not lanceolate in *Q. pharak*) and less pointed apical portion of the aedeagus.

Distribution

Rolwaling Himal (Janakpur Province in eastern Nepal). Known from type locality only.

Bionomics

Specimens were collected in mainly *Rhododendron* leaf litter of the middle cloud forest terrace at elevations of 2600-2800 m.

Etymology

The name for the new species is composed from the parts of the names of three most similar species: [ti]kta, to[ng]lu and pha[ra]k. It is used as noun in apposition.

Comments

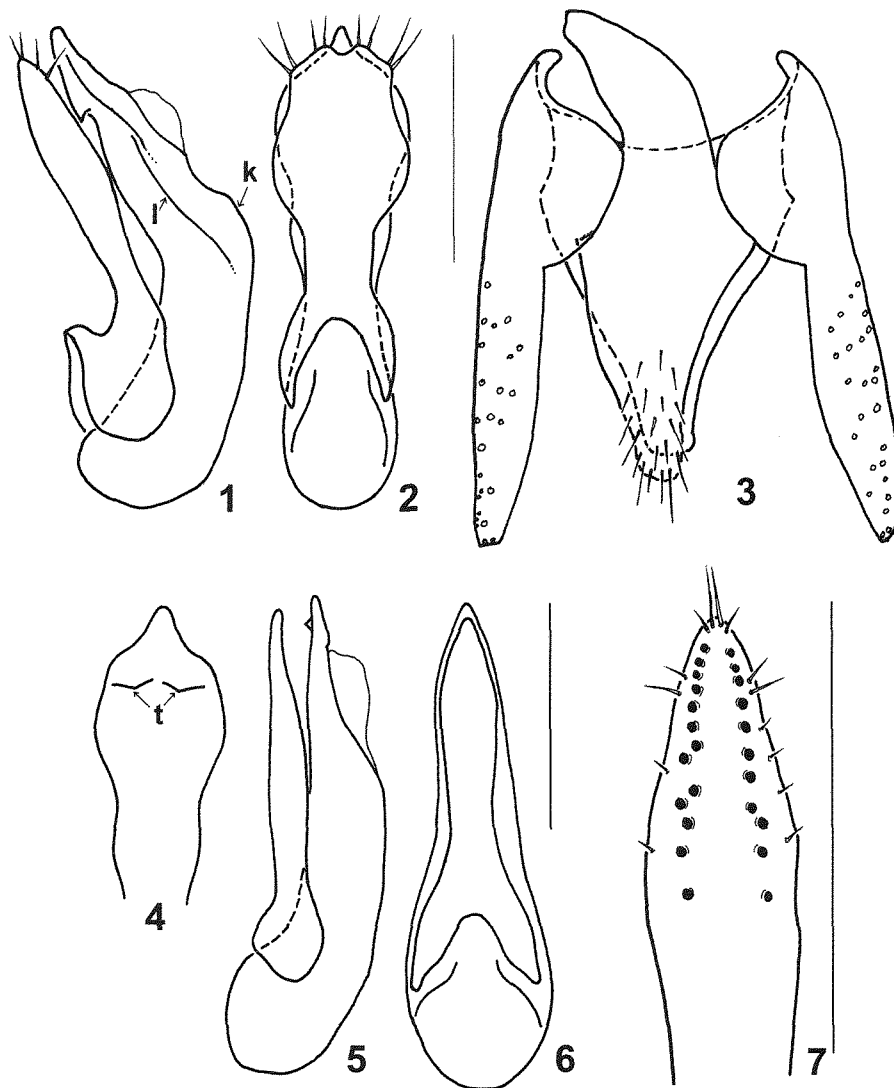
Noteworthy is that *Q. tingra* is sympatric with the very similar and apparently closely related *Q. tonglu* SMET. (Tab. 1). As far as known, it is allopatric to *Q. tikta* SMET. Geographic relations of the new species with the supposedly wider distributed *Q. pharak* SMET. are unclear because of the current lack of adequate distributional data. (For the currently known distributions of *Q. tonglu*, *Q. tikta* and *Q. pharak* see SMETANA (1988, 1992).

Table 1. Number of specimens (N) of *Quedius* collected at various localities (a-o) in Nepal (for details see 'Collecting localities' section)

Species	Collecting sites															N
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
<i>apicicornis</i> EPP.	3	4		1				21	4		1					34
<i>aureiventris</i> BERNH.					3	2	6	8	5	25		4			1	54
<i>inquietus</i> (CHAMP.)							1									1
<i>kailo</i> SMET.							3	2								5
<i>kuiro</i> SMET.									8	4		3	61			76
<i>lanjung</i> sp. n.		1														1
<i>milansaar</i> (SMET.)													1			1
<i>naati</i> SMET.			10													10
<i>placidus</i> CAM.								1								1
<i>stevensi</i> CAM.								1						1	1	3
<i>taruni</i> SMET.									8	4						12
<i>tingra</i> sp. n.								10								10
<i>tonglu</i> SMET.								4			6	3				13
sum	3	5	10	1	3	2	10	47	25	33	7	10	62	2	1	221

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Figs. 1-4: *Quedius lamjung* sp.n., holotype: 1. aedeagus in lateral view; 2. same in dorsal view; 3. sternite IX and tergate X, and lateral tergal sclerites IX of abdomen (setae of the tergate X omitted, setae of the lateral tergal sclerites IX are shown as sockets only); 4. apical portion of median lobe of the aedeagus (without paramere) in dorsal view; **Figs. 5-7:** *Quedius tingra* sp.n., holotype: 5. aedeagus in lateral view; 6. aedeagus in dorsal view; 7. underside of the apical portion of paramere. k – keel; l – lateral flat lobe; t – teeth. Scale bars equal to 0.5 mm.

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