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## A revision of *Sclerochiton*

(Coleoptera: Staphylinidae: Paederinae)

With 116 figures

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### Summary

Based on a revision of the available types and of additional material, fifteen species of *Sclerochiton* KRAATZ, 1859 are recognized in the Oriental region and the adjacent south of the East Palaearctic. All the species are (re-)described and illustrated, twelve of them for the first time: *S. acutissimus* sp. n. (China: Sichuan); *S. barbatus* sp. n. (China: Yunnan); *S. bistipulatus* sp. n. (southern India); *S. excisus* sp. n. (Malaysia); *S. hastatus* sp. n. (northern Pakistan, northern India); *S. laoticus* sp. n. (Laos); *S. maculosus* sp. n. (China: Yunnan); *S. penicillatus* sp. n. (Nepal); *S. rectus* sp. n. (Thailand); *S. rougemonti* sp. n. (Thailand); *S. schuelkei* sp. n. (China: Yunnan); *S. sinuatus* sp. n. (Thailand, Myanmar). The genus is redescribed and attributed to the subtribe Astenina. It has a discontinuous distribution with six species in the Afrotropical region and fifteen species in the Oriental region and the adjacent south of the East Palaearctic. In the study region, the diversity is highest in China, India, and Thailand (five species each), and Nepal (three species). The species were collected from forest litter at low to intermediate altitudes (150-2400 m). Adult beetles have been found throughout the year. A key to species and a catalogue are provided. A new synonymy is proposed: *Echiaster unicolor* BERNHAUER, 1922 = *E. japonicus* BERNHAUER, 1923, syn. n.

### Key words

Coleoptera, Staphylinidae, Paederinae, Astenina, *Sclerochiton*, *Echiaster*, Palaearctic region, Oriental region, taxonomy, new species, new synonymy, key to species, catalogue, discontinuous distribution

### New species

*Sclerochiton acutissimus* sp. n., *S. barbatus* sp. n., *S. bistipulatus* sp. n., *S. excisus* sp. n., *S. hastatus* sp. n., *S. laoticus* sp. n., *S. maculosus* sp. n., *S. penicillatus* sp. n., *S. rectus* sp. n., *S. rougemonti* sp. n., *S. schuelkei* sp. n., *S. sinuatus* sp. n.

### Zusammenfassung

Nach Revision der verfügbaren Typen und weiteren Materials umfasst die Gattung *Sclerochiton* KRAATZ, 1859 in der Orientalis und der südlichen Ostpaläarktis fünfzehn Arten, davon zwölf neu für die Wissenschaft: *S. acutissimus* sp. n. (China: Sichuan); *S. barbatus* sp. n. (China: Yunnan); *S. bistipulatus* sp. n. (Südindien); *S. excisus* sp. n. (Malaysia); *S. hastatus* sp. n. (Nordpakistan, Nordindien); *S. laoticus* sp. n. (Laos); *S. maculosus* sp. n. (China: Yunnan); *S. penicillatus* sp. n. (Nepal); *S. rectus* sp. n. (Thailand); *S. rougemonti* sp. n. (Thailand); *S. schuelkei* sp. n. (China: Yunnan); *S. sinuatus* sp. n. (Thailand, Myanmar). Alle Arten werden beschrieben und abgebildet. Die Gattung wird redeskribiert und in die Subtribus Astenina gestellt. Sie ist mit sechs aus der Afrotropis und mit fünfzehn aus der Orientalis und der Ostpaläarktis bekannten Arten disjunkt verbreitet. Im Untersuchungsgebiet ist die Diversität in China, Indien und Thailand (je fünf Arten) sowie in Nepal (drei Arten) am höchsten. Die Arten wurden überwiegend in der Laubstreu von Wäldern in unteren und mittleren Höhenlagen (150-2400 m) gefunden. Imagines wurden während des gesamten Jahres angetroffen. Eine Bestimmungstabelle und ein Gesamtkatalog werden erstellt. Ein Name wird synonymisiert: *Echiaster unicolor* BERNHAUER, 1922 = *E. japonicus* BERNHAUER, 1923, syn. n.

## Introduction and taxonomic history

*Sclerochiton* was described by KRAATZ (1859) to accommodate only the type species by monotypy, *Sclerochiton ochraceus* KRAATZ, 1859 from "India orientali". MOTSCHULSKY (1860) established the monotypical genus *Saurellus* for *Echiaster indicus* MOTSCHULSKY, 1858, which similarly had been described from "Indes orientales" (MOTSCHULSKY 1858). This species was subsequently treated as the senior synonym of *S. ochraceus*, which rendered *Saurellus* a junior synonym of *Sclerochiton* (BERNHAEUER & SCHUBERT 1912). A second species of *Sclerochiton*, *S. andrewesi*, was described from India by CAMERON (1914). A key to the Oriental representatives of the genus was provided by CAMERON (1931).

BERNHAEUER (1915) described the genus *Cheilaster* with *C. csikii* BERNHAEUER, 1915 from "Deutsch-Ostafrika" as the type species by monotypy. *Cheilaster* was recognized as a junior homonym and replaced with *Ramba* by BLACKWELDER (1952). Subsequently, five additional species were described from the Afrotropical region, two by CAMERON (1950) and three by FAGEL (1960), who revised and keyed the six *Sclerochiton* species known from Africa. The latest addition to the genus was *S. unicolor* COIFFAIT, 1975 from Nepal. Thus, *Sclerochiton* previously included nine species, three from the East Palaearctic and the Oriental regions, as well as six from the Afrotropical region.

CAMERON (1931) stated that *Sclerochiton* was "closely allied to the American genus *Echiaster*", which is currently attributed to the subtribe Echiastrina (NEWTON et al. 2001), and placed it among genera today assigned to the subtribe Stilicina. According to FAGEL (1950), however, *Sclerochiton* somewhat resembles *Echiaster* ERICHSON, 1839 in external appearance, but is a close relative of *Astenus* DEJEAN and allied genera. SMETANA (2004) lists the genus as "incertae sedis, Paederini".

The present paper was originally stimulated by a revision of the genus *Neosclerus* CAMERON, 1924. Material examined from various collections also included specimens of *Sclerochiton* that had been identified as *Neosclerus*. Both genera are characterized by conspicuously large eyes and may thus be confused. A preliminary study of the - at that time rather limited - *Sclerochiton* material at hand revealed that the genus was represented in the Oriental species by several undescribed species, in addition to those already known.

## Material and methods

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

BMNH	The Natural History Museum, London (R. G. Booth)
MHNG	Muséum d'histoire naturelle Genève (G. Cuccodoro)
NHMB	Naturhistorisches Museum Basel (M. Brancucci, M. Geiser)
NHMW	Naturhistorisches Museum Wien (H. Schillhammer)
NME	Naturkundemuseum Erfurt (M. Hartmann, assisted by W. Apfel)
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg (L. Behne, D. Werner)
SMNS	Staatliches Museum für Naturkunde, Stuttgart (W. Schawaller, K. Wolf-Schwenninger)
cAss	author's private collection
cKle	private collection Andreas Kleeberg, Berlin
cPüt	private collection Andreas Pütz, Eisenhüttenstadt
cRou	private collection Guillaume de Rougemont, London
cSch	private collection Michael Schülke, Berlin

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). For the photographs a digital camera (Nikon Coolpix 995) was used.

Head length was measured 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, aedeagal length from the apex of the ventral process to the base of the capsule. The parameral side of the aedeagus (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

### The genus *Sclerochiton* KRAATZ, 1859

*Sclerochiton* KRAATZ, 1859: 133 f.; type species by monotypy: *Sclerochiton ochraceus* KRAATZ, 1859.

*Saurellus* MOTSCHULSKY, 1858: 71 f.; type species by monotypy: *Echiaster indicus* MOTSCHULSKY, 1858.

*Cheilaster* BERNHAUER, 1915: 120 [primary homonym]; type species by monotypy: *Cheilaster csikii* BERNHAUER, 1915.

*Ramba* BLACKWELDER, 1952: 336 [replacement name for *Cheilaster* BERNHAUER].

#### Redescription:

Species of relatively small size, body length 2.5–4.3 mm. Head large in relation to pronotum and transverse, usually 1.2–1.3 times as wide as long; posterior margin truncate (e.g., Fig. 2) to broadly convex (e.g., Fig. 77) in dorsal view; neck slender, 1/5–1/4 as wide as head across eyes; dorsal aspect more or less matt owing to the extremely dense, coarse, and areolate punctation (Figs 3, 31, 90); interstices reduced to narrow ridges and without microsculpture; pubescence inconspicuous, short, fine, and depressed. Eyes enormous, strongly bulging and large, occupying nearly all of the lateral portion of the head (e.g., Figs 2, 17, 23). Antenna (Figs 11, 32) short; antennomere I large and weakly oblong; II 1.5–2 times as long as wide and distinctly narrower than I; III narrower than II, weakly oblong; IV weakly oblong or as long as broad; V globulous, usually approximately as long as wide; VI–X of gradually increasing width and increasingly transverse; X approximately 1.4–2.0 times as wide as long. Gular sutures very narrowly separated. Labrum (Fig. 4) transverse, in cross-section convex; anterior margin feebly concave to moderately deeply and sharply excised in the middle, but not dentate; near middle of anterior margin with a stout dorsal seta on either side; ventrally near anterior margin with two very long and stout setae on either side. Mandibles long, very slender, and apically acute; right mandible with three long and acute teeth often more or less merged and resembling a pronounced trifid tooth, left mandible with two long and acute teeth often merged and resembling a pronounced bifid tooth approximately in the middle. Maxillary palpus 4-jointed; palpomere I slender and short; II somewhat flattened, distinctly longer and broader than I; III somewhat flattened, distinctly longer and broader than II; IV very small and needle-shaped. Labial palpus (Fig. 5) 3-jointed; palpomere I very small and inconspicuous; II and III very long and slender, of subequal length; III apically very acute. Labium of trapezoid shape; anterior margin truncate in the middle and laterally dentate, near the lateral process with a long seta. Mentum weakly transverse (Figs 5–6), with conspicuous spine-like process directed anteriorly (Fig. 7). Gular sutures very narrowly separated.

Pronotum (e.g., Figs 2, 17, 23) weakly oblong and of sub-trapezoid shape, usually 1.05–1.20 times as long as broad, much narrower and smaller than head; maximal width in anterior half, posteriorly tapering; margins without long setae; punctation similar to that of head (Figs 12, 33); microsculpture absent; pubescence inconspicuous, short, depressed, and sometimes stout.

Elytra of variable length; humeral angles more or less marked; posterior margin oblique; punctuation either similar to that of head and pronotum, or slightly less dense, or not areolate (Figs 13, 34, 91); microsculpture absent. Hind wings present or reduced. Legs slender; all tarsi 5-jointed; tarsomeres I-IV of decreasing length; all tarsomeres unmodified (i.e., not dilated or bilobed); protarsi without sexual dimorphism.

Abdomen widest at base or at segment V; anterior tergites at most very indistinctly impressed anteriorly; punctuation of tergites III-V conspicuously dense and coarse, that of tergites VI-VIII in most species much sparser and less coarse (Fig. 70), in some species only slightly less coarse and dense (Fig. 44); interstices without microsculpture; tergite VII with more or less pronounced palisade fringe; surface of tergite VIII strongly convex in cross-section, posterior margin convex; tergite IX undivided, posterior margin strongly excised; tergite X very small.

♂: sternite VI sometimes depressed or shallowly impressed in posterior median portion; sternite VII with or without modified setae posteriorly, sometimes with conspicuous clusters of long black setae, posterior margin usually at least weakly concave in the middle; sternite VIII without modified pubescence, posterior margin with median excision of variable shape and depth; sternite IX very long and slender; aedeagus without parameres, at base of ventral process with more or less pronounced oblique process; dorsal plate in few species well-developed, in most species more or less reduced; internal structures in most species weakly sclerotized, in few species massive and distinctly sclerotized; ventral process of variable shape, apically more or less acute.

♀: posterior margin of sternite VIII convex.

### Systematic position:

Numerous external and sexual characters suggest that *Sclerochiton* belongs to the subtribe Astenina. This conclusion is supported particularly by the slender neck, the conspicuous punctuation of the head and pronotum (similar to that of *Astenus*), the characteristic shape of the pronotum (similar to that of *Astenus*), the morphology of the antennae (similar to that of *Astenus*), the general morphology of the maxillary palpi, the long and slender mandibles, the shape of the abdomen (similar to that of many *Astenus* species), as well as the male primary and secondary sexual characters, which in general resemble those of *Astenus*.

### Comparative notes:

In many respects, *Sclerochiton* resembles *Astenus*, from which it is readily distinguished by the enormous eyes, the characteristic punctuation of the abdomen, the much shorter and stouter antennae, the simple tarsomeres IV (bilobed in *Astenus*), the shape and chaetotaxy of the labrum, the morphology of the maxillary and the labial palpi, the absence of long black setae on the margins of the pronotum, the elytra, and the abdomen, as well as by the conspicuous process of the mentum. For illustrations of the mouthparts of *Astenus* see COIFFAIT (1984).

### Species groups:

The East Palaearctic and Oriental *Sclerochiton* species can be subdivided into two species groups, the *S. indicus* group and the *S. unicolor* group.

The *S. indicus* group is composed of three species (*S. indicus*, *S. rougemonti*, *S. hastatus*) and characterized by smaller average body size, paler coloration, extremely large eyes (their posterior margins reaching the posterior angles of the head or nearly so), a truncate posterior margin of the head (without appreciable posterior angles), a relatively shallow antero-median incision of the labrum, a posteriorly distinctly tapering (from base to apex) and apically more acute abdomen, a male sternite VII without distinctly modified pubescence, and a small aedeagus with weakly sclerotized internal structures.



The *S. unicolor* group comprises twelve species of larger average body size and darker coloration (body more or less uniformly blackish, only elytra sometimes with reddish spot or paler posterior margin). The eyes are often less enormous; the posterior angles of the head are mostly visible and obliquely rounded, leaving only the median portion of the posterior margin distinctly truncate; the anterior margin of the labrum is more deeply incised in the middle (exception: *S. andrewesi*), the abdomen is usually widest at segment V and apically less acute (exception: *andrewesi*), the pubescence of the male sternite VII is modified, and the aedeagus is larger and often has more massive and more strongly sclerotized internal structures.

Within the *S. unicolor* group, several subgroups can be identified. The *S. unicolor* subgroup (*S. unicolor*, *S. maculosus*, *S. acutissimus*, *S. penicillatus*) is characterized by more or less distinctly spotted elytra with the spots in more median position, a relatively slender pronotum (approximately 1.15-1.20 times as long as broad), the rather dense punctation of the abdominal tergites VI-VIII (in other species of the *S. unicolor* group much sparser than the punctation of tergites III-V), the presence of a transverse row of approximately eight or more peg-setae near the middle of the posterior margin of the male sternite VII, and by an aedeagus of rather similar general morphology. The synapomorphically derived male sexual characters suggest the following sister group affiliations: (*S. unicolor* + *S. maculosus*) + (*S. acutissimus* + *S. penicillatus*). Interestingly, both lineages are represented by one Himalayan and one Chinese species.

The *S. schuelkei* subgroup (*S. schuelkei*, *S. barbatus*) is distinguished from other subgroups by the following character combination: elytra with latero-median reddish spot; eyes moderately large; posterior margin of head convex; pronotum weakly oblong; male sternite VII with dense and extensive cluster of long black setae on either side; aedeagus large, with long and slender ventral process, at base of ventral process without long process, and with massive internal structures.

The *S. rectus* subgroup (*S. rectus*, *S. sinuatus*, *S. laoticus*, *S. excisus*) is distinguished from the two preceding subgroups by larger eyes (almost reaching posterior angles of head), the broadly truncate posterior margin of the head, the uniformly blackish elytra, and the shape and chaetotaxy of the male sternite VII (posterior margin shallowly to strongly excised in the middle, near this excision with cluster of peg-setae). Within this subgroup, *S. rectus* and *S. sinuatus* are undoubtedly adelphotaxa, as is suggested by the similar general morphology of the aedeagus and by the similar modifications of the male sternite VII.

The affiliations of *S. andrewesi* and *S. bistipulatus* are somewhat unclear. In *S. andrewesi*, the chaetotaxy of the male sternite VII is similar to that of the *S. unicolor* subgroup, but other characters (shape and punctation of the abdomen, coloration of the elytra, morphology of the aedeagus) do not suggest a closer relationship to *S. unicolor*.

### Identification:

Owing to the general uniformity of external characters, a reliable identification of *Sclerochiton* species is often possible only based on the male primary and secondary sexual characters, particularly the shape of the aedeagus and the shape and chaetotaxy of the male sternite VII.

### Distribution and diversity:

The currently known distribution of *Sclerochiton* is discontinuous and confined to the Afrotropical region (six species), as well as to the Oriental region, including the south of the East Palaearctic (fifteen described species). In addition to the fifteen species (re-)described below, additional material was seen representing at least one undescribed species. Since they are represented only by females, they must remain undescribed for the time being. The Oriental species are distributed

from northern Pakistan, Nepal, and India to southern China, Thailand, Laos, Malaysia, and Sumatra. The regions with the highest diversity are China, India, and Thailand (five species each), as well as Nepal (three species).

### Natural history:

As can be inferred from the available data, *Sclerochiton* species are mostly found in the leaf litter of forest habitats. This particularly applies to species with restricted distributions. The widespread *S. indicus* was also sifted from rotting vegetables. The altitudes indicated on the labels range from 150 to 2400 m. Adult beetles have been found throughout the year. A teneral specimen of *S. bistipulatus* was observed in November.

### The species of *Sclerochiton*

#### *Sclerochiton indicus* (MOTSCHULSKY, 1858) (Figs 1-15)

*Echiaster indicus* MOTSCHULSKY, 1858: 637 f.

*Sclerochiton ochraceus* KRAATZ, 1859: 134.

### Type material examined:

*S. ochraceus*: Lectotype ♂: "Ind. or. / ochraceus / coll. Kraatz / Holotypus / DEI Müncheberg Col 01020 / Lectotypus *Sclerochiton ochraceus* Kraatz, rev. V. Assing 2010 / *Sclerochiton indicus* (Motschulsky), det. V. Assing 2010" (SDEI).

### Comment:

The original description of *Echiaster indicus* is based on an unspecified number of syntypes from "Indes orientales" originally deposited in "Collection Holtzer" (MOTSCHULSKY 1858). Type material was located neither in the Zoological Museum Moscow nor in the Zoological Museum St. Petersburg (GUSAKOV, e-mail 10 November, 2010; KATAEV, e-mail 14 October, 2010). In HORN et al. (1990) there is no indication of the whereabouts of the Holtzer collection.

*Sclerochiton ochraceus* was described from an unspecified number of syntypes, among them at least one male and one female, collected "in India orientali" (KRAATZ 1859). One of these syntypes, a male, is deposited in the Kraatz collection at the SDEI. In using the term "Holotypus" for this specimen in a type catalogue, GAEDIKE (1981) unintentionally designated it as the lectotype.

### Additional material examined:

**Nepal:** 1 ex., Chitwan District, Chitwan N. P., Sauraha, 150 m, 31.V.-4.VI.1997, leg. Schawaller (SMNS).

**India:** 1 ♂, 1 ♀, Assam, Dibrugarh N. P., Tinsukia, sifted litter, 3.VI.2006, leg. de Rougemont (cRou, cAss).

**Myanmar:** 1 ♂, Chin province, Saw env., 900-1500 m, 27.-28.II.1996, leg. Kurbatov (cAss).

**China:** 2 ♂♂, 1 ♀, Yunnan, Dali Bai Aut. Pref., 35 km N Dali, 26°01'N, 100°07'E, 1980 m, rotting vegetables near pond sifted; 24.VIII.2009, leg. Schülke (cSch, cAss).

**Thailand:** 1 ♂, 2 ♀♀, Chiang Rai, 10 km W Wiang Pa Pao, Ban Huay Ya Sai, 780 m, 28.I.1988, leg. Schwendinger (MHNG); 1 ♂, "Gr. Ban Du", III.1987, leg. de Rougemont (cRou); 1 ♂, Ban Sai Yok, 9.III.1982, leg. de Rougemont (cRou); 1 ♀, Phetchaburi, Kaeng Krachan National Park, 300-400 m, 17.XI.1985, leg. Burckhardt & Löbl (MHNG).

**Locality not specified:** 1 ex., "India or." (NHMW).

**Redescription:**

Body length 2.8-3.3 mm. Habitus as in Fig. 1. Coloration: head and pronotum reddish-yellow, rarely darker, reddish-brown to dark brown; elytra yellowish, rarely uniformly so, usually with the lateral portions and the disc largely infuscate, leaving only the suture, the anterior and posterior margins, as well as the dorso-lateral portion yellowish; legs yellowish; antennae yellowish, with the apical half more or less distinctly darker.

Head approximately 1.3 times as wide as long (Fig. 2); neck slender, approximately 0.20-0.25 times as wide as head across eyes; posterior margin straight; punctation coarse, areolate, and extremely dense, interstices reduced to narrow ridges (Fig. 3); microsculpture absent; pubescence indistinct, short and depressed. Eyes large, almost reaching posterior margin, with short pubescence. Antennae approximately 0.6 mm long and shaped as in Fig. 11. Mouthparts as in Figs 4-7.

Pronotum weakly oblong, approximately 1.05 times as long as wide and 0.75 times as wide as head, widest in anterior half (Fig. 2); long marginal setae absent; punctation similar to that of head (Fig. 12); pubescence extremely short, and barely noticeable.

Elytra relatively long, approximately 0.9-1.05 times as long and 1.20-1.25 times as wide as pronotum; humeral angles marked (Fig. 2); punctation as dense and coarse as that of head and pronotum, but not areolate (Fig. 13); interstices without microsculpture; pubescence indistinct, fine, short, and depressed. Hind wings present and apparently fully developed. Metatarsomere I approximately as long as the combined length of II and III.

Abdomen widest at base, gradually tapering apically; punctation coarse and very dense on anterior, somewhat less dense and finer on posterior tergites; interstices without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

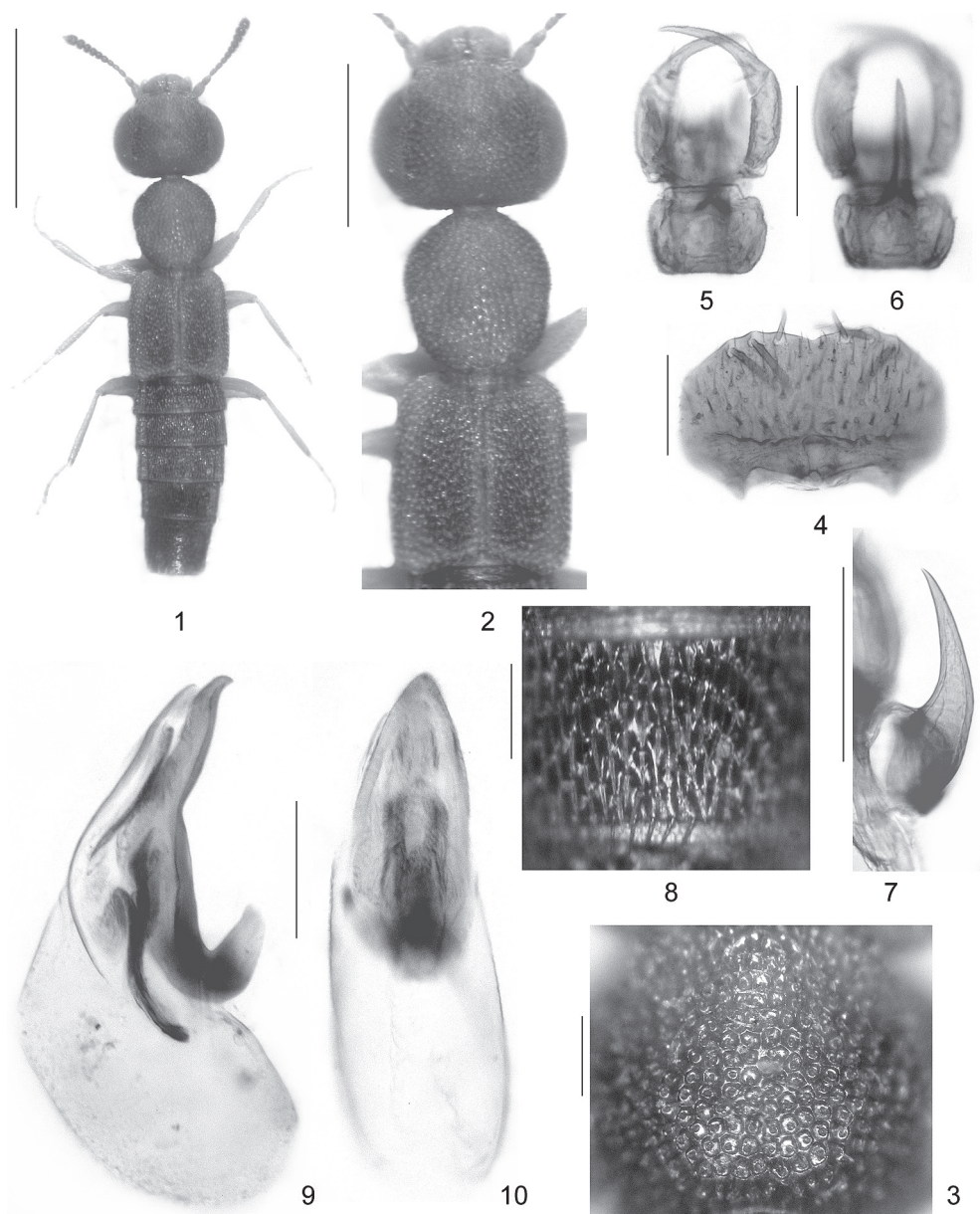
♂: sternite VII oblong, posteriorly weakly concave and in the middle with small triangular impression (Fig. 14); sternite VIII strongly oblong, posteriorly with rather deep and narrow, almost V-shaped excision (Fig. 15); aedeagus approximately 0.38 mm long, ventral process of characteristic shape in lateral view and rather broad in ventral view (Figs 9-10).

**Comparative notes:**

This species is distinguished from other pale-coloured congeners particularly by the coloration (forebody yellowish to reddish, elytra usually with large dark spot; abdomen dark) and by the morphology of the aedeagus.

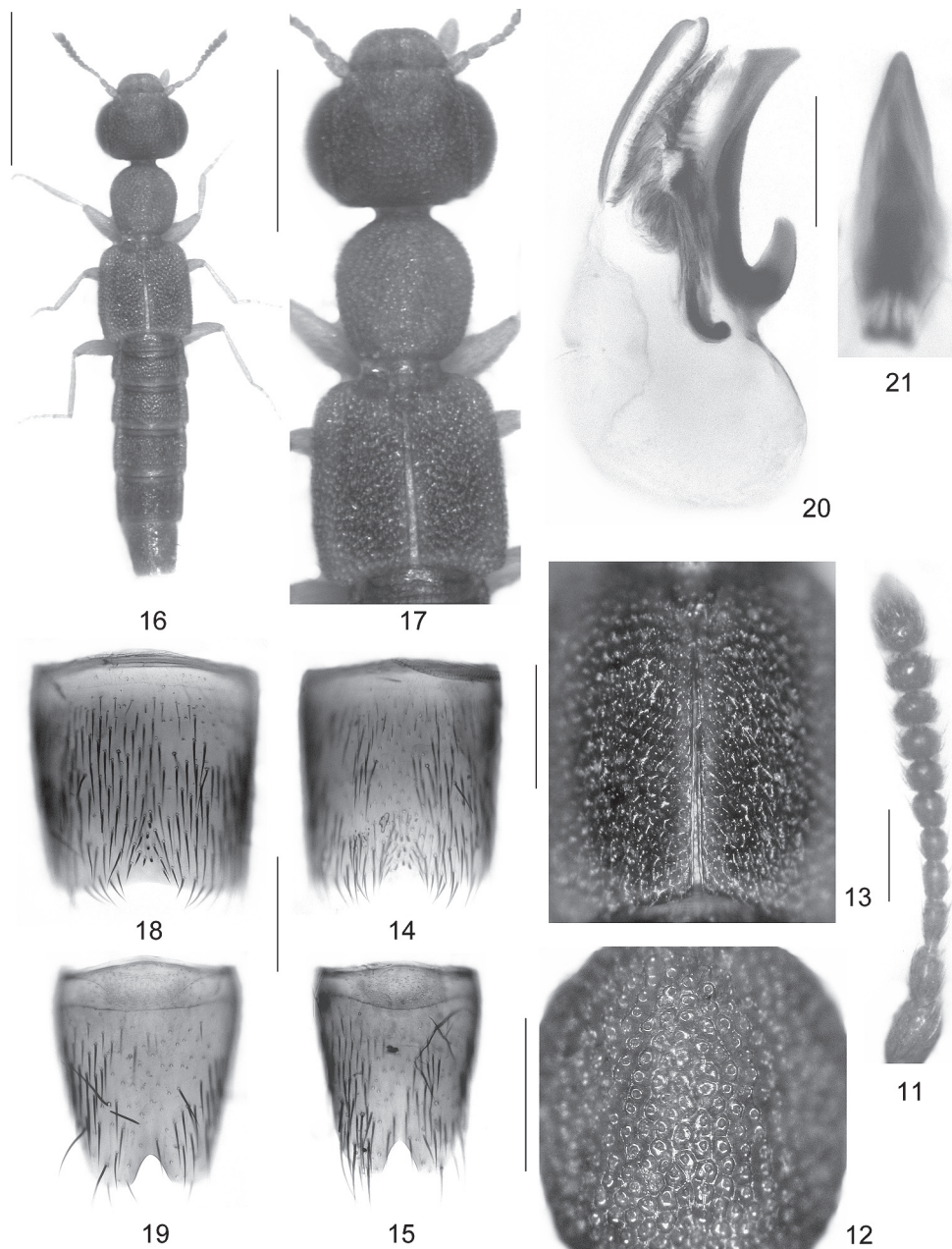
**Distribution and natural history:**

*Sclerochiton indicus* is the most widespread representative of the genus in the East Palaearctic and Oriental regions, its distribution ranging from the southern slopes of the Himalaya (Nepal, West Bengal) to Myanmar, southern China, and Thailand. Bionomic data are scarce. Three specimens were collected from rotting fruit near a pond, two were sifted from litter. The altitudes range from 150 to almost 2000 m. The material with dates specified on the labels was collected in January-March, May/June, August, and November.



Figs 1-10: *Sclerochiton indicus* (3: lectotype of *S. ochraceus*): habitus (1); forebody (2); median dorsal portion of head (3); labrum (4); labium and mentum in ventral view (5-6); mentum in lateral view (7); median portion of abdominal tergite IV (8); aedeagus in lateral and in ventral view (9-10). Scale bars: 1: 1.0 mm; 2: 0.5 mm; 3-10: 0.1 mm.





Figs 11-21: *Sclerochiton indicus* (11-15, 14-15: lectotype of *S. ochraceus*) and *S. rougemonti* (16-21): antenna (11); median portion of pronotum (12); median portion of elytra (13); male sternite VII (14, 18); male sternite VIII (15, 19); habitus (16); forebody (17); aedeagus in lateral view (20); apical portion of aedeagus in ventral view (21). Scale bars: 16: 1.0 mm; 17: 0.5 mm; 12-15, 18-19: 0.2 mm; 11, 20-21: 0.1 mm.

***Sclerochiton rougemonti* sp. n.** (Figs 16-21)**Type material:**

Holotype ♂: "Thailand, Chiang Dao, 26.X.2010, G. de Rougemont / Holotypus ♂ *Sclerochiton rougemonti* sp. n. det. V. Assing 2011" (cAss).

**Description:**

Body length 3.3 mm. Habitus and forebody as in Figs 16-17. External characters as in *S. indicus*, except as follows:

Coloration: abdomen reddish brown.

♂: sternite VII slightly less oblong (Fig. 18); sternite VIII less oblong and posteriorly with less deep median excision (Fig. 19); aedeagus 0.36 mm long, ventral process stout, weakly curved, and apically truncate in lateral view (Figs 20-21); dorsal plate shorter and more sclerotized than in *S. indicus*.

**Etymology:**

The species is dedicated to Guillaume de Rougemont, who collected the holotype, also in gratitude for the generous gift of the holotype.

**Comparative notes:**

This species is readily distinguished from the similar *S. indicus* by the less dark abdomen and particularly by the male sexual characters.

**Distribution and natural history:**

The type locality is situated in northern Thailand, where the holotype was collected in October. Additional bionomic data are not available.

***Sclerochiton hastatus* sp. n.** (Figs 22-28)**Type material:**

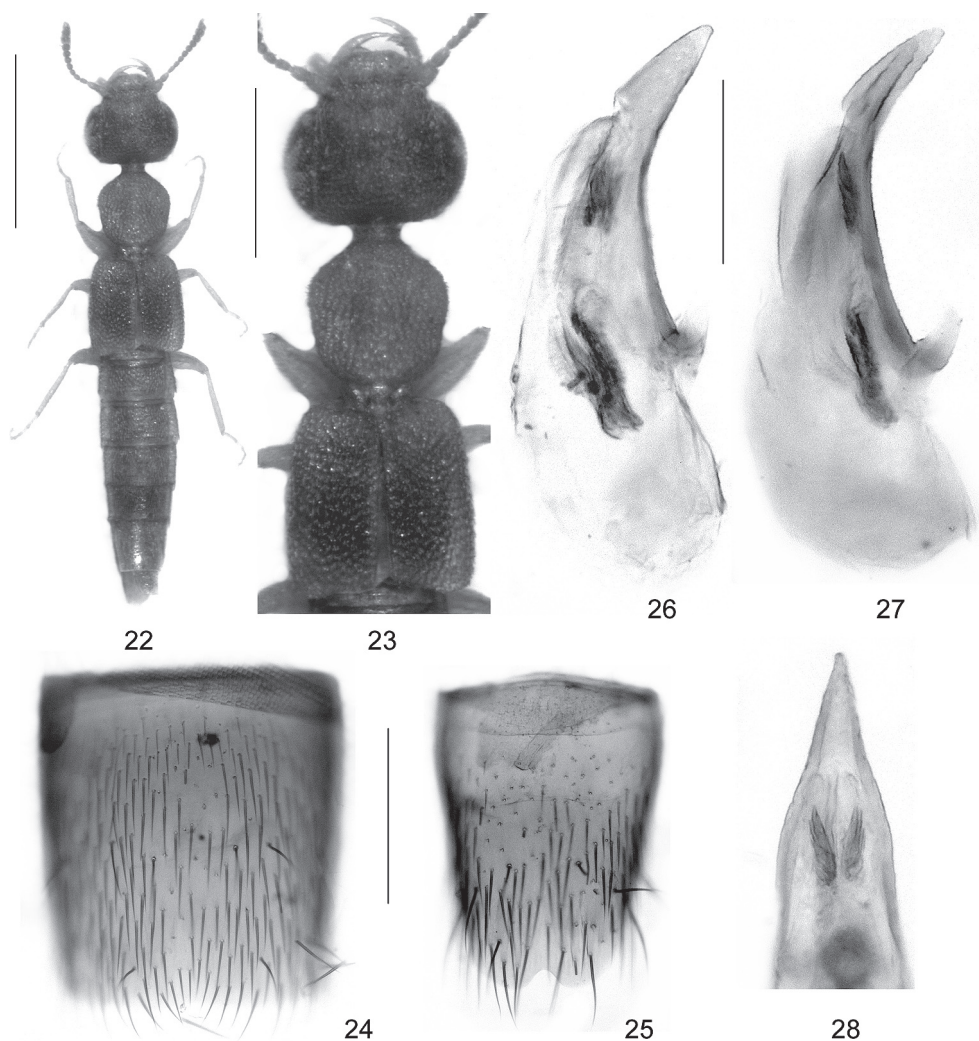
Holotype ♂: "Inde Garhwal (UP), 22 km N. de Rishikesh, 450 m, 30.X.79, I. Löbl / *Sclerochiton indicus* Mots., det. G. de Rougemont 1999 / Holotypus ♂ *Sclerochiton hastatus* sp. n., det. V. Assing 2010" (MHNG). Paratypes: 13 exs.: same data as holotype (MHNG, cAss, cRou); 1 ex.: "Pakistan: Hazara, Malkandi, 1500 m, 3.VI.1983, Besuchet - Löbl" (MHNG); 1 ex.: "Pakistan: Dir, Dir, 1500 m, 20.V.1983, Besuchet - Löbl" (cAss); 1 ♂: "Pak/Islamabad, Margalla base, ca. 600 m, Affenwald, Laubstreu (*Bauhinia*, *Lantana*, *Broussantia*), Pilze, 1.12.1997, leg.: Dickoré / *Sclerochiton indicus* Mots., det. 199 [sic] G. de Rougemont" (NME).

**Description:**

Body length 2.8-3.3 mm. Habitus and forebody as in Figs 22-23. External characters as in *S. indicus*, except as follows:

Coloration: whole body reddish-yellow, except for the slightly darker abdominal apex (segments IX-X) and a diffuse, ill-defined, more or less extensive, weakly infusate elytral spot. Anterior margin of labrum very feebly concave in the middle. Elytra on average shorter, 0.85-1.0 times as long as pronotum. Hind wings completely reduced. Abdominal tergite VIII with fine palisade fringe.





Figs 22-28: *Sclerochiton hastatus*: habitus (22); forebody (23); male sternite VII (24); male sternite VIII (25); aedeagus in lateral view (26-27); apical portion of aedeagus in ventral view (28). Scale bars: 22: 1.0 mm; 23: 0.5 mm; 24-25: 0.2 mm; 26-28: 0.1 mm.

♂: sternite VII with the pubescence in median posterior portion directed obliquely postero-mediad, otherwise unmodified (Fig. 24); sternite VIII posteriorly with very shallow median excision (Fig. 25); aedeagus (Figs 26-27) approximately 0.3 mm long, ventral process straight and apically spear-shaped in lateral view, process at base of ventral process short (lateral view).

#### Etymology:

The specific epithet is an adjective derived from the Latin noun *hasta* (spear) and alludes to the shape of the apex of the ventral process of the aedeagus (lateral view).

**Comparative notes:**

This species is readily distinguished from the similar *S. indicus* particularly by the reddish abdomen, the on average less defined elytral spot, the completely reduced hind wings, the shallower posterior excision of the male sternite VIII, as well as by the different morphology of the aedeagus (shape of ventral process in lateral and in ventral view; much shorter process at base of ventral process).

**Distribution and natural history:**

The known distribution of *S. hastatus* includes northern Pakistan and northern India. The type specimens were collected at altitudes of 450 and 1500 m in May, June, October, and December.

***Sclerochiton unicolor* COIFFAIT, 1975 (Figs 29-41)**

*Sclerochiton unicolor* COIFFAIT, 1975: 172 f.

**Type material examined:**

Holotypus ♂: "Ghokarna b. Kathmandu, Nepal, lg. H. Franz / Holotype / *Sclerochiton unicolor* H. Coiffait 1974 / *Sclerochiton unicolor* Coiffait, det. V. Assing 2010" (NHMW). Paratypus ♀: same data as holotype (NHMW).

**Comment:**

The original description is based on a male holotype (deposited in the Franz collection) and a female paratype (deposited in the Coiffait collection) from "Ghokharna près Katmandou, Népal central" (COIFFAIT 1975). The holotype and a specimen labelled as "paratype" were located in the Franz collection at the NHMW. The type status of the latter is doubtful; if there is a paratype in the Coiffait collection, it does not belong to the type series.

**Additional material examined:**

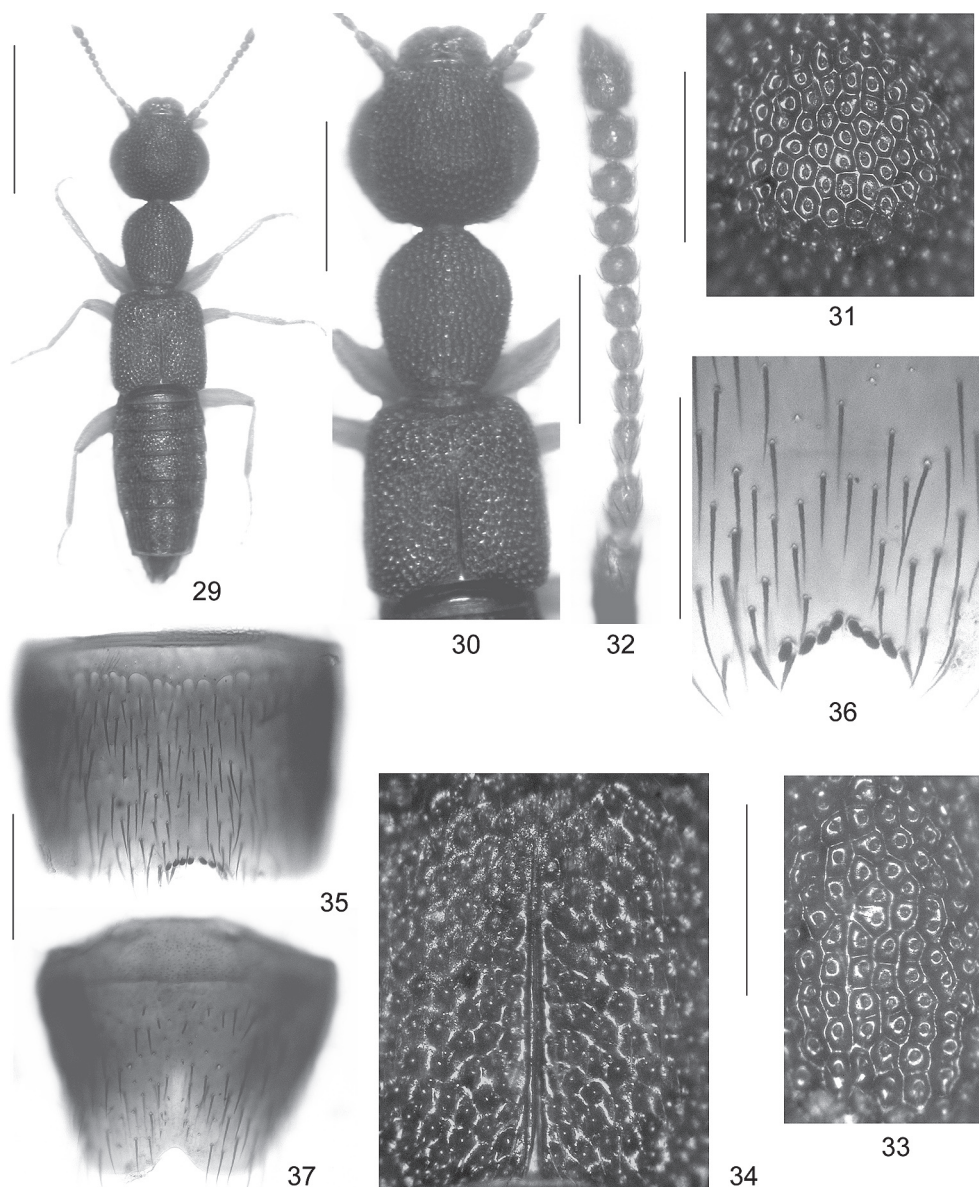
**Nepal:** 13 exs., Kathmandu, Gokarna Forest near Kathmandu, 1400 m, 31.III.1981, leg. Löbl & Smetana (MHNG, cAss); 3 exs., same data, but 1.IV.1981 (MHNG); 15 exs., Gokarna Forest, 1300 m, 20.X.1983, leg. Löbl & Smetana (MHNG, cAss); 8 exs., Kathmandu, Nagarjun Forest near Kathmandu, 1650 m, 2.IV.1981, leg. Löbl & Smetana (MHNG, cAss); 3 exs., same data as holotype (NHMW); 1 ex., S Kathmandu, Chapagaon, Bordzobara, leg. H. Franz (cAss); 1 ♀, "Pha Kumpa" [?], IV.1984, leg. de Rougemont (cRou); 1 ♀, Dhaulagiri, SE-slope, upper Ruhagat Khola, between Chima Khola and Dwari, 1750 m, 10.V.2002, leg. Schmidt (NME); 2 exs., Chapagaon, Bordzobaray, leg. H. Franz (NHMW).

**India:** 1 ♂, Arunachal Pradesh, Hapoli, 29.V.2006, leg. de Rougemont (cRou); 3 ♀ ♀, Arunachal Pradesh, Along, 30.V.2006, leg. de Rougemont (cRou); 1 ♀, Arunachal Pradesh, Miri Hills, road from Ziro to Daporijo, 29.V.2006, leg. de Rougemont (cRou); 1 ♂, West Bengal, Darjeeling district, 13 km N Ghoom, 1500 m, 15.X.1978, leg. Besuchet & Löbl (cAss).

**Redescription:**

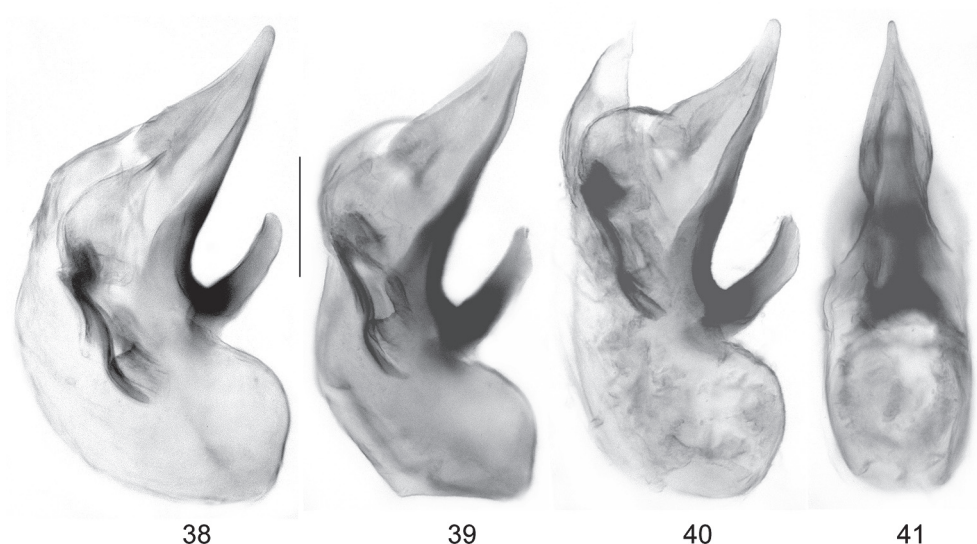
Body length 3.0-3.5 mm. Habitus as in Fig. 29. Coloration: body blackish; elytra with an ill-defined, usually more or less indistinct, oblique, and more or less extensive dark-reddish spot slightly behind the middle, which rarely extends anteriad towards humeral angles; legs yellowish; antennae yellowish with the apical 5-6 antennomeres slightly darker.

Head approximately 1.2 times as wide as long (Fig. 30); neck slender, approximately 0.2 times as wide as head across eyes; posterior margin straight in the middle and weakly convex laterally; punctation coarse, areolate, and extremely dense, interstices reduced to narrow ridges (Fig. 31);



**Figs 29-37:** *Sclerochiton unicolor*: habitus (29); forebody (30); median dorsal portion of head (31); antenna (32); median dorsal portion of pronotum (33); median portion of elytra (34); male sternite VII (35); posterior median portion of male sternite VII (36); male sternite VIII (37). Scale bars: 29: 1.0 mm; 30: 0.5 mm; 31-35, 37: 0.2 mm; 36: 0.1 mm.

microsculpture absent; pubescence fine, short, and depressed, indistinct. Eyes large (but slightly less so than in *S. indicus*), almost reaching posterior margin, with short pubescence; head behind eyes obliquely and briefly narrowed towards posterior margin (Fig. 30). Antennae approximately 0.8 mm long and shaped as in Fig. 32. Anterior margin of labrum with shallow excision in the middle.



Figs 38-41: *Sclerochiton unicolor*: aedeagus of males from West Bengal (38) and Nepal (39-40) in lateral view; aedeagus in ventral view (41). Scale bar: 0.1 mm.

Pronotum (Fig. 30) approximately 1.2 times long as wide and 0.70-0.75 times as wide as head, widest in anterior half; long marginal setae absent; punctuation similar to that of head (Fig. 33); pubescence extremely short, stout, and barely noticeable.

Elytra (Fig. 30) of variable length, 0.8-1.0 times as long and approximately 1.30-1.35 times as wide as pronotum; humeral angles marked; punctuation slightly less dense than that of head and pronotum (Fig. 34); interstices without microsculpture; pubescence fine, short, depressed, and indistinct. Hind wings present, but probably of reduced length at least in specimens with short elytra. Metatarsomere I as long as, or slightly longer than the combined length of II and III.

Abdomen slightly narrower than elytra, widest at segment V; punctuation rather coarse and very dense on anterior, only slightly less dense and finer on posterior tergites; interstices without microsculpture and glossy; posterior margin of tergite VII with pronounced palisade fringe.

♂: sternite VII (Fig. 35) posteriorly concave in the middle, near this concavity with a transverse row of approximately 8 (usually 4, rarely 3 on either side) submarginal peg-setae (Fig. 36); sternite VIII in posterior half with oblong portion without pubescence, posterior excision rather small (Fig. 37); aedeagus approximately 0.4 mm long and shaped as in Figs 38-41.

#### Comparative notes:

This species is distinguished from all other congeners of dark coloration and with a spot on the elytra, except *S. maculosus*, particularly by the distinctly oblong pronotum, the dense punctuation of the abdominal tergites VI-VIII, the weakly pronounced elytral spot in median position, the shape and chaetotaxy of the male sternite VII, as well as by the morphology of the aedeagus. For characters separating it from *S. maculosus*, quite probably its sister species, see the comparative notes in the following section.

#### Distribution and natural history:

This species has been found in several localities in Nepal and in northern India (Arunachal Pradesh, West Bengal), from where it is reported for the first time. The specimens with labels specifying additional data were collected at altitudes of 1300-1750 m in spring (March-May) and in October.



***Sclerochiton maculosus* sp. n.** (Figs 42-49)**Type material:**

Holotype ♂: "China: Yunnan [CH07-17], Baoshan Pref., mountain range 25 km S Tengchong, 1900 m, 24°48'28"N, 98°32'03"E, dev. primery [sic] decid. forest, litter, fungi sifted, 2.VI.2007, M. Schülke / Holotypus ♂ *Sclerochiton maculosus* sp. n., det. V. Assing 2010" (cAss). Paratypes: 5 exs.: same data as holotype (cSch, cAss); 3 exs.: "China: Yunnan [CH07-18], Baoshan Pref., mountain range 22 km S Tengchong, 1750 m, 24°49'29"N, 98°29'27"E, second. forest, litter, dead wood sifted, 2.VI.2007, leg. A. Pütz (cPüt, cRou); 1 ♂, 5 exs., "China: Yunnan, Baoshan Pref., mount. range 25 km S Tengchong, 1900 m, 24°48'21"N, 98°32'05"E, cleft with devast. primary forest, litter & mushr. sifted, 30.VIII.2009, leg. M. Schülke [CH09-18]" (cSch, cAss); 1 ♂, 2 exs.: "China: Yunnan [CH07-16], Baoshan Pref., mountain range 14 km E Tengchong, 1850 m, 25°00'28"N, 98°38'07"E, second. mixed forest, litter sifted, 1.VI.2007, M. Schülke" (cSch, cAss).

**Description:**

Body length 3.1-3.7 mm. Habitus, forebody, and abdomen as in Figs 42-44. External characters as in *S. unicolor*, except as follows:

Coloration: elytra with distinct reddish spot. Elytra on average broader, longer (0.9-1.0 times as long as pronotum), and with more pronounced humeral angles.

♂: sternite VII with posterior margin weakly concave in the middle, anterior to this concavity with transverse row of approximately 8-10 peg-setae (Fig. 45); sternite VIII transverse, posterior margin with broad and relatively deep posterior excision (Fig. 46); aedeagus approximately 0.4 mm long, shaped as in Figs 47-49.

**Etymology:**

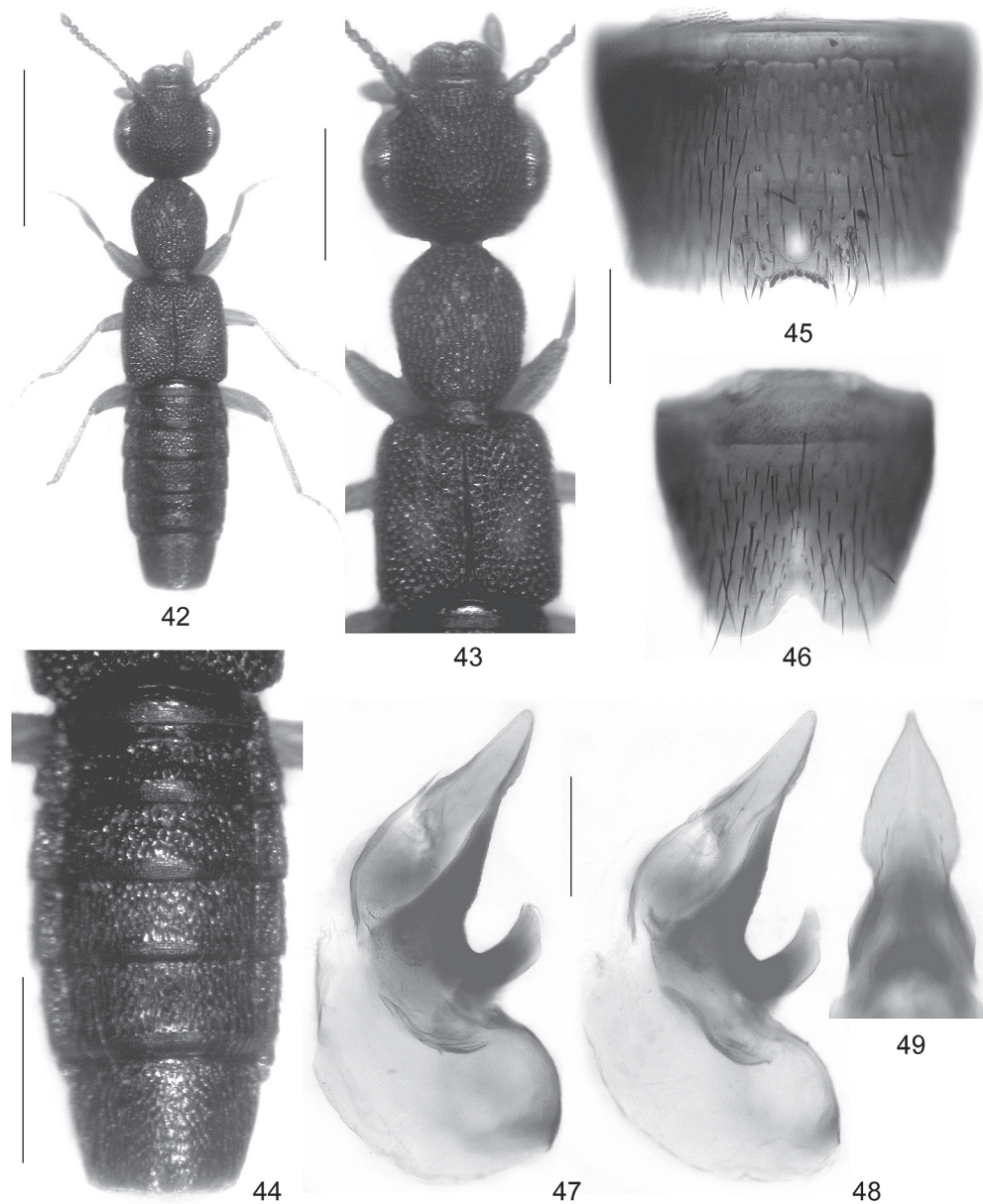
The specific epithet (Latin, adjective: spotted) alludes to the defined reddish spot on the elytra, one of the characters distinguishing this species from the similar *S. unicolor*.

**Comparative notes:**

Among the known species of *Sclerochiton*, *S. maculosus* is undoubtedly most closely related to *S. unicolor*, as can be inferred from several shared character states, some of them clearly synapomorphies: shape of posterior margin of head; size of eyes; distinctly oblong pronotum; punctuation of posterior abdominal tergites dense, only slightly less so than that of the anterior tergites; posterior margin of sternite VII weakly concave and with transverse row of peg-setae in the middle; shape of male sternite VIII; shape of aedeagus. The new species is distinguished from *S. unicolor* particularly by the marked and more defined reddish spot on the elytra, the deeper posterior excision of the male sternite VIII, as well as by the morphology of the aedeagus (process at base of ventral process shorter and stouter; ventral process subapically somewhat sinuate in lateral view and apically shorter and less acute). Together with *S. unicolor*, it is separated from all other dark-coloured species by the more oblong pronotum, the much denser punctuation of the abdominal tergites VI-VIII, the modifications of the male sternite VII, as well as by the completely different general shape of the aedeagus.

**Distribution and natural history:**

This species is known from several localities in Yunnan, where the type specimens were sifted from forest leaf litter at altitudes of 1850-1900 m in June and August. On two occasions, *S. maculosus* was collected together with *S. schuelkei*.



Figs 42-49: *Sclerochiton maculosus*: habitus (42); forebody (43); abdomen (44); male sternite VII (45); male sternite VIII (46); aedeagus in lateral view (47-48); apical portion of aedeagus in ventral view (49). Scale bars: 42: 1.0 mm; 43-44: 0.5 mm; 45-46: 0.2 mm; 47-49: 0.1 mm.



*Sclerochiton acutissimus* sp. n. (Figs 50-57)**Type material:**

Holotype ♂: "China W.Sichuan (Ya'an Pref. Tianquan Co.) Jiajin Shan, valley above Labahe N.R.St., 57 km W Ya'an, 30°06'N / 102°25'E (light forest) 1800 m, 12.VII.1999, D. W. Wrase / Holotypus ♂ *Sclerochiton acutissimus* sp. n., det. V. Assing 2010" (cAss). Paratypes: 3 ♀ ♀: "China: W-Sichuan 1999, Ya'an Prefecture, Tianquan Co., Jiajin Shan, Tal oberh. Labahe N.R.St., 57 km W Ya'an, 30°06'N, 102°25'E, Streu, Rinde, Pilze, 1800 m, 12.VII., leg. M. Schülke" (cSch); 2 ♂ ♂, 4 ♀ ♀: "China: W-Sichuan, Ya'an Pref., Tianquan Co., valley above Labahe / N.R.St., 57 km W Ya'an, 30.06.63N, 102.25.18E, light forest, 1800 m, 12.VII.1999, leg. A. Pütz" (cPütz, cAss).

**Description:**

Body length 3.4-4.6 mm. Habitus as in Fig. 50. Coloration: head blackish-brown, with the frons paler brown and the mouthparts reddish; pronotum dark-brown to blackish-brown, of similar coloration as head or slightly less dark; elytra blackish-brown with relatively small, usually defined, either circular or obliquely oblong (more or less distinctly extended antero-laterad) reddish spot slightly behind middle in median position; abdomen blackish-brown to blackish; legs yellowish; antennae dark-yellowish, with the apical five antennomeres slightly darker.

Head (Fig. 51) approximately 1.25 times as wide as long; punctation coarse, dense, and areolate; dorsal surface matt. Eyes large, but not reaching posterior margin; postocular region obliquely narrowed towards the broadly truncate posterior margin of the head (Fig. 51). Labrum with anterior margin deeply incised in the middle.

Pronotum oblong, 1.15-1.20 times as long as broad and approximately 0.7 times as wide as head (Fig. 51); punctation somewhat coarser than that of head.

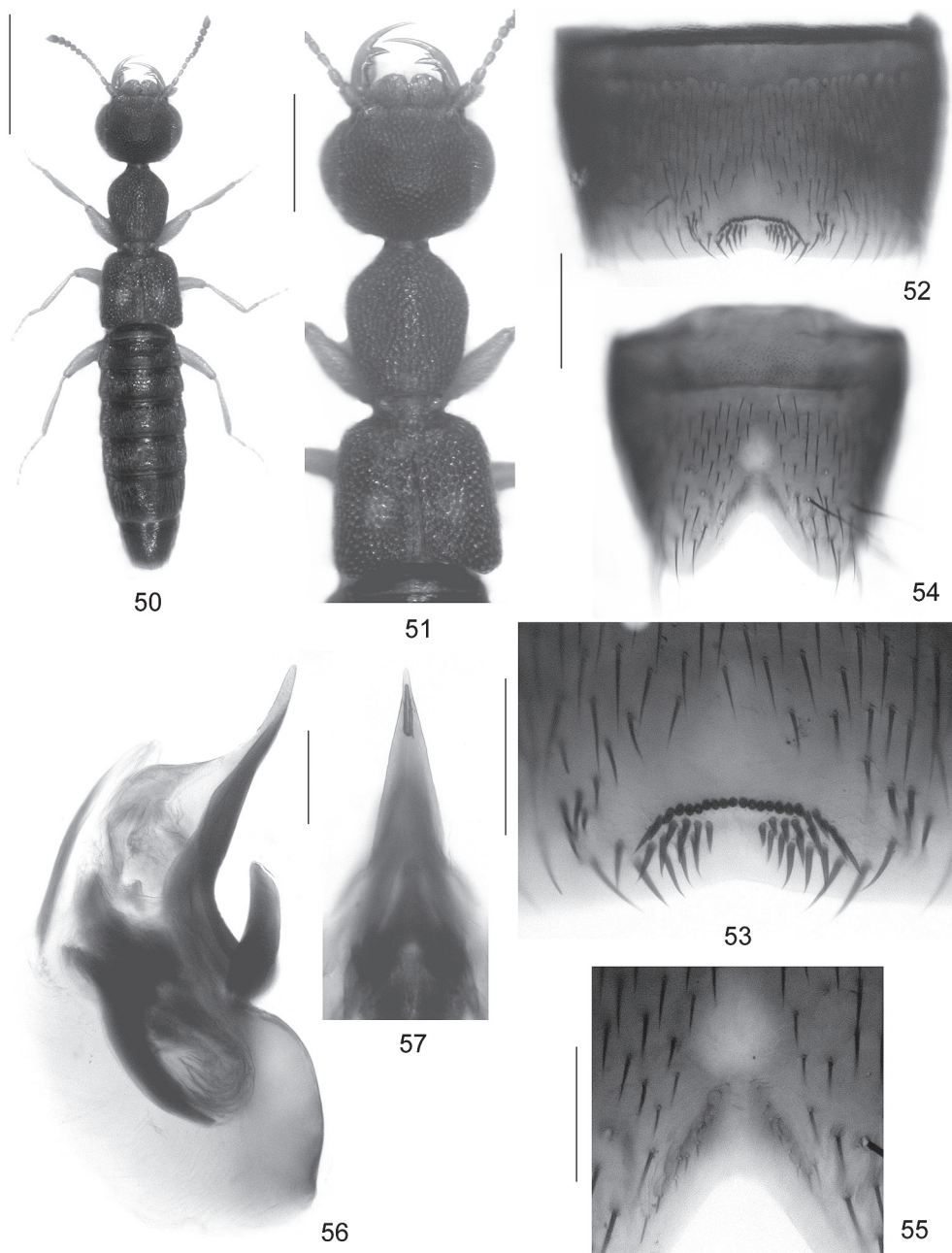
Elytra short, 0.75-0.80 times as long as pronotum; lateral margins dilated posteriad in dorsal view; humeral angles moderately marked (Fig. 51); punctation slightly coarser than that of pronotum, but not areolate. Hind wings completely reduced. Metatarsomere I at least as long as the combined length of II and III.

Abdomen slightly broader than elytra, widest at segments V/VI; punctation of tergites III-V very dense and coarse, that of tergites VI-VIII only slightly less dense than that of anterior tergites; tergite VII with palisade fringe.

♂: sternite VI with shallow median impression posteriorly; sternite VII of highly distinctive chaetotaxy, strongly transverse, posterior margin weakly concave in the middle, anterior to this concavity with two clusters of 10-15 short stout setae, anterior to these clusters with a transverse row of approximately 15 peg-setae (Figs 52-53); sternite VIII with deep, broad, and V-shaped posterior excision, near the apex of this excision with two rows of minute submarginal setae, these rows forming approximately a V, postero-median portion without long setae (Figs 54-55); aedeagus (Figs 56-57) large, 0.57-0.60 mm long, ventral process long, straight, and apically very acute; internal structures rather massive and distinctly sclerotized.

**Etymology:**

The specific epithet (Latin, superlative of *acutus* = sharp) alludes to the conspicuously acute ventral process of the aedeagus.



**Figs 50-57:** *Sclerochiton acutissimus*: habitus (50); forebody (51); male sternite VII (52); posterior median portion of male sternite VII (53); male sternite VIII (54); posterior median portion of male sternite VIII (55); aedeagus in lateral view (56); apical portion of aedeagus in ventral view (57). Scale bars: 50: 1.0 mm; 51: 0.5 mm; 52, 54: 0.2 mm; 53, 55-57: 0.1 mm.

**Comparative notes:**

As can be inferred from external characters (head shape; presence and position of the elytral spots; punctuation of the forebody; distinctly oblong pronotum; dense punctuation of the abdominal tergites VI-VIII), as well as the sexual characters (chaetotaxy of the male sternite VII, shape and chaetotaxy of the male sternite VIII; shapes of the ventral process and the internal structures of the aedeagus), *S. acutissimus* is undoubtedly most closely related to *S. penicillatus* (see below), together with which it forms the sister group of *S. unicolor* + *maculosus*.

The species is readily distinguished from all its congeners by the coloration and particularly by the conspicuous chaetotaxy of the male sternite VII, as well as by the distinctive morphology of the aedeagus.

**Distribution and natural history:**

The type locality is situated in western Sichuan, China. The specimens were sifted from litter in a forest at an altitude of 1800 m.

***Sclerochiton penicillatus* sp. n. (Figs 58-63)****Type material:**

Holotype ♂: "Nepal, Tama Koshi Vall., Jagat -> Tshet Tshet, 1000-1300 m, 15.05.2000, leg. J. Schmidt / Holotypus ♂ *Sclerochiton penicillatus* sp. n., det. V. Assing 2011" (cAss). Paratype ♀: same data as holotype (cKle); 1 ♀: "Nepal: Myagdi distr.: Lulang, Dhara Khola, / 2160-2400 m, 11.III.1994, leg. Ahrens" (SDEI); 1 ♀: "Nepal, Godovari [=Godavari?], 13:III:1981, de Rougemont / *Sclerochiton* sp. det. 198 [sic], G. de Rougemont" (cRou).

**Description:**

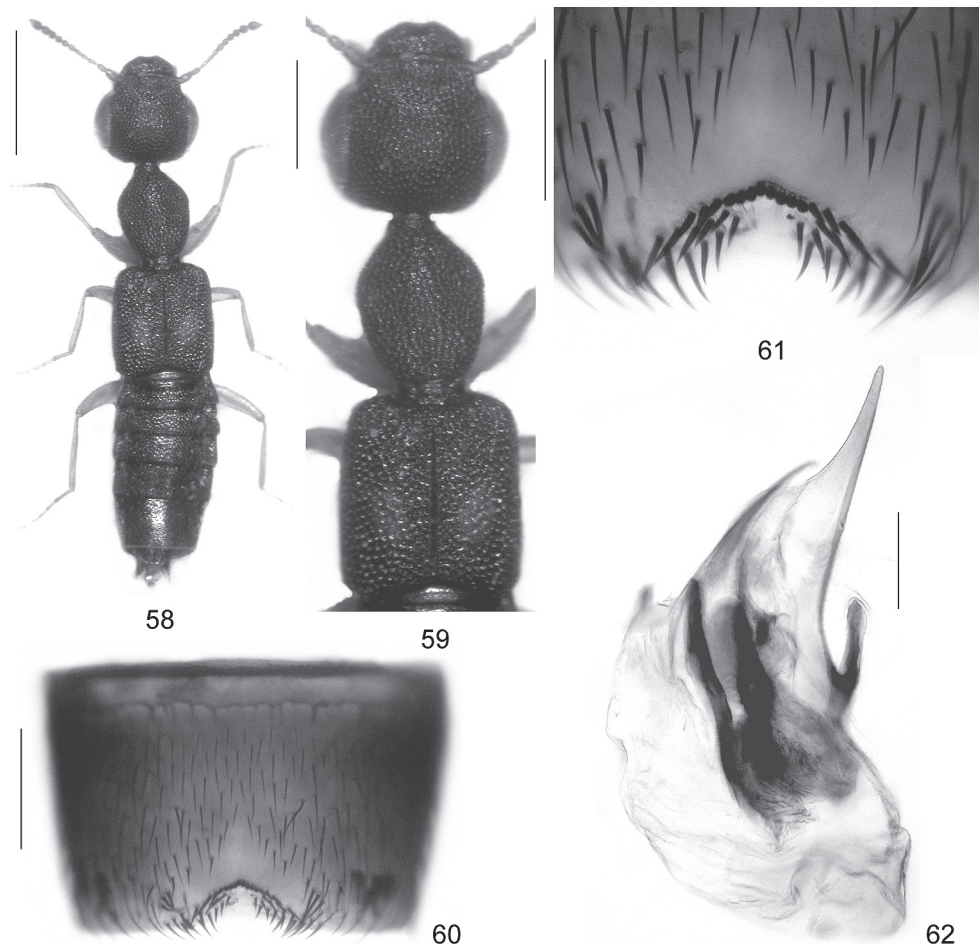
Body length 4.2-5.0 mm. Habitus as in Fig. 58. Coloration: body matt-blackish; elytra with a defined circular to obliquely oval yellowish to pale-reddish spot in mid-position slightly behind the middle; legs yellowish; antennae yellowish, with the apical five antennomeres slightly darker. Head (Fig. 59) approximately 1.25 times as wide as long; punctuation coarse, dense, and areolate; dorsal surface matt. Eyes large, but not reaching posterior margin; postocular region obliquely narrowed towards the broadly truncate posterior margin of the head (Fig. 59). Labrum with anterior margin rather weakly incised in the middle.

Pronotum oblong, approximately 1.2 times as long as broad and approximately 0.7 times as wide as head (Fig. 59); punctuation similar to that of head.

Elytra long, 0.95-1.00 times as long as pronotum; lateral margins subparallel in dorsal view; humeral angles pronounced (Fig. 59); punctuation slightly deeper and slightly less dense than that of pronotum. Hind wings apparently present. Metatarsomere I slightly longer than the combined length of II and III.

Abdomen as broad as, or slightly narrower than elytra, widest at segments V/VI; punctuation of tergites III-V very dense and coarse, that of tergites VI-VIII only slightly less dense than that of anterior tergites; tergite VII with palisade fringe.

♂: sternite VI with shallow median depression posteriorly; sternite VII of highly distinctive chaetotaxy and shape, distinctly transverse, posterior margin moderately concave in the middle, anterior to this concavity with two clusters of 10-15 short stout setae, next to these clusters with two brush-like clusters of 4 long black setae, and between them with a transverse row of 8 peg-setae



Figs 58-62: *Sclerochiton penicillatus*: habitus (58); forebody (59); male sternite VII (60); posterior median portion of male sternite VII (61); aedeagus in lateral view (62). Scale bars: 58: 1.0 mm; 59: 0.5 mm; 60: 0.2 mm; 61-62: 0.1 mm.

(Figs 60-61); sternite VIII with deep, broad, and V-shaped posterior excision, near the apex of this excision with two rows of minute submarginal setae, postero-median portion without long setae (Fig. 63); aedeagus (Fig. 62) large, 0.62 mm long, ventral process long, straight, and apically very acute; internal structures rather massive and moderately sclerotized.

#### Etymology:

The specific epithet (Latin, adjective derived from *penicillus* = brush) alludes to the pair of brush-like clusters of long setae on the male sternite VII.

#### Comment:

The female from Godavari in central Nepal has a smaller elytral spot, but since no additional differences were found, it is hypothesized to be conspecific with the holotype.

**Comparative notes:**

Based on the similarly derived chaetotaxy of the male sternite VII, the shape of sternite VIII, and the morphology of the aedeagus there is little doubt that *S. penicillatus* is the sister species of *S. acutissimus*, a hypothesis additionally supported by the similar punctuation of the abdomen, head shape, and elytral coloration. *Sclerochiton penicillatus* is distinguished from *S. acutissimus* by much longer elytra, coarser punctuation of the forebody, darker coloration, the shape and chaetotaxy of the male sternite VII (posterior margin more distinctly concave in the middle; presence of brush-like clusters of setae; fewer peg-setae), and the shape of the aedeagus (ventral process straighter and apically longer; process at base of ventral process massive and of different shape).

**Distribution and natural history:**

The type locality is situated between Chet Chet (27°51'N, 86°13.5'E) and Jagat (27°49'N, 86°14'E) in eastern Nepal, where the specimens were collected at an altitude of 1000-1300 m in May; one paratype was found in Myagdi district, central Nepal at 2160-2400 m, another one near Kathmandu, central Nepal, both of them in March.

***Sclerochiton andrewesi* CAMERON, 1914 (Figs 64-67)**

*Sclerochiton* (?) *andrewesi* CAMERON, 1914: 541.

**Type material examined:**

Holotypus ♂: "H. L. Andrewes, Nilgiri Hills / *Sclerochiton andrewesi* Cam / M. Cameron Bequest, B. M. 1955-147 / Type / Holotype *Sclerochiton andrewesi* Cam, det. R. G. Booth 2010 / *Sclerochiton andrewesi* Cameron, det. V. Assing 2010" (BMNH).

**Comment:**

The original description is based on a single specimen from "S. India, Nilgiri Hills (Mr. H. E. Andrewes' Collection)" (CAMERON 1914). The holotype was located in the Cameron collection at the BMNH. CAMERON (1914) attributed the species to *Sclerochiton* with doubts, which can be inferred from the question mark behind the generic name and from his statement that it "will probably form the type of a new genus, as it differs from *Sclerochiton* by not having the labrum bilobed". These doubts, however, were not repeated by CAMERON (1931).

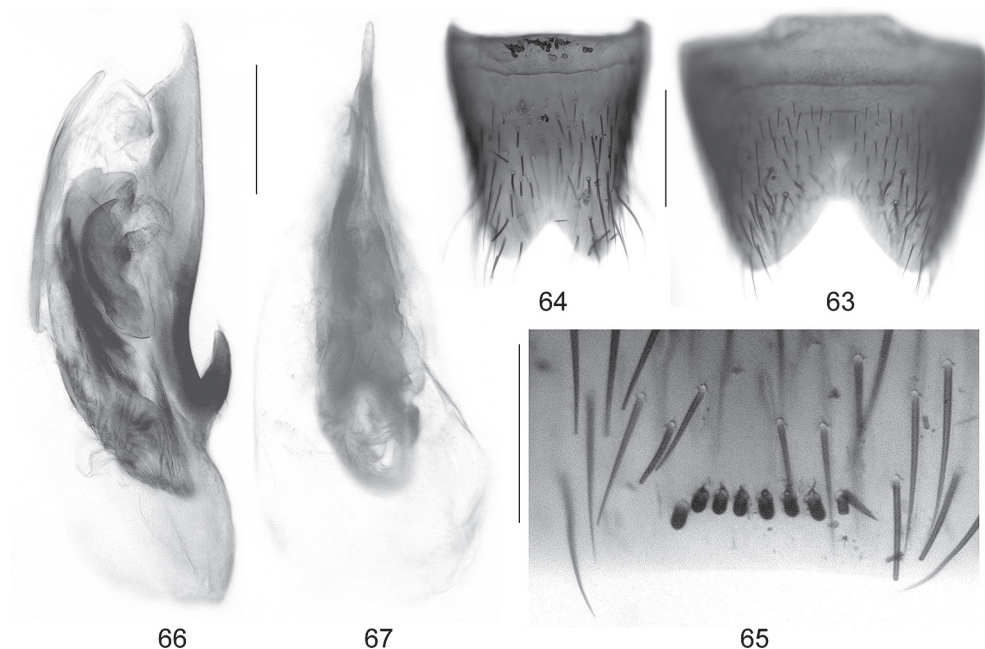
**Redescription:**

Body length 3.2 mm. Coloration: body blackish-brown, with the posterior margin of the elytra yellowish and the apex of the abdomen slightly paler brown; legs yellowish; antennae yellowish with the apical 5-6 antennomeres slightly darker.

Head approximately 1.3 times as wide as long; neck slender, approximately 0.25 times as wide as head across eyes; posterior margin of similar shape as in *S. unicolor*, straight in the middle and weakly convex laterally; punctuation coarse, areolate, and extremely dense, interstices reduced to narrow ridges; microsculpture absent; pubescence fine, short, and depressed, indistinct. Eyes approximately as large as in *S. unicolor*, almost reaching posterior margin, with short pubescence; head behind eyes obliquely and briefly narrowed towards posterior margin. Antennae approximately 0.7 mm long. Anterior margin of labrum shallowly concave in the middle.

Pronotum approximately 1.15 times as long as wide and 0.7 times as wide as head, widest in anterior half; punctuation similar to that of head; pubescence extremely short, stout, and barely noticeable.





Figs 63-67: *Sclerochiton penicillatus* (63) and *S. andrewesi* (64-67): male sternite VIII (63-64); posterior median portion of male sternite VII (65); aedeagus in lateral and in ventral view (66-67). Scale bars: 63-64: 0.2 mm; 65-67: 0.1 mm.

Elytra approximately as long, and 1.3 times as wide as pronotum; humeral angles marked; punctuation as dense as that of head and pronotum; interstices without microsculpture; pubescence fine, short, depressed, and indistinct. Hind wings probably present. Metatarsomere I slightly longer than the combined length of II and III.

Abdomen approximately 0.85 times as wide as elytra; segments III-V of subequal width; punctuation coarse and very dense on tergites III-V, noticeably less dense and finer on tergites VI-VIII; interstices without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: sternite VII posteriorly indistinctly concave, almost truncate, in the middle with transverse row of eight submarginal peg-setae (Fig. 65); sternite VIII with moderately deep and V-shaped posterior excision (Fig. 64); aedeagus 0.48 mm long, with conspicuously acute and laterally flattened ventral process (Figs 66-67).

#### Comparative notes:

*Sclerochiton andrewesi* is readily distinguished from all its congeners by the coloration, the shape of the labrum (anterior margin only weakly concave, not incised in the middle, and particularly by the conspicuous shape of the aedeagus. The similarly modified male sternite VII (transverse row of peg-setae near middle of posterior margin) suggests that *S. andrewesi* is closely allied to *S. unicolor* and *S. maculosus*. From these species it is additionally separated by the less slender pronotum, the denser punctuation of the elytra, and by the sparser punctuation of the abdominal tergites VI-VIII.



**Distribution and natural history:**

This species has not been recorded again since its original description, which is based on a single specimen from the Nilgiri Hills in southern India. Bionomic data are not available.

***Sclerochiton schuelkei* sp. n.** (Figs 68-75)**Type material:**

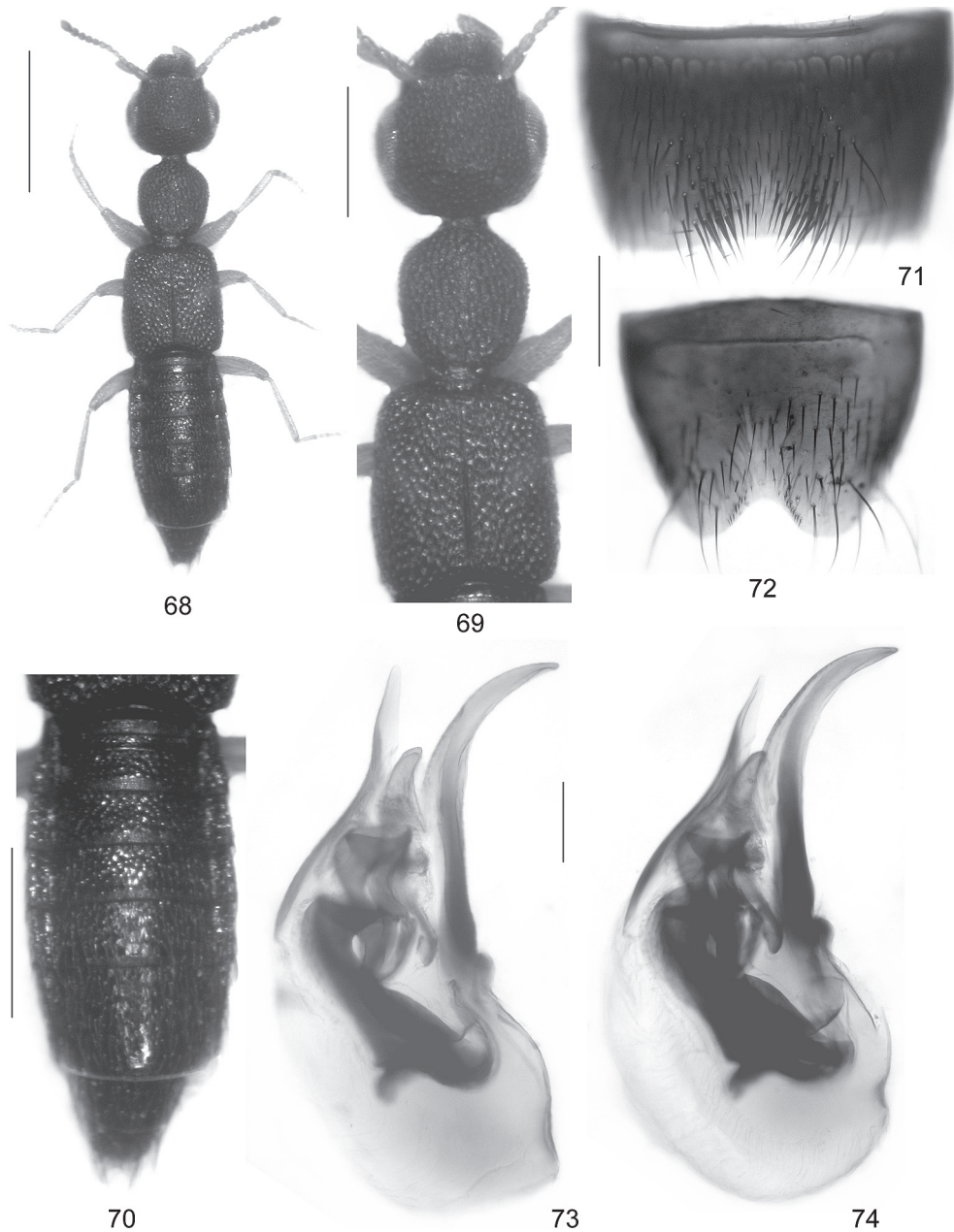
Holotype ♂: "China: Yunnan, Lincang Pref., Bangma Shan, E pass, 17 km NW Lincang, 23°57'31"N, 99°56'13"E, 2040 m, secondary pine forest, litter, dead wood & mushrooms sifted, 9.IX.2009, M. Schülke [CH09-36] / Holotypus ♂ *Sclerochiton schuelkei* sp. n., det. V. Assing 2010" (cAss). Paratypes: 14 exs.: same data as holotype (cSch, cAss); 1 ex.: same data as holotype, but leg. Wrase (cSch); 1 ♀: "China: Yunnan, Baoshan Pref., mount. range 25 km S Tengchong, 1900 m, 24°48'21"N, 98°32'05"E, cleft with devast. primary forest, litter & mushr. sifted, 30.VIII.2009, leg. M. Schülke [CH09-18]" (cSch); 1 ♀: "China: Yunnan [CH07-16], Baoshan Pref., mountain range 14 km E Tengchong, 1850 m, 25°00'28"N, 98°38'07"E, second. mixed forest, litter sifted, 1.VI.2007, leg. A. Pütz" (cPüt); 6 ♀ ♀: "China: Yunnan, Lincang Pref., Bangma Shan, 20 km NW Lincang, 2210 m, 23°58'25"N, 99°54'36"E, water reservoir, devast. forest with ferns, litter & ferns sifted, reservoir bank, 9.IX.2009, M. Schülke [CH09-37]" (cSch, cAss); 1 ♂, 1 ♀: "China: Yunnan, Dali Bai Aut. Pref., 36 km N Dali, ruderal pasture with pines and shrubs, 26°01'20"N, 100°08'14"E, 2158 m, litter sifted under pines and shrubs, 24.VIII.2009, leg. M. Schülke [CH09-04]" (cSch, cAss); 1 ♂: "China: Yunnan [C2005-04], Diqing Tibet. Aut. Pref., Deqin Co., small cleft W Yangtze river / 27°56.75'N, 99°24.42'E, 2220-2300 m, litter, moss, gravel, dead wood sifted near water, 4.VI.2005, M. Schülke [C2005-04]" (cAss); 1 ♀: "China: Yunnan [CH07-11], Baoshan Pref., Gaoligong Shan, nr. Xiaoheshan N. R., 35 km SE Tengchong, 2110 m, 24°50'16"N, 98°45'43"E, decid. forest, litter, sifted, 30.V.2007, leg. M. Schülke" (cSch); 2 ♀ ♀: "China: Yunnan [CH07-13], Baoshan Pref., Gaoligong Shan, E pass, 36 km SE Tengchong, 2200 m, 24°49'32"N, 98°46'06"E, decid. forest, litter, wood, fungi sifted, 31.V.2007, leg. M. Schülke" (cSch); 1 ♂, 2 ♀ ♀: "China Yunnan, Kunming, 20.I.1993, G. de Rougemont / leaf litter" (cRou, cAss); 2 ♀ ♀: "China X.1986, Yunnan: Kunming, G. de Rougemont" (cRou); 5 exs.: "Yunnan, Xishan, 2400 m, 30. Jul 1995, Bolm lgt." (NHMB, cAss). 2 ♀ ♀: "Laos, Houa Phan Prov., 20°12'01-30"N, 104°00'34-55"E, 1750-1850 m, Phou Pane Mt., 4 + 10.vi.2009, Z. Kraus & D. Hauck leg. / NHMB Basel, NMPC Prag, Laos 2009 Expedition: M. Brancucci, M. Geiser, Z. Kraus, D. Hauck, W. Kubán" (NHMB); 1 ♀: "Thailand: Chiang Mai, Doi Inthanon, 1720 m, 7.XI.1985, Burckhardt-Löbl" (MHNG); 1 ♀: "Thailand, Doi Inthanon, 15.III:1982, G. de Rougemont" (cRou).

**Description:**

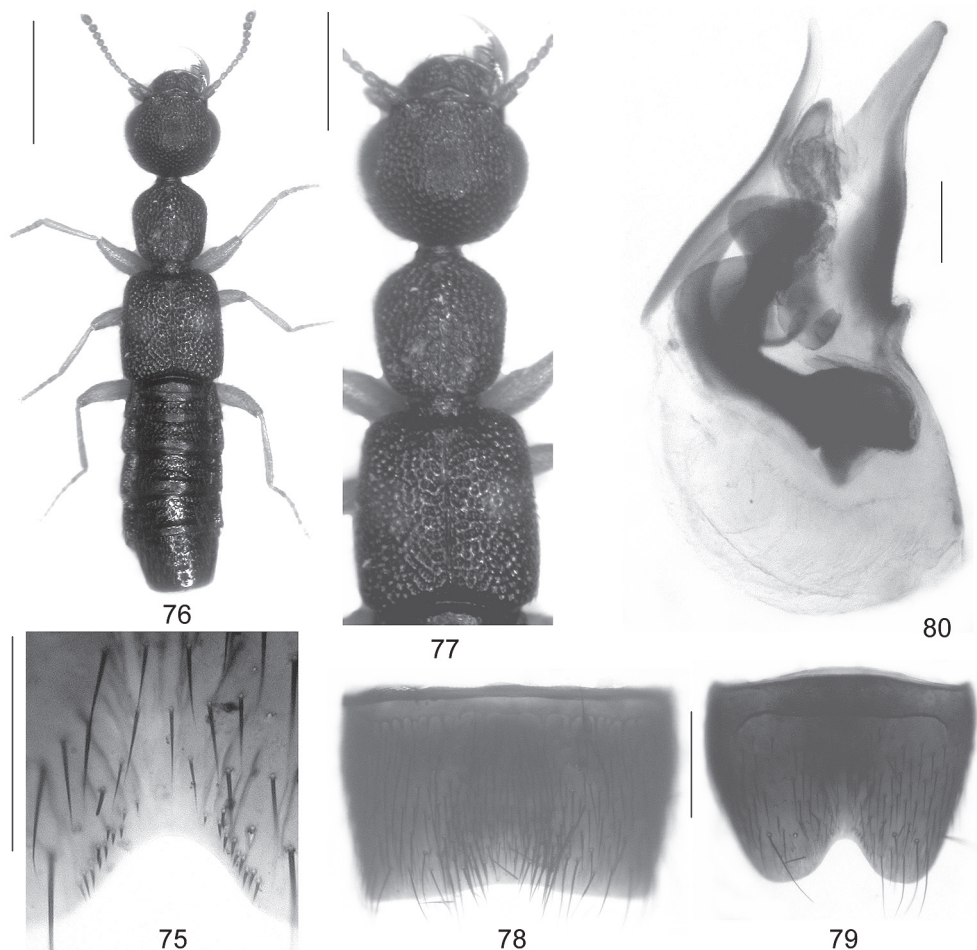
Body length 3.3-3.8 mm. Habitus as in Fig. 68. External characters as in *S. unicolor*, except as follows:

Coloration: elytra usually with distinct, relatively small, obliquely oval reddish spot in latero-median position; rarely this spot is almost obsolete.

Outline of head behind eyes convex in dorsal view, not distinctly truncate in the middle (Fig. 69). Eyes somewhat smaller, only slightly longer than distance from posterior margin of eye to neck (Fig. 69). Anterior margin of labrum distinctly excised in the middle. Pronotum weakly oblong, 1.05-1.10 times as long as broad, often with narrow shiny ridge of variable length along midline (Fig. 69); punctation slightly coarser than that of head, slightly less dense than in *S. unicolor*,



Figs 68-74: *Sclerochiton schuelkei*: habitus (68); forebody (69); abdomen (70); male sternite VII (71); male sternite VIII (72); aedeagus in lateral view (73-74). Scale bars: 68: 1.0 mm; 69-70: 0.5 mm; 71-72: 0.2 mm; 73-74: 0.1 mm.



Figs 75-80: *Sclerochiton schuelkei* (75) and *S. barbatus* (76-80): posterior median portion of male sternite VIII (75); habitus (76); forebody (77); male sternite VII (78); male sternite VIII (79); aedeagus in lateral view (80). Scale bars: 76: 1.0 mm; 77: 0.5 mm; 78-79: 0.2 mm; 75, 80: 0.1 mm.

ridge-like interstices partly shiny. Elytra relatively longer, 1.05-1.12 times as long as pronotum, broader, and with more pronounced humeral angles; punctation less dense and somewhat coarser (Fig. 69); interstices more shiny and whole of surface of elytra less matt than in *S. unicolor*. Hind wings fully developed. Abdomen, including the apex, broader; punctation of tergites VI-VIII much sparser and finer than that of tergites III-V (Fig. 70).

♂: sternite VI with shallow median impression posteriorly; sternite VII strongly transverse, with rather large median impression, posteriorly with rather large cluster of numerous very long black setae (Fig. 71); sternite VIII weakly transverse, posterior margin with rather large and broadly V-shaped median excision (Fig. 72), near margin of this excision with row of approximately eight very short submarginal setae on either side (Fig. 75); aedeagus (Figs 73-74) large, approximately 0.68 mm long; ventral process long, slender, smoothly curved, and apically acute; dorsal plate well-developed; internal structures massive, basal internal structures distinctly sclerotized.

**Etymology:**

This species is dedicated to my friend and colleague Michael Schülke, who collected almost all the type specimens not only of this species, but also those of *S. maculosus*.

**Comparative notes:**

Together with the following species, *S. schuelkei* is readily distinguished from all other Oriental and East Palaearctic species particularly by the conspicuous shape and chaetotaxy of the male sternite VII, as well as by the completely different morphology of the aedeagus (large size; massive internal structures; slender and acute ventral process; well-developed dorsal plate). It is additionally separated from the sympatric *S. maculosus*, which too has spotted elytra, by the smaller eyes, the convex outline of the posterior portion of the head, the different shape and position of the elytral spot (*S. maculosus*: usually longer or larger, and in more median position), the much sparser and finer punctuation of the abdominal tergites VI-VIII, as well as by the chaetotaxy of the male sternite VIII.

**Distribution and natural history:**

*Sclerochiton schuelkei* was discovered in several localities in Yunnan, southern China; two females were found in one locality in northern Laos, another two females in two localities in northern Thailand. The specimens with specified data on the labels were sifted from forest litter and from litter of shrubs on a pasture at altitudes of 1720 to 2400 m in January, March, and May-November. In two localities (Yunnan) this species was collected together with *S. maculosus*.

***Sclerochiton barbatus* sp. n. (Figs 76-80)****Type material:**

Holotype ♂: "China (Yunnan) Pu'er Pref., Ailao Shan, 37 km NW Jingdong, 24°45'12"N / 100°41'24.5"E, 2300 m (devastated forest remnant, litter/moss/grass roots sifted), 13.IX.2009, D. W. Wrase [48] / Holotypus ♂ *Sclerochiton barbatus* sp. n., det. V. Assing 2010" (cAss).

**Description:**

Body length 4.3 mm. Habitus and forebody as in Figs 76-77. In external and male sexual characters highly similar to *S. schuelkei*, but distinguished as follows:

Size somewhat larger. Coloration: elytral spot well-defined and larger.

♂: sternite VI with shallow median impression posteriorly; sternite VII of similar shape and chaetotaxy as in *S. schuelkei* (Fig. 78); sternite VIII somewhat more transverse, posterior excision deeper (Fig. 79); aedeagus (Fig. 80) larger, 0.75 mm long; ventral process much shorter, stouter, not smoothly curved, and apically less acute; internal structures similarly massive, but of different shape.

**Etymology:**

The specific epithet (Latin, adjective: with a beard) alludes to the conspicuous chaetotaxy of the male sternite VII.

**Comparative notes:**

Among the known species of *Sclerochiton*, *S. barbatus* is undoubtedly most closely related to *S. schuelkei*. This conclusion is supported particularly by several evident and exclusive synapomorphies (shape and chaetotaxy of the male sternite VII; chaetotaxy of the male sternite VIII; large-sized aedeagus with a well-developed dorsal plate; process at base of ventral process completely

reduced; internal structures massive and distinctly sclerotized), as well as several external similarities of unknown polarity (relatively small eyes; convex outline of posterior portion of the head; position of the elytral spot; punctuation of the forebody and of the abdomen). For characters separating *S. barbatus* from *S. schuelkei* see the description above.

#### Distribution and natural history:

This species is known from only one locality in Yunnan, southern China, where it was sifted from litter, moss, or grass roots in a degraded forest at an altitude of 2300 m in September.

#### *Sclerochiton rectus* sp. n. (Figs 81-87)

##### Type material:

Holotype ♂: "Thailand: Mae Hong Son, Mae Lang, 600-700 m, 12.XI.1985, Burckhardt-Löbl / Holotypus ♂ *Sclerochiton rectus* sp. n., det. V. Assing 2010" (MHNG). Paratypes: 2 exs.: same data as holotype (MHNG, cAss); 1 ♀: "Thailand: Mae Hong Son, Tom Lok, 8 km N Mae Lang, 700 m, 11, 13.XI.1985, Burckhardt-Löbl" (MHNG); 1 ♀: "Thailand: Phetchaburi, Kaeng Krachan Nat. Pk, 300-400 m, 17.XI.1985, Burckhardt-Löbl" (MHNG); 1 ♂: "Thailand: Chiang Rai Prov 500 m, Tham Luang For. Park, Schwendinger 29.10.91" (MHNG); 1 ♂: "Thailand 16.X.86, prov. Chiang Mai, Doi Chiang Dao, P. Schwendinger 760 m" (cAss); 1 ♀: "Thailand, Chiang Dao, 26.X.2010, G. de Rougemont" (cRou).

##### Description:

Body length 3.2-3.8 mm. Habitus as in Fig. 81. External characters as in *S. unicolor*, except as follows:

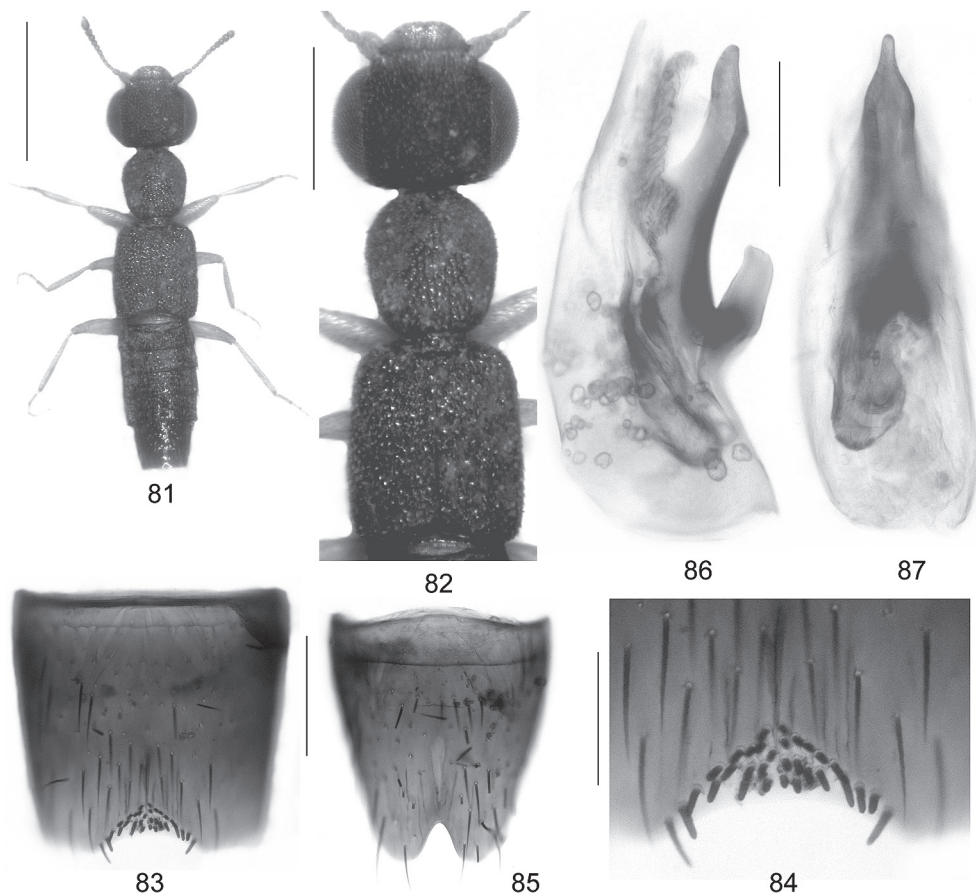
Coloration: whole body blackish, elytra without reddish spot. Head (Fig. 82) strongly transverse, approximately 1.3 times as wide as long. Eyes larger, posteriorly almost reaching posterior margin; posterior margin broadly truncate. Anterior margin of labrum very feebly concave in the middle. Pronotum less slender, 1.05-1.15 times as long as broad (Fig. 82). Elytra longer, approximately as long as pronotum; humeral angles pronounced; punctuation coarse and very dense, as dense as that of head and pronotum. Hind wings apparently fully developed. Metatarsomere I barely as long as the combined length of II and III; metatarsomere II elongate, much longer than III. Abdominal tergites III-V with very coarse and dense punctuation, matt; tergites VI and particularly VII-VIII with distinctly sparser and less coarse punctuation, much more glossy than anterior tergites.

♂: sternite VII with posterior margin distinctly concave in the middle, anterior to this concavity with triangular impression furnished with 10-15 peg-setae on either side (Figs 83-84); sternite VIII with relatively deep, narrow, and somewhat V-shaped posterior excision (Fig. 85); aedeagus approximately 0.4 mm long, basal portion of ventral process almost straight in lateral view (Figs 86-87).

##### Etymology:

The specific epithet (Latin, adjective: straight) alludes to the shape of the ventral process of the aedeagus (lateral view), which readily distinguishes *S. rectus* from the highly similar *S. sinuatus* (see the following section).





Figs 81-87: *Sclerochiton rectus*: habitus (81); forebody (82); male sternite VII (83); posterior median portion of male sternite VII (84); male sternite VIII (85); aedeagus in lateral and in ventral view (86-87). Scale bars: 81: 1.0 mm; 82: 0.5 mm; 83, 85: 0.2 mm; 84, 86-87: 0.1 mm.

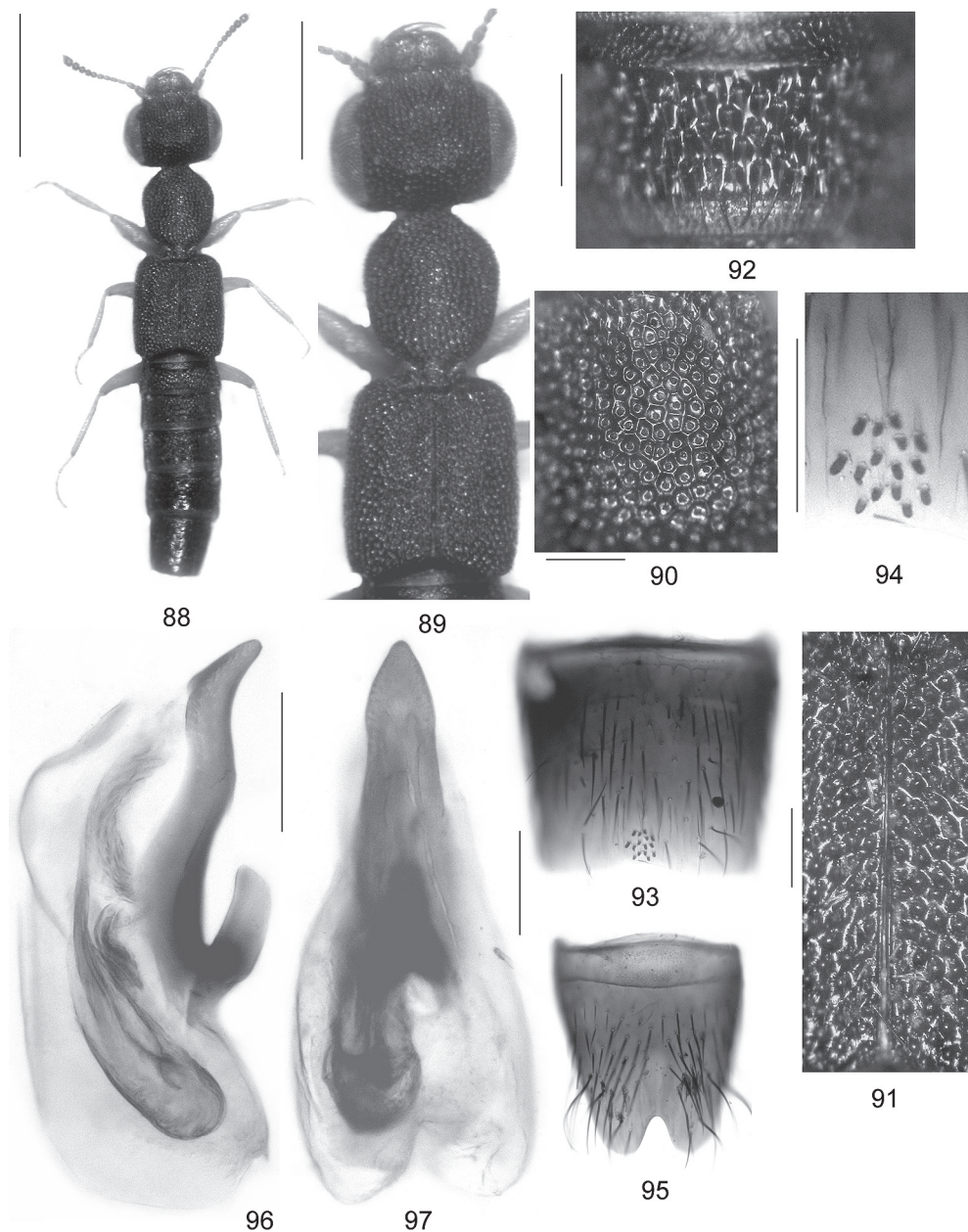
#### Comparative notes:

*Sclerochiton rectus* is readily distinguished from the preceding species of the *S. unicolor* group by the uniformly blackish coloration of the elytra, the more transverse head, the larger eyes, the broadly truncate posterior margin of the head, as well as by the male primary and secondary sexual characters. It is separated from *S. unicolor* additionally by the less oblong pronotum, the longer and broader elytra, the relatively shorter metatarsomere I and the longer metatarsomere II, as well as by the much more glossy and more sparsely punctate abdominal tergites VI-VIII.

#### Distribution and natural history:

This species was found in several localities in Thailand, where the specimens were collected at altitudes of 300-760 m in October and November.





Figs 88-97: *Sclerochiton sinuatus*: habitus (88); forebody (89); median dorsal portion of head (90); sutural portion of elytra (91); median portion of abdominal tergite III (92); male sternite VII (93); posterior median portion of male sternite VII (94); male sternite VIII (95); aedeagus in lateral and in ventral view (96-97). Scale bars: 88: 1.0 mm; 89: 0.5 mm; 93, 95: 0.2 mm; 90-92, 94, 96-97: 0.1 mm.

***Sclerochiton sinuatus* sp. n.** (Figs 88-97)**Type material:**

Holotype ♂: "Burma, env. Maymyo, 12-13.02.1996, 700-900 m, Kurbatov / Holotypus ♂ *Sclerochiton sinuatus* sp. n., det. V. Assing 2010" (MHNG). Paratypes: 2 ♀ ♀: same data as holotype, but "4-5.03.96" (MHNG, cAss); 2 ♀ ♀: "Thailand, Chiang Mai, Rd to Wab Pang An, 50 km NE Chiang Mai, 900 m, Burckhardt-Löbl, 3.XI.85" (MHNG); 1 ♂: "Thailand: Chiang Mai, 33 km NE Chiang Mai, 500 m, 3.XI.85, Burckhardt-Löbl" (cAss).

**Description:**

Body length 3.3-3.7 mm. Habitus, forebody, and punctuation as in Figs 88-92. External characters as in *S. rectus*; distinguished only by the male sexual characters:

♂: sternite VII with posterior margin weakly concave in the middle, anterior to this concavity with shallow impression furnished with cluster of approximately 15 peg-setae (Figs 93-94); sternite VIII shaped as in *S. sinuatus* (Fig. 95); aedeagus approximately 0.4 mm long, ventral process with the basal portion bisinuate in lateral view and the apex much less acute in ventral view (Figs 96-97).

**Etymology:**

The specific epithet (Latin, adjective) alludes to the shape of the ventral process of the aedeagus (lateral view), one of the most prominent characters distinguishing *S. sinuatus* from the similar *S. rectus*.

**Comparative notes:**

*Sclerochiton sinuatus* is reliably distinguished from *S. rectus* only by the different modifications of the male sternite VII and the different shape of the aedeagus (shape of the ventral process both in lateral and in ventral view). For characters separating the species from *S. unicolor* and other species of the *S. unicolor* group see the comparative notes in the above section on *S. rectus*.

**Distribution and natural history:**

*Sclerochiton sinuatus* was collected in three localities in Myanmar and Thailand at altitudes of 500-900 m in February-March and November.

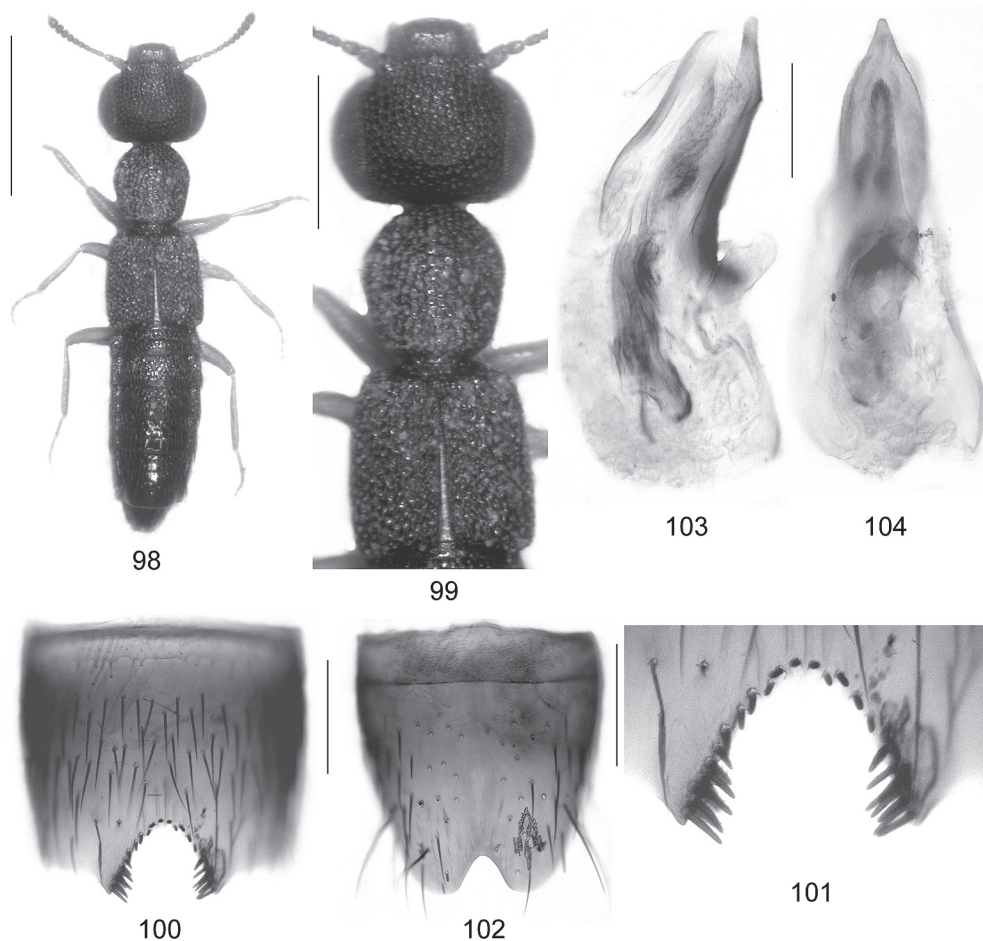
***Sclerochiton excisus* sp. n.** (Figs 98-104)**Type material:**

Holotype ♂: "Malaysia, Cameron Hlds, 25-30.III.1984, Rougemont / Holotypus ♂ *Sclerochiton excisus* sp. n., det. V. Assing 2010" (cRou). Paratype: 1 ♂, 1 ♀: same data as holotype (cRou, cAss); 1 ♀: "Malaisie Perak, Cascade Sungei Simei, Cameron Highlands, T. Jacoud, III.77" (MHNG); 1 ♀: "West Malaysia, Selangor, 26.9.91, Ulu Gombak, nr14, D. Agosti, leaf litt." (cAss).

**Description:**

Body length 3.0-3.2 mm. Habitus and forebody as in Figs 98-99. External characters as in *S. rectus*, except as follows:

Elytra shorter, approximately 0.9 times as long as pronotum.



Figs 98-104: *Sclerochiton excisus*: habitus (98); forebody (99); male sternite VII (100); posterior median portion of male sternite VII (101); male sternite VIII (102); aedeagus in lateral and in ventral view (103-104). Scale bars: 98: 1.0 mm; 99: 0.5 mm; 100, 102: 0.2 mm; 101, 103-104: 0.1 mm.

♂: sternite VII strongly modified, posterior margin deeply excised in the middle, margins of this concavity furnished with numerous conspicuous modified setae (Figs 100-101); sternite VIII with relatively small V-shaped posterior excision (Fig. 102); aedeagus 0.42 mm long, shaped as in Figs 103-104.

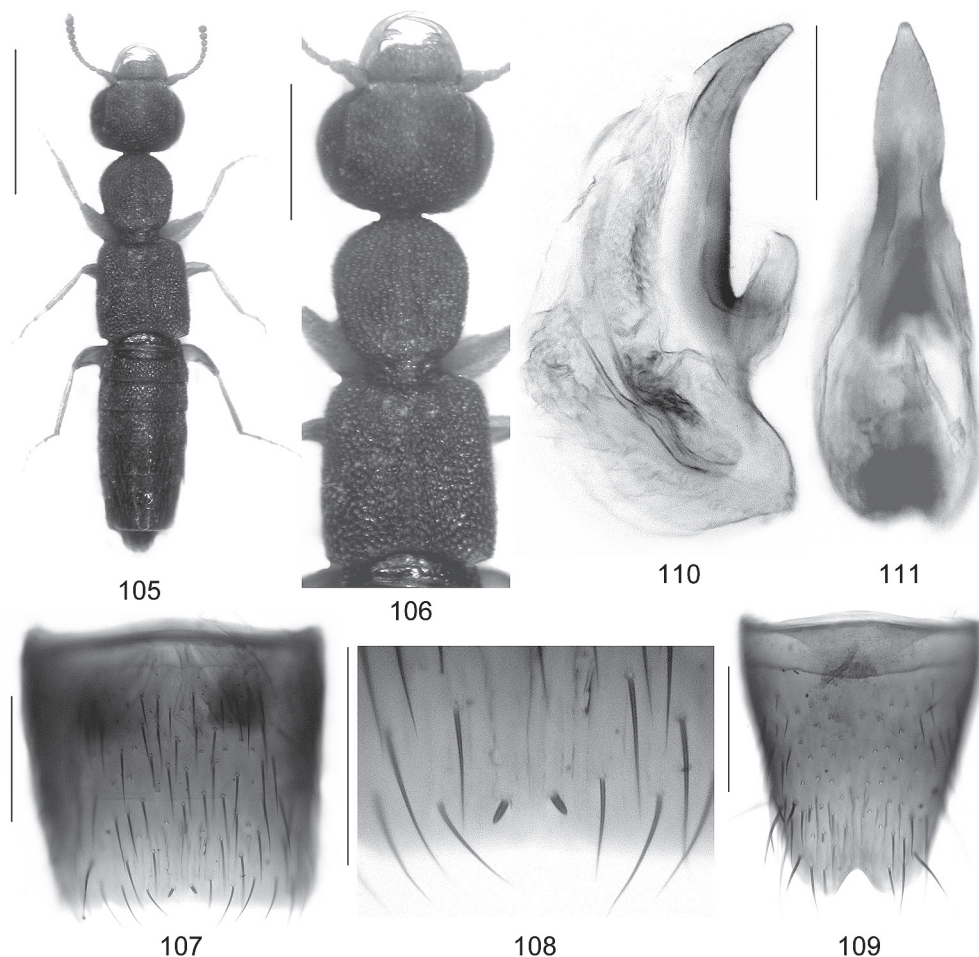
#### Etymology:

The specific epithet (Latin, adjective) alludes to the pronounced posterior excision of the male sternite VII.

#### Comparative notes:

*Sclerochiton excisus* is reliably distinguished from other dark-coloured species of the genus only by the male sexual characters, particularly the conspicuous modifications of the male sternite VII and the morphology of the aedeagus.





Figs 105-111: *Sclerochiton bistipulatus*: habitus (105); forebody (106); male sternite VII (107); posterior median portion of male sternite VII (108); male sternite VIII (109); aedeagus in lateral and in ventral view (110-111). Scale bars: 105: 1.0 mm; 106: 0.5 mm; 107, 109: 0.2 mm; 108, 110-111: 0.1 mm.

#### Distribution and natural history:

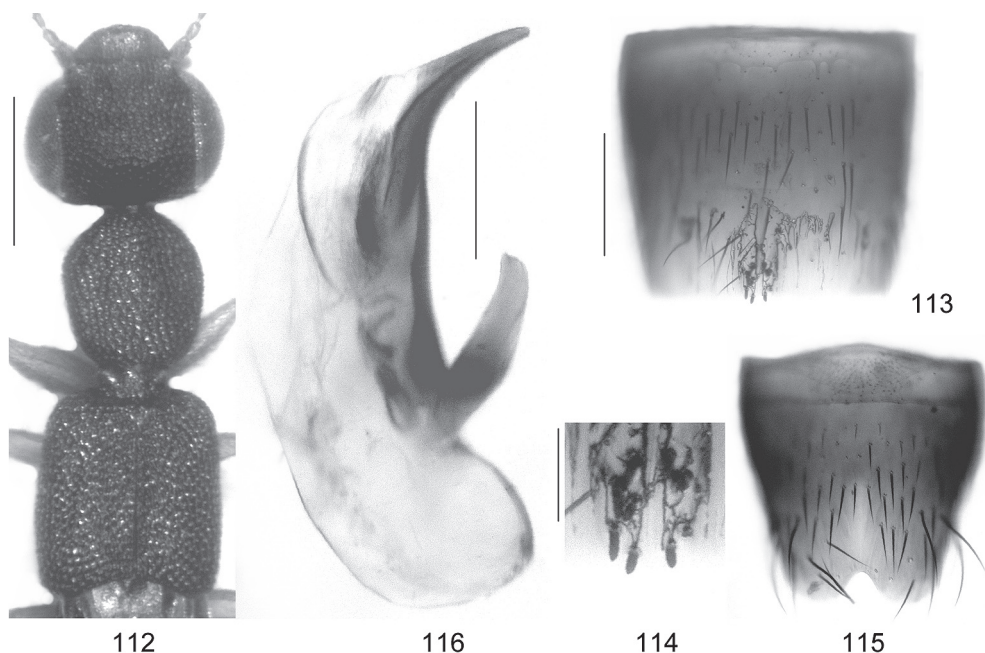
The currently known distribution is confined to Malaysia, where the types were collected in March and September.

#### *Sclerochiton bistipulatus* sp. n. (Figs 105-111)

##### Type material:

Holotype ♂: "India Madras, Cardamon H. 6 km. N.E. de Kumily, 700 m. 3-XI-72, Besuchet Löbl Mussard / Holotypus ♂ *Sclerochiton bistipulatus* sp. n., det. V. Assing 2010" (MHNG). Paratypes: 1 ♂, 1 ♀: same data as holotype (MHNG, cAss); 1 ♀: "India 9 Madras, Cardamon H., 2 km N.E. de Kumily, 900 m, 4-XI-72, Besuchet Löbl Mussard" (MHNG); 1 ♂, 2 ♀ ♀ [1 ♀ teneral]: "India No. 47, Kerala, Anaimalai Hills, 48 km. N.E. de Munnar, 700 m. 24-XI-72, Besuchet Löbl Mussard" (MHNG, cAss).





Figs 112-116: *Sclerochiton laoticus*: forebody (112); male sternite VII (113); posterior median portion of male sternite VII (114); male sternite VIII (115); aedeagus in lateral view (116). Scale bars: 112: 0.5 mm; 113, 115: 0.2 mm; 116: 0.1 mm; 114: 0.05 mm.

### Description:

Body length 2.9-3.7 mm. Habitus as in Fig. 105. Coloration variable: head reddish-brown to dark-brown, with the anterior portion more or less extensively reddish; pronotum reddish to dark-brown; elytra uniformly reddish to dark-brown with the anterior margin indistinctly paler reddish-brown; abdomen reddish to blackish, with the apex (segments VIII-X) in specimens with reddish abdomen paler and in specimens with dark-coloured abdomen reddish to reddish-brown; legs yellowish; antennae yellowish, with the apical half slightly darker.

Head approximately 1.3 times as wide as long (Fig. 106); neck slender, approximately 0.25 times as wide as head across eyes; posterior margin straight; punctation coarse, areolate, and extremely dense, interstices reduced to narrow ridges; dorsal surface matt; microsculpture absent; pubescence fine, short, and depressed, indistinct. Eyes large, almost reaching posterior margin, with short pubescence (Fig. 106). Antennae approximately 0.65-0.75 mm long, of similar shape as in *S. unicolor*. Anterior margin of labrum feebly concave in the middle.

Pronotum weakly oblong, 1.05-1.10 times long as wide and approximately 0.75 times as wide as head (Fig. 106); punctation similar to that of head; pubescence extremely short, stout, and barely noticeable.

Elytra of variable length, 0.85-1.0 times as long and approximately 1.25 times as wide as pronotum (Fig. 106); humeral angles marked; punctation similar to that of head and pronotum; interstices without microsculpture; pubescence fine, short, depressed, and indistinct. Hind wings present. Metatarsomere I elongate, approximately as long as the combined length of II and III or nearly so.

Abdomen slightly narrower than elytra, widest at segment V; punctation rather coarse and very dense on tergites III-V and distinctly sparser on tergites VI-VIII; tergites III-V matt, tergites VI-VIII glossy; posterior margin of tergite VII with fine palisade fringe.

♂: sternite VII posteriorly weakly concave in the middle, in the middle near posterior margin with pair of short peg-setae (Figs 107-108); posterior excision of sternite VIII relatively small and V-shaped (Fig. 109); aedeagus 0.30-0.33 mm long and shaped as in Figs 110-111.

#### Etymology:

The specific epithet is an adjective derived from the Latin noun stipula (stubble) and refers to the pair of peg-setae near the posterior margin of the male sternite VII.

#### Comparative notes:

This species is characterized particularly by the chaetotaxy of the male sternite VII and by the morphology of the aedeagus. From other Oriental species, except *S. indicus*, *S. rougemonti*, and *S. hastatus*, it is additionally separated by the paler coloration.

#### Distribution and natural history:

*Sclerochiton bistipulatus* was discovered in few localities in southern India. The specimens were collected at altitudes of 700 and 900 m in November. One of the paratypes is teneral.

### *Sclerochiton laoticus* sp. n. (Figs 112-116)

#### Type material:

Holotype ♂: "Laos-N (Louangphrabang), 11-21.v.2002, 19°35'N, 101°58'E, Thong Khan., ~750 m, Vít Kubáň leg. / Collection Naturhistorisches Museum Basel / Holotypus ♂ *Sclerochiton laoticus* sp. n., det. V. Assing 2010" (NHMB). Paratype ♀: same data as holotype (cAss).

#### Description:

Body length 3.3-3.5 mm. Forebody as in Fig. 112. External characters as in *S. rectus* and *S. sinuatus*; distinguished only by the male primary and secondary sexual characters:

♂: sternite VII posteriorly weakly concave in the middle, in the middle near posterior margin with cluster of 10 peg-setae (Figs 113-114); posterior excision of sternite VIII relatively small (Fig. 115); aedeagus 0.38 mm long, ventral process subapically curved and apically very acute in lateral view (Fig. 116).

#### Etymology:

The specific epithet is an adjective derived from Laos.

#### Comparative notes:

Based on external characters (punctation, shape of head, shape of labrum), as well as on the male sexual characters (chaetotaxy of the male sternite VII; morphology of the aedeagus) this species is closely allied to the similar *S. rectus* and *S. sinuatus*. From these species, *S. laoticus* is reliably distinguished only based on the male sexual characters, particularly the shape of the ventral process of the aedeagus and the chaetotaxy of sternite VII.

**Distribution and natural history:**

The type locality is situated in northern Laos at an altitude of approximately 750 m. The specimens were collected in May.

**Undescribed species**

The material examined contained four specimens whose identification was not possible with sufficient certainty, either because the male sexual characters were missing or because males were not available from nearby localities. The female from Sumatra undoubtedly represents an undescribed species.

***Sclerochiton* sp. 1****Material examined:**

1 ♀: "Sumatra, rés. Mont Leuser, Lawe Gurah, 9.VII.84, J. Roberts" (MHNG).

**Comment:**

This species is characterized by uniformly reddish coloration and completely reduced hind wings.

***Sclerochiton* sp. 2****Material examined:**

1 ♂ [heavily damaged; aedeagus and abdominal segments VIII-X missing]: "Burma, Taunggyi, I:I:1980, de Rougemont" (cRou).

**Comment:**

Based on the chaetotaxy of the male sternite VII (the only male sexual character not missing), the above specimen either is conspecific with *S. schuelkei* or *S. barbatus*, or it represents a closely related species.

***Sclerochiton* sp. 3****Material examined:**

2 ♀ ♀: "N-Vietnam, 120 km SW Hanoi, Cuc Phuong National Park, 13.IV.2010, leg. A. Kleeberg" (cKle).

**Comment:**

In external characters, the above females are highly similar to *S. unicolor* and *S. maculosus*. In view of the distance between the above locality and the currently known distributions of *S. unicolor* and *S. maculosus*, it seems likely that the above females belong to an undescribed species.

Key to the Oriental and East Palaearctic species of *Sclerochiton*

1. Forebody, at least the anterior portion of the head, more or less extensively yellowish to reddish-brown; elytra without reddish spot. Posterior margin of head truncate. Eyes very large, almost reaching posterior margin (posterior angles indistinct). ♂: sternite VII at least as long as broad and at most with two peg-setae near middle of posterior margin, without conspicuous clusters of long black setae. .... 2
  - Whole body blackish-brown to blackish; elytra sometimes with reddish spot or with yellowish posterior margin. Posterior margin of head often convex and eyes often less enormous. ♂: sternite VII in most species more or less distinctly transverse, either with more numerous peg-setae or with conspicuous clusters of long black setae. .... 5
2. Coloration of forebody darker, reddish to dark-brown; elytra not yellowish with dark spot. ♂: sternite VII with two peg-setae near middle of posterior margin (Figs 107-108); aedeagus as in Figs 110-111. Southern India. .... *S. bistipulatus* sp. n.
  - Coloration of forebody yellowish to reddish; elytra yellowish, often with more or less extensive darker spot. ♂: sternite VII without peg-setae. .... 3
3. Abdominal segments III-VIII dark-brown to blackish. Hind wings fully developed. ♂: posterior excision of sternite VIII deeper (Fig. 15); aedeagus with ventral process sinuate in lateral view, process at base of ventral process longer (Figs 9-10). Widespread from the Himalaya (Nepal, northern India) to Myanmar, southern China, and Thailand. .... *S. indicus* (MOTSCHULSKY)
  - Abdominal segments III-VIII reddish to reddish-brown. ♂: posterior excision of sternite VIII shallower; aedeagus with ventral process apically straight to weakly curved in lateral view. .... 4
4. Elytra longer; hind wings apparently fully developed (Figs 16-17). ♂: sternite VII in posterior median portion shallowly impressed and with stout setae (Fig. 18); posterior excision of sternite VIII deeper (Fig. 19); aedeagus 0.35 mm long; ventral process stouter and dorso-apically truncate in lateral view (Figs 20-21). Thailand. .... *S. rougemonti* sp. n.
  - Elytra shorter (Figs 22-23); hind wings reduced. ♂: sternite VII in posterior median portion not impressed and with fine setae (Fig. 24); posterior excision of sternite VIII shallower (Fig. 25); aedeagus approximately 0.30 mm long; ventral process apically spear-shaped (Figs 26-28). Northern Pakistan and northern India. .... *S. hastatus* sp. n.
5. Elytra blackish with yellowish posterior margin. Anterior margin of labrum only shallowly concave in the middle. ♂: sternite VII with transverse row of approximately eight peg-setae near middle of posterior margin (Fig. 65); aedeagus with ventral process laterally distinctly flattened and apically very acute (Figs 66-67). Southern India: Nilgiri Hills. .... *S. andrewesi* CAMERON
  - Elytra of different coloration, either uniformly blackish or with more or less pronounced reddish spot. Anterior margin of labrum rather deeply incised in the middle. ♂: aedeagus of completely different shape. .... 6
6. Elytra uniformly blackish. Eyes enormous and almost reaching posterior margin; posterior angles almost obsolete. Posterior margin of head broadly truncate (e.g., Figs 89, 99). ♂: sternite VII either with cluster (not transverse row) of peg-setae near middle of posterior margin, or with pronounced posterior excision. .... 7



- Elytra with more or less pronounced reddish spot. Eyes less large; posterior angles of head obliquely rounded. Posterior margin of head evenly convex or truncate only in the middle. ♂: sternite VII either with transverse row of approximately eight peg-setae near middle of posterior margin or with dense cluster of long black setae on either side of middle, posterior margin at most weakly concave in the middle. .... 10
- 7. ♂: posterior margin of sternite VII strongly excised in the middle, margins of this concavity furnished with numerous conspicuous modified setae (Figs 100-101); aedeagus as in Figs 103-104. Malaysia. .... *S. excisus* sp. n.
- ♂: posterior margin of sternite VII at most moderately concave in the middle, margins of this concavity without modified setae, anterior to concavity with cluster of peg-setae; aedeagus of different morphology. .... 8
- 8. ♂: posterior median portion of sternite VII with 10 peg-setae (Figs 113-114); aedeagus with apically long, slender, and acute ventral process in lateral view (Fig. 116). Laos. .... *S. laoticus* sp. n.
- ♂: posterior portion of sternite VII with at least approximately 15 peg-setae (Figs 83-84, 93-94); aedeagus with stouter ventral process. Thailand, Myanmar. .... 9
- 9. ♂: posterior margin of sternite VII distinctly concave in the the middle, anterior to this concavity with triangular impression furnished with 10-15 peg-setae on either side (Figs 83-84); aedeagus with basal portion of ventral process almost straight in lateral view; apex of ventral process more acute (Figs 86-87). Thailand. .... *S. rectus* sp. n.
- ♂: posterior margin of sternite VII weakly concave in the middle, anterior to this concavity with cluster of approximately 15 peg-setae (Figs 93-94); aedeagus with basal portion of ventral process bisinuate in lateral view; apex of ventral process less acute (Figs 96-97). Thailand, Myanmar. .... *S. sinuatus* sp. n.
- 10. Punctuation of abdominal tergites VI-VIII dense, only slightly less dense than that of tergites III-V (Fig. 44). Pronotum more oblong, approximately 1.15-1.20 times as long as broad (Figs 30, 43). Elytral spot in more median position. Posterior margin of head truncate in the middle (Figs 30, 43). ♂: sternite VII with transverse row of approximately eight or more peg-setae near middle of posterior margin; aedeagus smaller, 0.4-0.6 mm long; ventral process at base with long process in lateral view; internal structures less massive. .... 11
- Punctuation of abdominal tergites VI-VIII conspicuously sparser than that of tergites III-V (Fig. 70). Pronotum only weakly oblong, at most approximately 1.1 times as long as broad (Fig. 69). Elytral spot in lateral position. Posterior margin of head convex (Fig. 77). ♂: sternite VII with dense cluster of long black setae on either side of middle (Figs 71, 78); aedeagus larger, at least approximately 0.68 mm long; ventral process at base without long process in lateral view; internal structures massive. .... 14
- 11. Coloration of forebody dark-brown to blackish brown; frons paler brown. Elytra shorter, 0.75-0.80 times as long as pronotum (Fig. 51). Hind wings completely reduced. ♂: sternite VII of very conspicuous chaetotaxy (Figs 52-53); sternite VIII with very broad and deep V-shaped posterior excision (Figs 54-55); aedeagus approximately 0.6 mm long, and with very long and acute ventral process; internal structures more massive and more strongly sclerotized (Figs 56-57). China: Sichuan. .... *S. acutissimus* sp. n.
- Coloration of forebody usually blackish; frons not distinctly paler than posterior portion of head. Elytra longer, 0.8-1.0 times as long as pronotum. Unknown from Sichuan. .... 12

12. Larger species with longer and broader elytra; head width > 0.80 mm; pronotal length > 0.65 mm; elytral width > 0.80 mm (Figs 58-59). ♂: sternite VIII of very distinctive chaetotaxy: near posterior margin with pair of brush-like clusters of long setae, with pair of clusters of short stout setae, and between them with transverse row of 8 peg-setae (Figs 60-61); posterior excision of sternite VIII very broad and deep (Fig. 63); aedeagus much larger, approximately 0.6 mm long, with long and very acute ventral process; internal structures more massive and more distinctly sclerotized (Fig. 62). Nepal. .... *S. penicillatus* sp. n.
- Smaller species with shorter and narrower elytra; head width < 0.75 mm (usually < 0.70 mm); pronotal length < 0.60 mm; elytra width < 0.70 mm. ♂: sternite VII with transverse row of eight peg-setae near middle of posterior margin, without additional clusters of long or short stout setae; sternite VIII with smaller posterior excision; aedeagus smaller, approximately 0.4 mm long, and with shorter and less acute ventral process; internal structures less massive and less strongly sclerotized. .... 13
13. Elytral spot usually weakly defined, more or less indistinct. ♂: sternite VII as in Figs 35-36; aedeagus with process at base of ventral process longer; ventral process subapically straight, apically longer and more acute in lateral view (Figs 38-41). Nepal, northern India. .... *S. unicolor* COIFFAIT
- Elytral spot more defined and marked. ♂: sternite VII as in Fig. 45; aedeagus with process at base of ventral process shorter and stouter; ventral process subapically somewhat sinuate in lateral view, apically shorter and less acute (Figs 47-49). China: Yunnan. .... *S. maculosus* sp. n.
14. Elytral spot somewhat less defined and smaller. ♂: sternite VIII less transverse and with less deep posterior excision (Fig. 72); aedeagus < 0.7 mm long; ventral process longer, more slender, smoothly curved, and apically more acute (Figs 73-74). China: Yunnan; N-Thailand; Laos. .... *S. schuelkei* sp. n.
- Elytral spot well-defined and larger. ♂: sternite VIII more transverse and with deeper posterior excision (Fig. 79); aedeagus approximately 0.75 mm long; ventral process shorter, less slender, not curved, and apically less acute (Fig. 80). China: Yunnan. .... *S. barbatus* sp. n.

Catalogue of the species of *Sclerochiton*

species	revised distribution
<i>acutissimus</i> sp. n.	China: Sichuan
<i>africanus</i> FAGEL, 1960	Senegal
<i>andrewesi</i> CAMERON, 1914	S-India: Nilgiri Hills
<i>barbatus</i> sp. n.	China: Yunnan
<i>bistipulatus</i> sp. n.	S-India
<i>csikii</i> (BERNHAEUER, 1915)	Afrotropical region (widespread)
<i>curtipennis</i> FAGEL, 1960	Democratic Republic of the Congo
<i>elegans</i> CAMERON, 1950	Afrotropical region (widespread)
<i>excisus</i> sp. n.	Malaysia
<i>hastatus</i> sp. n.	N-Pakistan; N-India

species	revised distribution
<i>indicus</i> (MOTSCHULSKY, 1858) = <i>ochraceus</i> KRAATZ, 1859	Nepal; N-India, Myanmar; S-China: Yunnan; Thailand
<i>laoticus</i> sp. n.	Laos
<i>maculosus</i> sp. n.	China: Yunnan
<i>penicillatus</i> sp. n.	Nepal
<i>rectus</i> sp. n.	Thailand
<i>rougemonti</i> sp. n.	Thailand
<i>schuelkei</i> sp. n.	China: Yunnan; Thailand; Laos
<i>sinuatus</i> sp. n.	Myanmar; Thailand
<i>thoracicus</i> CAMERON, 1950	Angola, Democratic Republic of the Congo
<i>unicolor</i> COIFFAIT, 1975	Nepal; N-India
<i>variegatus</i> FAGEL, 1960	Democratic Republic of the Congo

### Note on the genus *Echiaster* ERICHSON, 1839 in the Palaearctic region

The genus *Echiaster* is currently attributed to the subtribe Echiasterina CASEY, 1905 and represented in the Palaearctic region by a single species, *E. unicolor* BERNHAUER, 1922, with two subspecies from Japan and Taiwan. The generic affiliations of this species have not been revised.

#### *Echiaster unicolor* BERNHAUER, 1922

*Echiaster japonicus unicolor* BERNHAUER, 1922: 230.

*Echiaster japonicus* BERNHAUER, 1923: 123; **syn. n.**

#### Material examined:

**Taiwan:** 1 ♂, Taitung, road no. 9, Lueyeh env., High Terrace, Gaotai tea area, 300 m, rotten straw, 13.IV.2007, leg. Vit (cAss); 1 ♂, 1 ♀, Taitung, road no. 11, W Tulan, Forest Moonlight Inn, 200 m, forest litter, 12.IV.2007, leg. Vit (cAss); 1 ♂, Taitung, W-Taitung, road no. 24, Jhibhen Forest Recreation Area, 400 m, *Canacea* litter, 12.IV.2007, leg. Vit (cAss); 1 ♀, Taipei, Yangminghsan, Sanjhih, North Road 11, km 5.5, 600 m, fern litter sifted, 21.X.2008, leg. Vit (cAss); 1 ♂, Taipei, TianMu Gudao Hiking Trail, Beitou, S-Samau mt., old forest litter, 3.I.2009, leg. Vit (cAss).

**China:** 1 ex., Zhejiang, Tianmu Shan, pass 25 km NNW Linan, 30°26'N; 119°36'E, 620-820 m, creek valley with bamboo and mixed forest, sifted, 16.VI.2007, leg. Pütz (cPüt); 1 ex. [det. Schülke], Yunnan, Dali Bai Auton. Pref., mountain range N Er Hai, 42 km N Dali, 26°05'N, 100°10'E, 2500-2550 m, NE-slope with oak, litter sifted, 12.VI.2007, leg. Schülke (cSch); 1 ex., NW-Hunan, Wulingshan, Tianzishan Nat. Res., 800 m, 16.-18.VI.1997, leg. Bolm (NHMB).

#### Comment:

*Echiaster unicolor* was described as a variety of *E. japonicus* from Taiwan. The description of *E. japonicus*, however, which is based on a single specimen from Tsushima (Japan), was not published until the following year, so that *E. unicolor* is the name of the species and *E. unicolor japonicus* refers to the holotype from Tsushima (BERNHAUER 1922, 1923; HERMAN 2003; SMETANA 2004). According to the original description of *E. unicolor unicolor*, this subspecies is

distinguished from *E. u. japonicus* "nur durch die einfarbig roten Flügeldecken". BERNHAUER (1922) himself was not certain regarding the subspecific status of this taxon stating "Vielleicht sind diese Stücke unreif, da ein sonstiger Unterschied von mir nicht festzustellen ist".

The examination of the above material revealed that the coloration of the whole body and particularly of the elytra is highly variable, the colour of the elytra ranging from uniformly reddish to distinctly bicoloured (as in material from Japan). Since, furthermore, no differences in the aedeagus were found, the subspecific status of the two taxa described by Bernhauer is more than doubtful and *E. japonicus* is synonymized with *E. unicolor*.

The above specimens from Zhejiang and Yunnan represent the first records of the species from mainland China.

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