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A revision of *Neosclerus* V. Thirteen new species and additional records (Coleoptera: Staphylinidae: Paederinae)

With 85 figures and 6 maps

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Summary

Thirteen species of *Neosclerus* CAMERON, 1924 are described and illustrated: *N. albens* spec. nov. (Sri Lanka), *N. areolatus* spec. nov. (Thailand), *N. biangulatus* spec. nov. (Thailand), *N. daweianus* spec. nov. (China: Yunnan), *N. discolor* spec. nov. (Burma, Thailand), *N. figens* spec. nov. (China: Yunnan), *N. forficatus* spec. nov. (Sri Lanka), *N. fractus* spec. nov. (India: Meghalaya), *N. khasicus* spec. nov. (India: Meghalaya), *N. revolutus* spec. nov. (South India), *N. sagittatus* spec. nov. (India: Meghalaya), *N. semicalvus* spec. nov. (Thailand), and *N. trisinuatus* spec. nov. (China: Yunnan). The previously unknown male sexual characters of *N. granulicollis* CAMERON, 1924 are described and illustrated. Additional records of twelve named and three unnamed species are reported, among them several new country records. The genus now comprises 44 named species in five species groups, one of them newly established. The countries with the greatest diversity are China, India, and Thailand (ten species each), and Taiwan (nine locally endemic species). The distribution of the genus as a whole, as well as the individual distributions of 34 species are mapped. An updated catalogue is provided.

Key words

Coleoptera, Staphylinidae, Paederinae, Medonina, *Neosclerus*, East Palaearctic region, Oriental region, taxonomy, new species, new records, species groups, zoogeography, distribution maps, catalogue

Zusammenfassung

Dreizehn Arten der Gattung *Neosclerus* CAMERON, 1924 werden beschrieben und abgebildet: *N. albens* spec. nov. (Sri Lanka), *N. areolatus* spec. nov. (Thailand), *N. biangulatus* spec. nov. (Thailand), *N. daweianus* spec. nov. (China: Yunnan), *N. discolor* spec. nov. (Burma, Thailand), *N. figens* spec. nov. (China: Yunnan), *N. forficatus* spec. nov. (Sri Lanka), *N. fractus* spec. nov. (Indien: Meghalaya), *N. khasicus* spec. nov. (Indien: Meghalaya), *N. revolutus* spec. nov. (Südindien), *N. sagittatus* spec. nov. (Indien: Meghalaya), *N. semicalvus* spec. nov. (Thailand) und *N. trisinuatus* spec. nov. (China: Yunnan). Die zuvor unbekannten männlichen Sexualmerkmale von *N. granulicollis* CAMERON, 1924 werden beschrieben und abgebildet. Weitere Nachweise von fünfzehn Arten, davon drei unbenannt, werden gemeldet, darunter mehrere Erstnachweise. Einschließlich der neuen Arten enthält die Gattung derzeit 44 beschriebene Arten in fünf Artengruppen, von denen eine neu begründet wird. Die Diversität ist in China, Indien und Thailand (je zehn Arten) sowie in Taiwan (neun lokalendemische Arten) am höchsten. Die derzeit bekannte Gesamtverbreitung der Gattung sowie die Verbreitungsgebiete von 34 Arten werden anhand von Karten illustriert. Ein aktualisierter Katalog wird erstellt.

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1. Introduction

The distribution of the medonine genus *Neosclerus* Cameron, 1924 includes the southern East Palaearctic and the Oriental regions, and ranges from the Himalaya (North India, Nepal, Bhutan), Burma, and southern China in the north to South India, Sri Lanka, Borneo, Java, and Sumatra in the south. The genus previously included a total of 31 species.The regions with the greatest diversity were Taiwan (nine species) and southern China (seven species). A catalogue and a key to species were provided by Assing (2011a). The species have been attributed to four species groups, with some species of uncertain affiliations (male sexual characters unknown) (Assing 2011a, 2011b, 2013, 2014).

The present paper is based on material collected during a recent field trip to East Yunnan conducted by Michael Schülke and the author, as well as on more than 500 previously unrevised specimens from the Muséum d'Histoire Naturelle, Genève. A study of this material, in total 651 specimens, yielded an astounding thirteen species new to science, the previously unkown male of *N. granulicollis* Cameron, 1924, as well as additional records of twelve previously described species and records of three unnamed species, at least one of them undescribed.

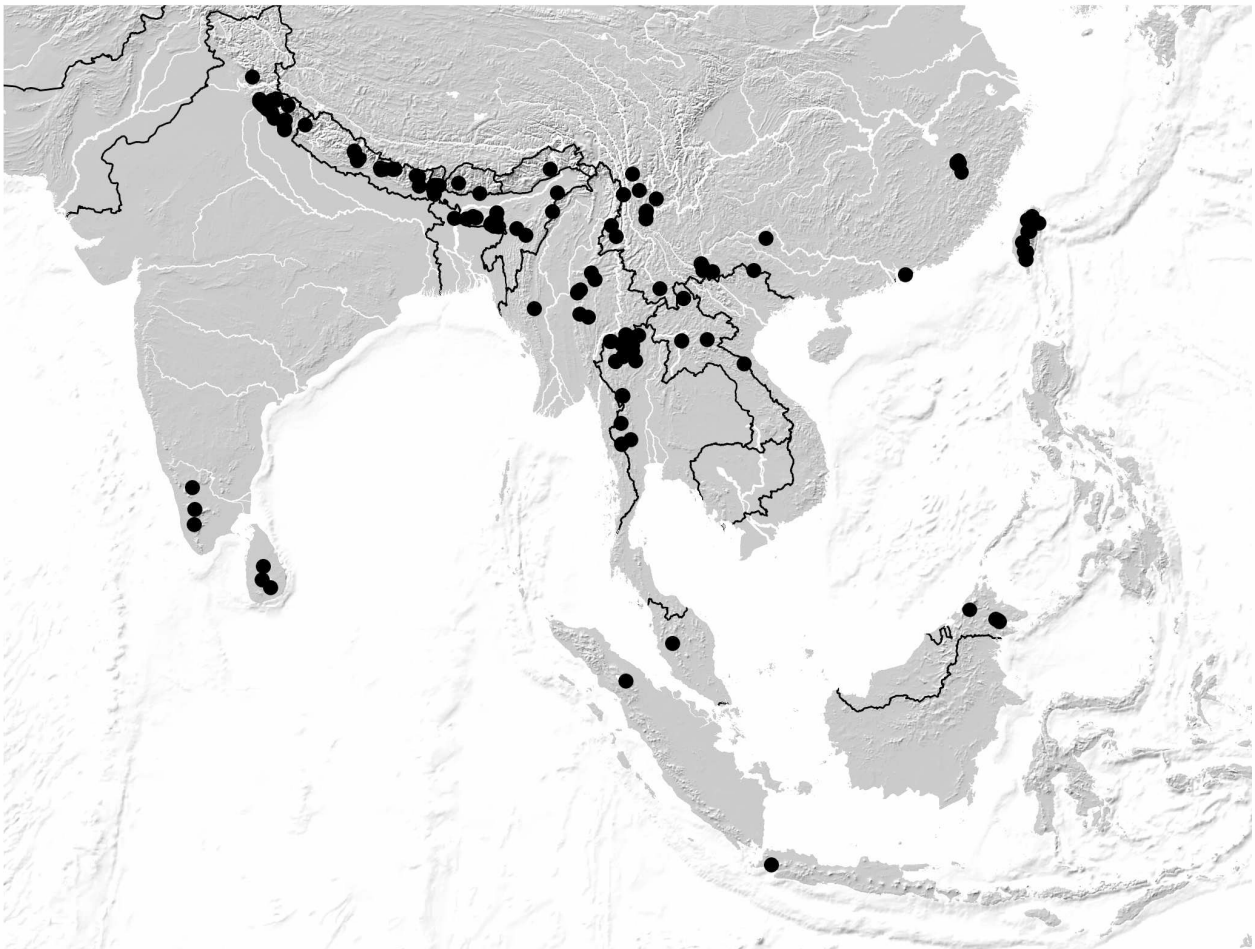
2. Material and methods

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

MHNG	Muséum d'Histoire Naturelle, Genève (G. Cuccodoro)
MNHUB	Museum für Naturkunde der Humboldt-Universität Berlin (J. Frisch, J. Willers)
cAss	author´s private collection
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). The images of the forebodies were created using a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software. A digital camera (Nikon Coolpix 995) was used for the remaining photographs. The maps were created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles to the posterior margin of the elytra, head length from the anterior margin of the frons to the posterior constriction of the head, elytral



Map 1: Pooled distribution of *Neosclerus* in the Oriental and southern East Palaearctic regions, based on examined records.

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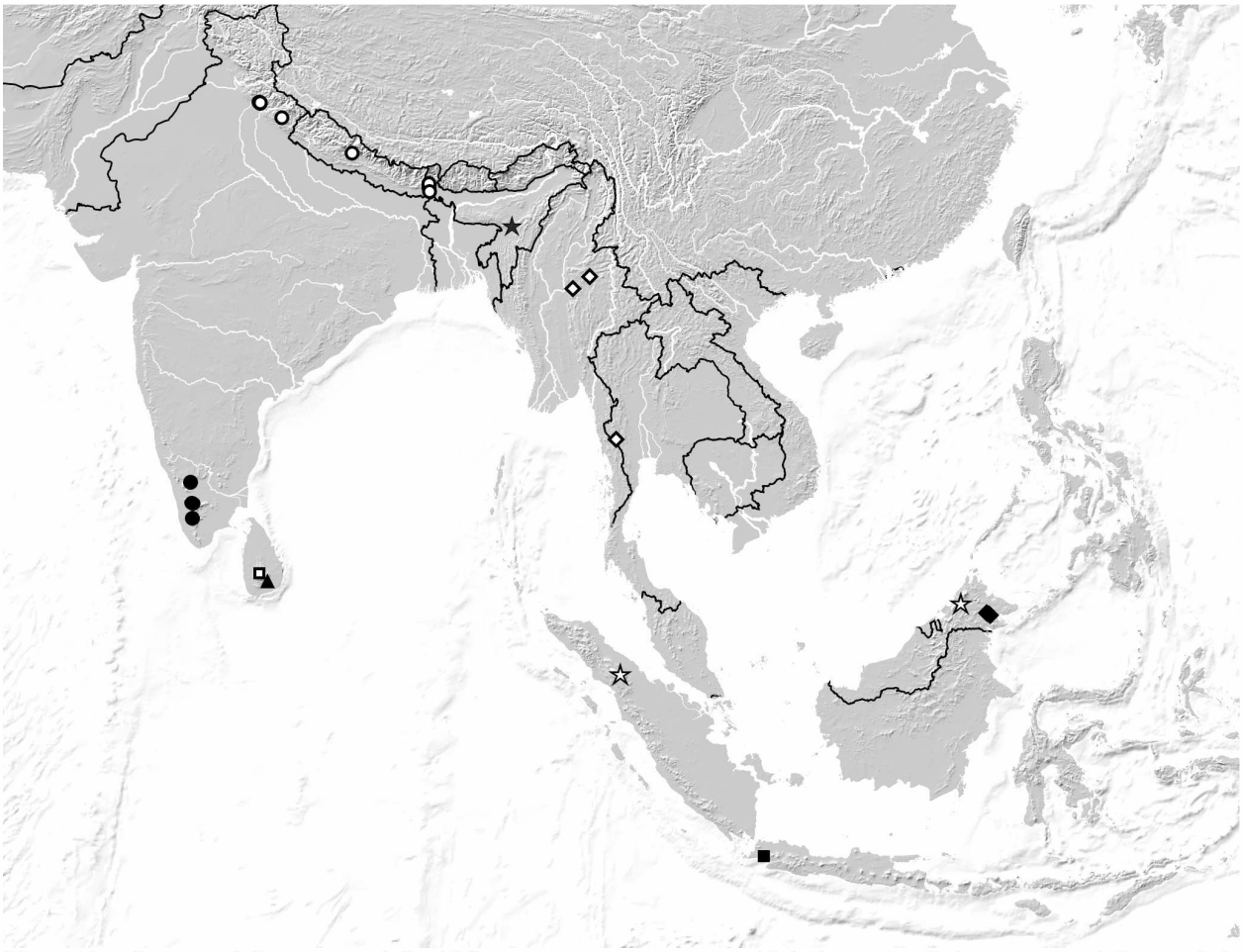
length at the suture from the apex of the scutellum to the posterior margin of the elytra (at the suture), and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

3.1 General remarks

Including the newly described species, *Neosclerus* now comprises a total of 44 species in five species groups. One of them, the *N. granulicollis* group, is newly established with *N. granulicollis* as the sole representative.

The general distribution of the genus (Map 1) still shows some evident gaps, particularly in the central and southern parts of India, in the southern Indochinese Peninsula, in Malaysia, and in Indonesia. Most *Neosclerus* species are fully winged, more or less widespread (though partly known only from few localities), and their distributions often overlap. At least three species are wing-dimorphic. Micropterous, locally endemic species are known from Northeast India (Meghalaya), South China, and particularly from Taiwan, where macropterous species are apparently absent.

The countries with the greatest diversity are China, Thailand, and India (ten species each), followed by Taiwan (nine locally endemic species), Burma (five species), Laos and Nepal (four species each), Sri Lanka (three endemic species), Malaysia (three species), Indonesia (two species), and Bhutan, Vietnam, and Hongkong (one species each).



Map 2: Distributions of the species of the *N. fortepunctatus* group, except *N. dupleseriatus*: *N. fortepunctatus* (white circles); *N. obscurus* (black star); *N. barbatus* (white diamonds); *N. revolutus* (black circles); *N. nigerrimus* (question mark; precise locality in Sri Lanka unknown); *N. albens* (white square); *N. forficatus* (black triangle); *N. immutatus* (white stars); *N. erubescens* (black diamonds); *N. javanus* (black square).

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3.2 Descriptions and additional records

3.2.1 *Neosclerus fortepunctatus* group

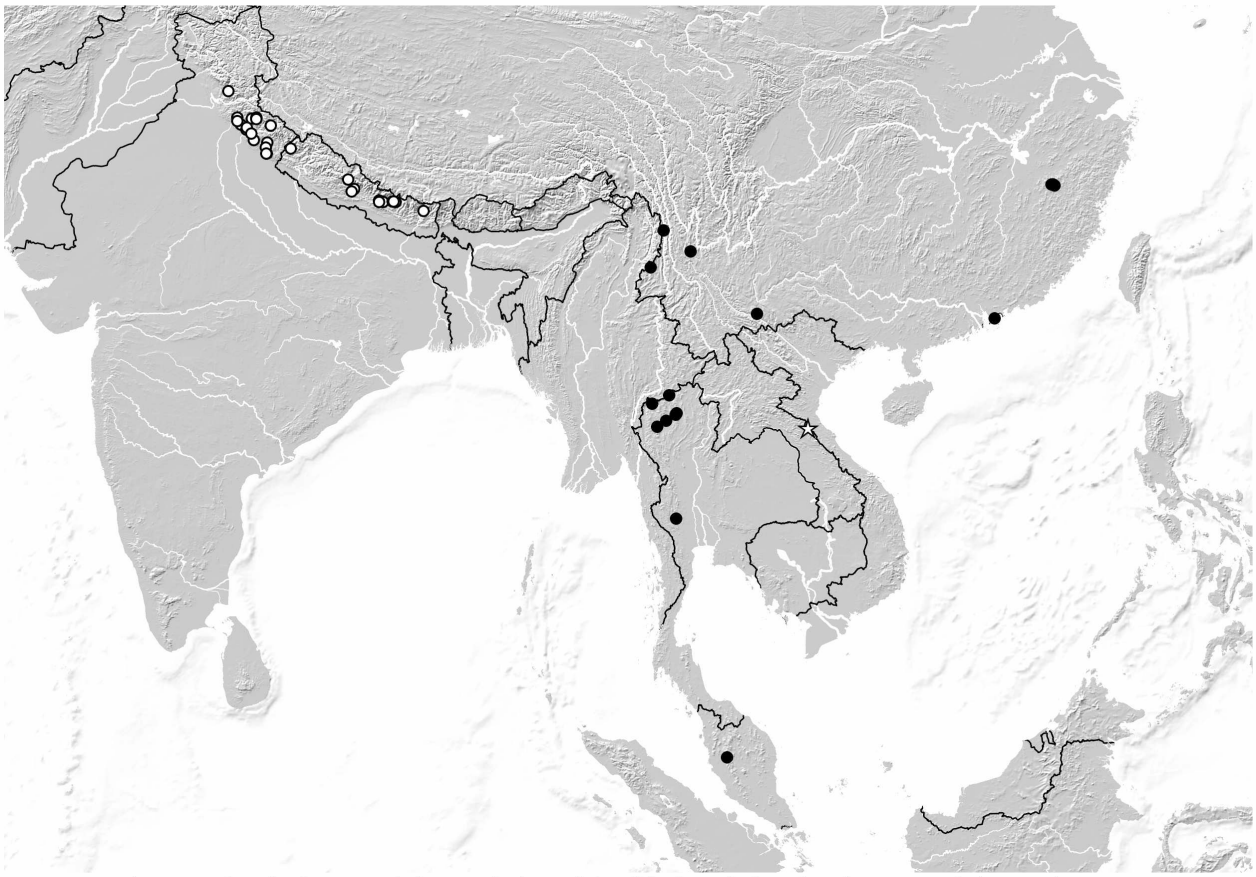
Neosclerus fortepunctatus Cameron, 1924
(Map 2)

Material examined: **India**: **Uttar Pradesh**: 16 exs., Garhwal, road to Mussoorie, 1300 m, 18.X.1979, leg. Löbl (MHNG, cAss); 1 ♀, Garhwal, below Mussoorie, 1700 m, 19.X.1979, leg. Löbl (MHNG). **West Bengal**: **Darjeeling**: 2 exs., 13 km N Ghoom, 1500 m, 15.X.1978, leg. Besuchet & Löbl (MHNG, cAss); 2 ♀♀, Mahanadi, 1200 m, 19.X.1978, leg. Besuchet & Löbl (MHNG); 1 ♀, Ghoom–Lopchu, 2000 m, 14.X.1978, leg. Besuchet & Löbl (MHNG); 5 exs., Sukna, 200 m, 7.X.1978, leg. Besuchet & Löbl (MHNG, cAss).

Comment: Male-based records of *N. fortepunctatus* were previously known only from the environs of Mussoorie in Uttar Pradesh (India) and Pokhara in central Nepal (Assing 2011a, b). The specimens from Darjeeling considerably expand the known range towards the east (Map 2). The distribution of *N. fortepunctatus* overlaps with that of the highly similar, closely related, and much more common *N. dupleseriatus*, as well as with that of *N. granulicollis*.

Neosclerus dupleseriatus Assing, 2011
(Map 3)

Material examined: **India**: **Uttar Pradesh**: 15 exs., Kumaon, Rangarh, 2000 m, 9.X.1979, leg. Löbl (MHNG, cAss); 3 exs., Kumaon, Bhim Tal env., 1500 m, 4.X.1979, leg. Löbl (MHNG, cAss); 3 exs., same data, but 1800 m (MHNG); 6 exs., Kumaon, Chaubattia near Ranikhet, 1800 m, 12.–13.X.1979, leg. Löbl (MHNG, cAss); 16 exs., Kumaon, between Bhim Tal and Sat Tal, 1500 m, 7.X.1979, leg. Löbl (MHNG, cAss); 3 exs., Garhwal, below Bhatwari, 1500 m, 24.X.1979, leg. Löbl (MHNG, cAss); 36 exs., Garhwal, 4 km S Bhatwari, 1400 m, 23.X.1979, leg. Löbl (MHNG, cAss); 6 exs., Garhwal, below Joshimath, 2100 m, 27.X.1979, leg. Löbl (MHNG, cAss); 152 exs., Garhwal, above Pauri, 1900 m, 28.X.1979, leg. Löbl (MHNG, cAss); 3 exs., Garhwal, 20 km S Chamba, 1150 m, 20.X.1979, leg. Löbl (MHNG, cAss); 4 exs., Garhwal, 16 km from Karnaprayag, Chamoli env., 900 m, 26.X.1979, leg. Löbl (MHNG, cAss). **Nepal**: 21 exs. [all macropterous], Bagmati province, Dobate Ridge NE Barahbise, 2700 m, 2.V.1981, leg. Löbl & Smetana (MHNG, cAss); 13 exs. [all macropterous], Bagmati province, Pokhare NE Barahbise, 2800 m, 2.V.1981, leg. Löbl & Smetana (MHNG, cAss); 1 ♀, Bagmati province, Nagarjun Forest near Kathmandu, 1650 m, 2.IV.1981, leg. Löbl & Smetana (MHNG); 1 ♂, Kosi, Induwa Khola valley, 2100 m, 17.IV.1984, leg. Löbl & Smetana (cAss).



Map 3: Distributions of *N. dupleseriatus* (white circles), *N. glaber* (black circles), and *N. bicarinatus* (white star).

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Comment: *Neosclerus dupleseriatus* is the most common species of the genus in the Himalaya from Northwest India to Nepal. The above specimen from Kosi considerably expands the known distribution eastwards. The currently known distribution is illustrated in Map 3.

Neosclerus barbatus Assing, 2011
(Map 2)

Material examined: **Burma**: 1 ex., Maymyo env., 700–900 m, 4.–5.III.1996, leg. Kurbatov (MHNG); 1 ex., Shan province, Hsipaw, ca. 600 m, 22.II.1996, leg. Kurbatov (cAss).

Comment: Like the two preceding species, *N. barbatus* belongs to the *N. fortepunctatus* group. It was previously represented only by the holotype from Thailand. The distribution is illustrated in Map 2.

Neosclerus revolutus spec. nov.
(Figs 1–5, Map 2)

Type material: Holotype ♂: "INDIA N. 18 Kerala, Cardamon H. entre Pambanar et Peermade, 950 m, 9-XI-72, Besuchet Löbl Mussard / Holotypus ♂ *Neosclerus revolutus* spec. nov. det. V. Assing 2015" (MHNG).
Paratypes: 10 exs.: same data as holotype (MHNG, cAss); 5 exs.: "INDIA Kerala, Nelliampathi Hills, N.O. Anaimalai Hills, 900 m 30-XI-72, Besuchet Löbl Mussard" (MHNG, cAss); 7 exs.: "INDIA Madras, No. 38, Nilgiri 7 km E. de Conoor, 1350 m, 19-XI-72, Besuchet Löbl Mussard" (MHNG, cAss); 2 exs.: "INDIA 39 Madras, Anaimalai H., Valparai, 1100 m. 20-XI-72, Besuchet Löbl Mussard" (MHNG, cAss).

Etymology: The specific epithet is the past participle of the Latin verb revolvere (to roll, to coil) and alludes to the basally coiled internal structures of the aedeagus.

Description: Body length 3.1–3.9 mm; length of forebody 1.8–2.0 mm. Coloration: head and pronotum blackish; elytra and abdomen brown to blackish-brown; legs yellowish; antennae reddish to reddish-brown.
Head (Fig. 1) relatively weakly transverse, 1.07–1.10 times as broad as long; punctation coarse and dense in anterior portion, distinctly less dense to very sparse and moderately coarse to fine in posterior portion of dorsal surface; interstices without microsculpture. Eyes separated from posterior angles by a distance of distinctly more than the width of antennomere II. Antenna approximately 1.0 mm long.
Pronotum (Fig. 1) 1.05–1.10 times as long as broad and about 0.85 times as broad as head; punctation coarse and moderately dense; midline broadly impunctate; interstices without microsculpture.
Elytra (Fig. 1) approximately as long as pronotum; punctation rather coarse and very dense. Hind wings present. Metatarsomere I nearly as long as the combined length of II and III.
Abdomen narrower than elytra; punctation fine, moderately dense on anterior tergites, gradually becoming sparser towards posterior tergites; interstices with distinct microsculpture; posterior margin of tergite VII with palisade fringe.
♂: sternite VII (Fig. 2) approximately 1.2 times as broad as long, posterior margin broadly and distinctly concave, pubescence unmodified; sternite VIII (Fig. 2) distinctly oblong and with unmodified pubescence, posterior excision of broadly triangular shape, its depth approximately one–seventh the length of sternite; aedeagus (Figs 4–5) 0.65–68 mm long (approximately 0.6 mm in dry preparation) and rather weakly sclerotized; ventral process long and slender, apically hooked in lateral view; internal sac with a pair of long series of weakly sclerotized structures.

Comparative notes: As can be inferred particularly from the male sexual characters (shapes and chaetotaxy of sternite VII and VIII, morphology of the aedeagus), *N. revolutus* belongs to the *N. fortepunctatus* group. It is distinguished from other species of this group particularly by the densely and coarsely punctate, practically matt elytra, the relatively sparsely punctate posterior portion of the head, the broadly and distinctly concave posterior margin of the male sternite VII, and by the shape and internal structures of the aedeagus. The general shape of the aedeagus is most similar to that of *N. fortepunctatus*, *N. barbatus*, and *N. obscurus* Assing, 2013. For illustrations of these species see Assing (2011a, 2013).

Distribution and natural history: The type specimens were collected in two localities in Tamil Nadu and two in Kerala, South India (Map 2), at altitudes of 900–1350 m.

Neosclerus forficatus spec. nov.
(Figs 6–11, Map 2)

Type material: Holotype ♂: "CEYLAN Uva, s/Wellawaya, 300 m, 25.I.70, Mussard Besuchet Löbl / Holotypus ♂ *Neosclerus forficatus* spec. nov. det. V. Assing 2015" (MHNG).
Paratype ♀: same data as holotype (cAss).

Etymology: The specific epithet is an adjective derived from the Latin noun forfex (pliers, forceps) and alludes to the shape of the basal internal structures of the aedeagus.

Description: Small species; body length 2.7–3.0 mm; length of forebody 1.4–1.5 mm. Coloration: body blackish-brown to blackish, with the elytra slightly paler; legs pale-yellowish; antennae dark-yellowish.

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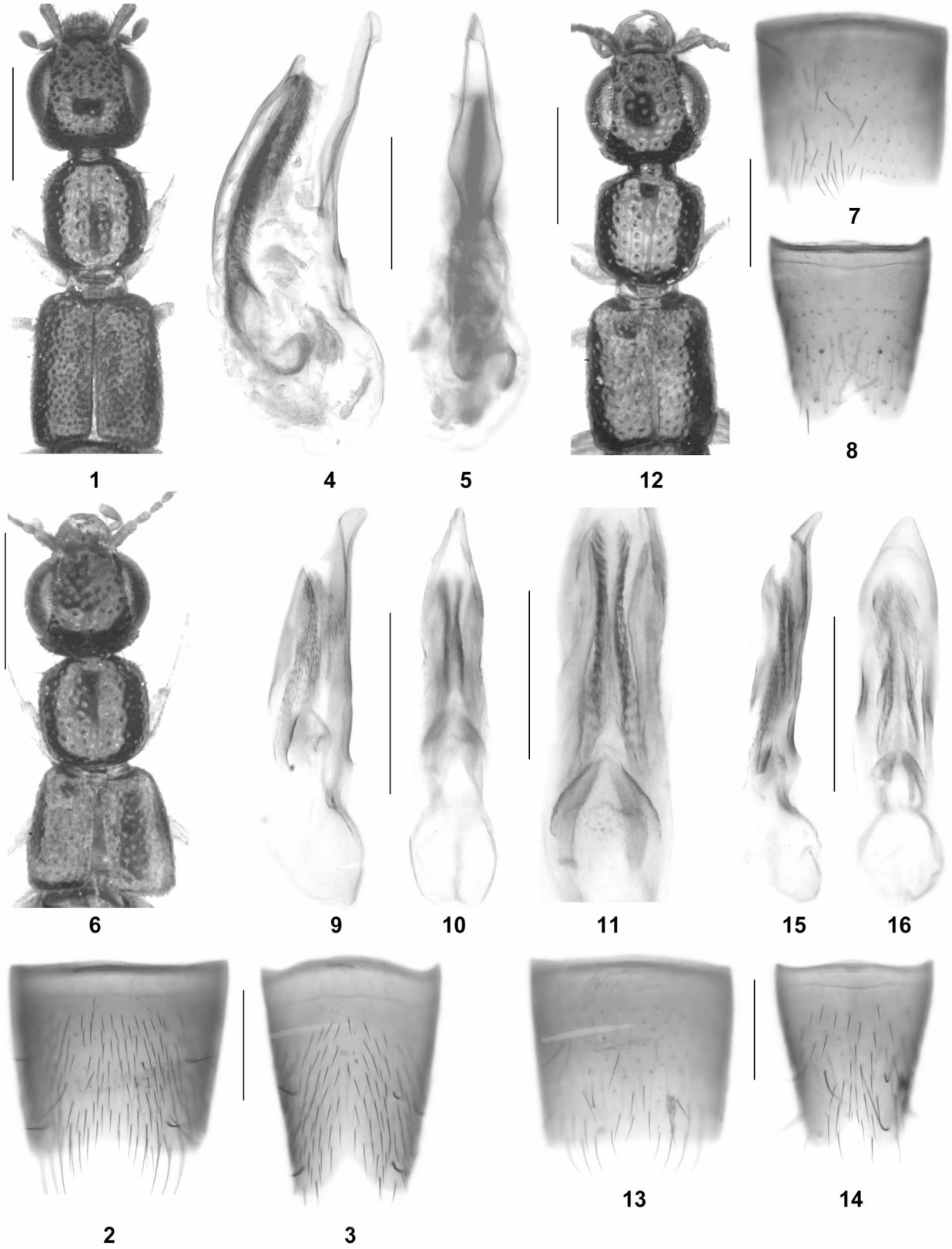

Figs 1–16: *Neosclerus revolutus* spec. nov. (1–5), *N. forficatus* spec. nov. (6–11), and *N. albens* spec. nov. (12–16): forebody (1, 6, 12); male sternite VII (2, 7, 13); male sternite VIII (3, 8, 14); aedeagus in lateral and in ventral view (4–5, 9–10, 15–16); internal structures of aedeagus in ventral view (11). Scale bars: 1, 6, 12: 0.5 mm; 2–5, 7–19, 13–16: 0.2 mm; 11: 0.1 mm.

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Head (Fig. 6) relatively weakly transverse, approximately 1.1 times as broad as long; punctation moderately coarse and moderately dense in anterior half, sparser and less coarse in posterior half of dorsal surface; interstices without microsculpture. Eyes separated from posterior angles by a distance of slightly more than width of antennomere II. Antenna approximately 0.75 mm long.
Pronotum (Fig. 6) approximately as broad as long and about 0.85 times as broad as head; on either side of the broadly impunctate midline with a series of approximately 10 punctures, lateral portion with rather sparse coarse punctation; interstices without microsculpture.
Elytra (Fig. 6) relatively short, approximately 0.9 times as long as pronotum; punctation moderately fine and moderately dense. Hind wings completely reduced. Metatarsomere I nearly as long as the combined length of II and III.
Abdomen approximately as broad as elytra; punctation fine, rather dense on anterior tergites, gradually becoming less dense towards posterior tergites; interstices with shallow microsculpture; posterior margin of tergite VII with palisade fringe.
♂: sternite VII (Fig. 7) 1.23 times as broad as long, posterior margin weakly concave in the middle, pubescence unmodified; sternite VIII (Fig. 8) weakly oblong and with unmodified pubescence, posterior excision of triangular shape, its depth approximately one-fifth the length of sternite; aedeagus (Figs 9–10) 0.45 mm long and weakly sclerotized; ventral process long and slender, apically acute in ventral view; internal sac with a pair of series of weakly sclerotized structures and with a basal pair of weakly sclerotized sclerites (Fig. 11).

Comparative notes: Based on external (head weakly transverse; head moderately bulging and clearly not reaching posterior angles; punctation of forebody moderately dense) and the male sexual characters (sternites VII and VIII with unmodified pubescence; aedeagus with dorso-ventrally flattened ventral process; internal sac with two long series of membranous structures and a pair of basal sclerites), *N. forficatus* is closely allied to *N. nigerrimus* (Kraatz, 1859), previously the sole representative of the genus known from Sri Lanka. The new species is distinguished from *N. nigerrimus* by the much more slender and apically more acute ventral process, as well as the more or less sclerotized and differently shaped pair of basal internal structures of the aedeagus.
The unmodified pubescence of the male sternite VIII and the morphology of the aedeagus (ventral process dorso-ventrally flattened; internal sac with a pair of series of membranous structures) suggest that both *N. nigerrimus* and *N. forficatus* belong to the *N. fortepunctatus* group.

Distribution and natural history: The type locality is situated in the southeast of Sri Lanka (Map 2) at an altitude of 300 m.

Neosclerus albens spec. nov.
(Figs 12–16, Map 2)

Type material: Holotype ♂: "CEYLAN Central, s/ Mululla, 750 m, 4.II.70, Mussard Besuchet Löbl / Holotypus ♂ *Neosclerus albens* spec. nov. det. V. Assing 2015" (MHNG).
Paratypes: 2 ♀♀: same data as holotype (MHNG, cAss).

Etymology: The specific epithet (Latin, adjective: pale) alludes to the weakly sclerotized aedeagus.

Description: Small species; body length 2.7–3.0 mm; length of forebody 1.5–1.6 mm. External characters (Fig. 12) as in *N. forficatus*, except as follows:
Head (Fig. 12) anteriorly with relatively sparse and coarse punctures, punctation of pronotum and of remainder of head not particularly coarse and rather sparse. Elytra apparently dimorphic, approximately 1.1 times as long as pronotum in holotype (macropterous morph) and 0.9 times as long as pronotum in paratypes (brachypterous morph). Hind wings probably fully developed in macropterous morph, of reduced length (extending slightly beyond posterior margin of elytra) in brachypterous morph.
♂: sternite VII (Fig. 13) 1.28 times as broad as long, posterior margin very weakly concave in the middle, pubescence sparse and unmodified; sternite VIII (Fig. 14) 1.1 times as long as broad and with unmodified pubescence, posterior excision of triangular shape, its depth approximately one-sixth the length of sternite; aedeagus (Figs 15–16) 0.45 mm long and weakly sclerotized; ventral process long and slender, apically moderately acute in ventral view; internal sac with a pair of series of weakly sclerotized structures and with a basal pair of weakly sclerotized sclerites.

Comparative notes: This species, too, is closely allied to *N. nigerrimus*, as can be inferred from the similar external and male sexual characters. It is distinguished from *N. nigerrimus* by the less broad posterior excision of the male sternite VIII, the more slender ventral process of the aedeagus (*N. nigerrimus*: distinctly dilated subapically in ventral view) and by the weakly sclerotized and differently shaped basal internal structures of the aedeagus. For illustrations of *N. nigerrimus* see Assing (2011a).

Distribution and natural history: The type locality is situated in Central Province, Sri Lanka (Map 2), at an altitude of 750 m.

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3.2.2 *Neosclerus granulicollis* group

Neosclerus granulicollis Cameron, 1924
(Figs 47–50, Map 4)

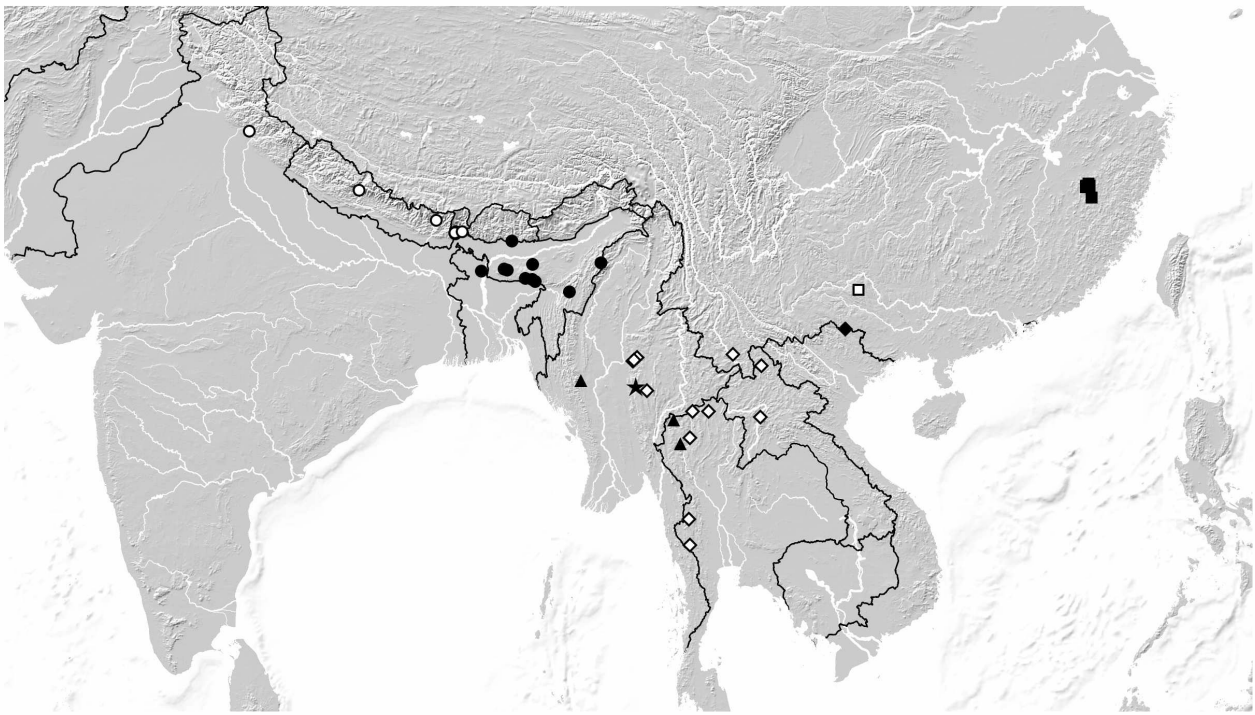
Material examined: **India**: **West Bengal**: **Darjeeling**: 2 exs., Ghoom, 1500 m, 15.X.1978, leg. Besuchet & Löbl (MHNG); 1 ex., 13 km N Ghoom, 1500 m, 15.X.1978, leg. Besuchet & Löbl (cAss); 1 ex., Ghoom–Lopchu, 2000 m, 14.X.1978, leg. Besuchet & Löbl (MHNG); 1 ex., Algarah, 1800 m, 9.X.1978, leg. Besuchet & Löbl (cAss).

Comment: This species was originally described from Uttar Pradesh and subsequently reported also from West Bengal, as well as from Central and East Nepal (Assing 2011a, b). The distribution (Map 4) is largely congruent with those of *N. fortepunctatus* and *N. dupleseriatus*.
The male sexual characters were previously unknown; the aedeagus of the available male was teratologically malformed, at least that is what I had believed. Based on the above material, the male sexual characters, especially the aedeagus, are remarkably different from those of all other *Neosclerus* species:
sternite VII (Fig. 47) weakly transverse, with unmodified pubescence, and with weakly concave posterior margin; sternite VIII (Fig. 48) strongly oblong, posterior margin with shallow median concavity, without distinct excision; aedeagus (Figs 49–50) minute, only approximately 0.3 mm long, very weakly sclerotized, and with very short and apically broadly convex (ventral view) ventral process; internal sac with weakly defined structures.
The general morphology of the aedeagus and the punctation of the pronotum are unique in the genus, suggesting that *N. granulicollis* represents a species group of its own.

3.2.3 *Neosclerus glaber* group

Neosclerus glaber Assing, 2011
(Map 3)

Material examined: **China**: 2 ♂♂, 4 ♀♀ [all more or less teneral], Yunnan, S Gejiu, 23°17'N, 103°09'E, 1860 m, grassy slope with shrubs near road, litter, soil, and moss sifted, 21.VIII.2014, leg. Schülke (cSch, cAss). **Thailand**: 1 ♂, Chiang Mai, Doi Suthep, 890 m, pitfall trap, IV.1986, leg. Schwendinger (cAss); 1 ♂, 3 ♀♀ [1 teneral], Chiang Mai, Doi Suthep, 1450 m, 4.XI.1985, leg. Burckhardt & Löbl (MHNG); 1 ♀, Chiang Mai, Doi Inthanon, 1080 m, 24.XI.1987, leg. Schwendinger (MHNG); 1 ♀, Chiang Mai, Doi Inthanon, 1780 m, 17.XII.1986, leg. Schwendinger (MHNG); 1 ♀, Chiang Mai, Doi Inthanon, 172 m, 7.XI.1985, leg. Schwendinger (MHNG); 1 ♂, Chiang Mai, Doi Inthanon, 910 m, 23.II.1987, leg. Schwendinger (cAss); 1 ♀, Chiang Mai, 50 km NE Chiang Mai, road to Wab Pang An, 900 m, 3.XI.1985, leg. Burckhardt & Löbl (MHNG); 1 ♂, Chiang Mai, 54 km NE Chiang Mai, Mae Nang Kaeo, 900 m, 3.XI.1985, leg. Burckhardt & Löbl (MHNG); 1 ♂, Chiang Mai, Doi Angkhang, 10 km W Fang, 920 m, 18.III.1987, leg. Schwendinger (cAss); 1 ♂, Kanchanapuri Province, Chalerm Rattana Kosin, 12.XI.1992, leg. Schwendinger (MHNG); 1 ♀, Mae Hong



Map 4: Distributions of *N. granulicollis* (white circles), *N. assamensis* (black circles), *N. discolor* (black triangles), *N. barbatulus* (white diamonds), *N. schillhammeri* (black star), *N. incisus* (black diamond), *N. rimatus* (white square), and *N. hlavaci* (black squares).

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Son, 8 km N Mae Lang, Tom Lok, 700 m, 13.XI.1985, leg. Burckhardt & Löbl (MHNG).

Comment: The known distribution of *N. glaber* includes southern China (Yunnan, Fujian), Hong Kong, Thailand, and Malaysia (Map 3).

Neosclerus macer Assing, 2013
(Map 5)

Material examined: **Thailand**: 2 ♂♂, 2 ♀♀, Chiang Rai, 10 km W Wiang Pa Pao, Ban Huay Ya Sai, 780 m, 28.I.1988, leg. Schwendinger (MHNG, cAss); 1 ♀, Chiang Mai, Doi Chiang Dao, 16.X.1986, leg. Schwendinger (MHNG); 1 ♀, 50 km N Lampang, Pratu Pah, 620 m, sifted, 18.I.1986, leg. Schwendinger (MHNG).

Comment: This species was previously represented only by the holotype from Laos (Assing 2013). The currently known distribution is illustrated in Map 5.

3.2.4 *Neosclerus brevipennis* group

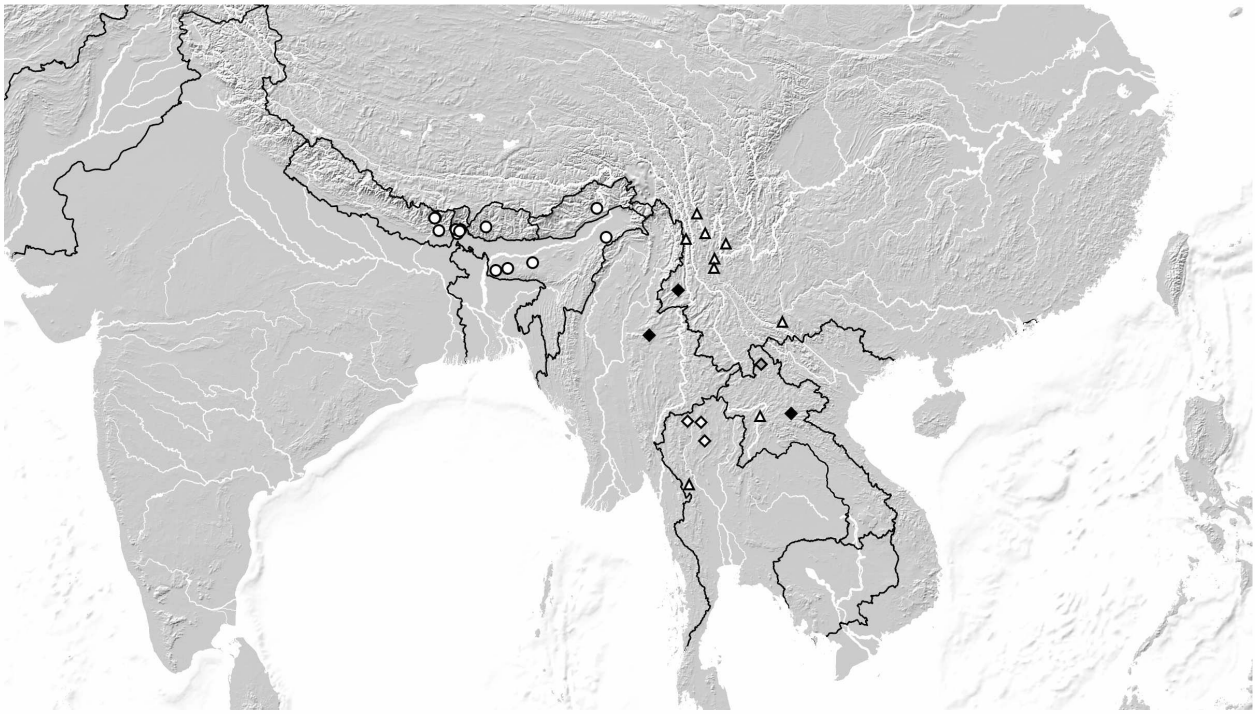
Neosclerus brevipennis (Cameron, 1943)
(Map 3)

Material examined: **India**: **West Bengal**: **Darjeeling**: 8 exs., Teesta, 250 m, 10.X.1978, leg. Besuchet & Löbl (MHNG, cAss); 1 ♀, Singla, 300 m, 17.X.1978, leg. Besuchet & Löbl (MHNG); 2 ♂♂, Kalimpong, 1300 m, 11.X.1978, leg. Besuchet & Löbl (cAss). **Meghalaya**: 7 exs., Khasi Hills, Nongpoh, 700 m, 5.XI.1978, leg. Besuchet & Löbl (MHNG, cAss); 17 exs., Garo Hills, Tura, 700–900 m, 1.XI.1978, leg. Besuchet & Löbl (MHNG, cAss); 1 ♀, Garo Hills, Darogiri, 400 m, 4.XI.1978, leg. Besuchet & Löbl (MHNG). **Nepal**: 8 exs., Kosi, Arun valley, S Num, 1050 m, 20.IV.1984, leg. Löbl & Smetana (MHNG, cAss).

Comment: The known distribution of *N. brevipennis*, like *N. dupleseriatus* a wing-dimorphic species, ranges from East Nepal and West Bengal to Bhutan, Assam, Meghalaya, and Arunachal Pradesh (Map 5).

Neosclerus assamensis (Cameron, 1931)
(Map 4)

Material examined: **India**: **Meghalaya**: 17 exs. [partly teneral], Garo Hills, Songsak, 400 m, 2.XI.1978, leg. Besuchet & Löbl (MHNG, cAss); 3 exs., Garo Hills, Darugiri, 400 m, 4.XI.1978, leg. Besuchet & Löbl (MHNG, cAss); 3 exs. [1 teneral], Garo Hills, Rongrengiri, 400 m, 3.XI.1978, leg. Besuchet & Löbl (MHNG, cAss); 4 exs., Khasi Hills, Nongpoh, 700 m, 5.XI.1978, leg. Besuchet & Löbl (MHNG, cAss); 1 ex., Khasi Hills, Dawki, 500–800 m, 29.X.1978, leg. Besuchet & Löbl (cAss); 4 exs., Khasi Hills, Mawsynram–Balat, 1000 m, 27.X.1978, leg. Besuchet & Löbl (MHNG, cAss); 12 exs., Khasi Hills, Pynursla, 1100 m, 29.X.1978, leg. Besuchet & Löbl (MHNG, cAss). **Assam**: 1 ♀, Manas, 200 m, 22.X.1978, leg. Besuchet & Löbl (MHNG).



Map 5: Distributions of *N. brevipennis* (white circles), *N. praeacutus* (white triangles), *N. schuelkei* (black and grey diamonds), and *N. macer* (white and grey diamonds).

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Comment: Previously, only a single female syntype from Assam and a male from Meghalaya were known (Assing 2011a, 2013). The currently known distribution is illustrated in Map 4.
The coloration is subject to pronounced variation. The pronotum and the elytra are pale-reddish and strongly contrasting with the black head in the material from most localities. The specimens from two localities in the Meghalayan Khasi Hills (Mawsynram–Balat; Pynursla), however, have the elytra brown to dark-brown and the pronotum dark-brown to blackish, of similar coloration as the head. Some of the above specimens are teneral.

Neosclerus praeacutus Assing, 2011
(Map 5)

Material examined: **China**: 1 ♂ [teneral], Yunnan, mountain W Gejiu, 23°24'N, 103°07'E, 1990 m, mixed forest, litter and various debris sifted, 23.VIII.2014, leg. Schülke (cSch).

Comment: *Neosclerus praeacutus* has been recorded from Yunnan, Thailand, and doubtfully also from Laos (Assing 2011a, 2011b, 2013; Map 5). The above teneral male was collected together with numerous specimens of *N. figens* spec. nov.

Neosclerus barbatulus Assing, 2011
(Map 4)

Material examined: **Burma**: 10 exs., Maymyo env., 700–900 m, 4.–5.III.1996, leg. Kurbatov (MHNG, cAss). **Thailand**: 4 exs., Chiang Mai, Doi Angkhang, 10 km W Fang, 920 m, 18.III.1987, leg. Schwendinger (MHNG, cAss); 2 exs., Chiang Mai, Doi Suthep, 1600 m, 4.XI.1985, leg. Burckhardt & Löbl (MHNG, cAss); 1 ♀, Chiang Rai, Doi Tung, 1350 m, 30.X.1991, leg. Schwendinger (MHNG).

Comment: This species has been recorded from Thailand, Burma, Laos, and the Chinese province Yunnan (Map 4).

Neosclerus schuelkei Assing, 2011
(Map 5)

Material examined: **Burma**: 2 ♂♂, 1 ♀, Shan province, Namhsan, 1600 m, litter, 18.II.1996, leg. Kurbatov (MHNG, cAss).

Comment: This species had been recorded from Laos and the Chinese province Yunnan (Assing 2011a, 2013). The above specimens represent the first record from Burma. The currently known distribution is illustrated in Map 5.

Neosclerus immutatus Assing, 2011
(Map 2)

Material examined: **Malaysia**: 1 ♀, Sabah, Crocker Ra., km 60 route Kota Kinabalu – Tambunan, 1270 m, 17.V.1987, leg. Burckhardt & Löbl (MHNG).

Comment: This species was previously known only from the type locality in northern Sumatra. A comparison of the above female with the holotype revealed no significant external differences. The distribution is illustrated in Map 2.

Neosclerus khasicus spec. nov.
(Figs 17–22, Map 6)

Type material: Holotype ♂: "INDIA Meghalaya, Khasi Hills 28.X.78, Mawphlang 1800 m, Besuchet-Löbl / Holotypus ♂ *Neosclerus khasicus* spec. nov. det. V. Assing 2015" (MHNG).
Paratypes: 33 exs. [partly slightly teneral]: same data as holotype (MHNG, cAss); 10 exs. [partly slightly teneral]: "INDIA Meghalaya, Khasi Hills 25.X.78, Shillong 1850–1950 m, Besuchet-Löbl" (MHNG, cAss); 6 exs. [partly slightly teneral]: same data, but "30.X.78" (MHNG).

Etymology: The specific epithet is an adjective derived from Khasi Hills, where the species was discovered and where it is probably endemic.

Description: Body length 2.8–3.5 mm; length of forebody 1.5–1.6 mm. Coloration: body black, with the pronotum and the elytra sometimes slightly paler; legs and antennae yellowish.
Head (Fig. 17) approximately 1.15 times as broad as long; punctation very coarse and dense, sparser and less coarse in posterior dorsal portion; interstices without microsculpture. Eyes very large, nearly extending to posterior angles of head. Antenna approximately 0.9 mm long.
Pronotum (Fig. 17) approximately 1.05 times as long as broad and about 0.85 times as broad as head; punctation moderately dense, slightly less coarse than that of head; interstices without microsculpture; midline broadly impunctate.
Elytra (Fig. 17) short, 0.60–0.65 times as long as pronotum; punctation fine and dense. Hind wings completely reduced. Metatarsomere I approximately as long as the combined length of II and III, or nearly so.
Abdomen approximately as broad as, or slightly broader than elytra; punctation fine, dense on anterior tergites, gradually becoming less dense towards posterior tergites; interstices with shallow microsculpture; posterior margin of tergite VII without palisade fringe.
♂: sternite VII (Fig. 18) weakly transverse, approximately 1.1 times as broad as long, posteriorly with pronounced median excision, with small impression of triangular shape anterior to this excision, and with a pair of clusters

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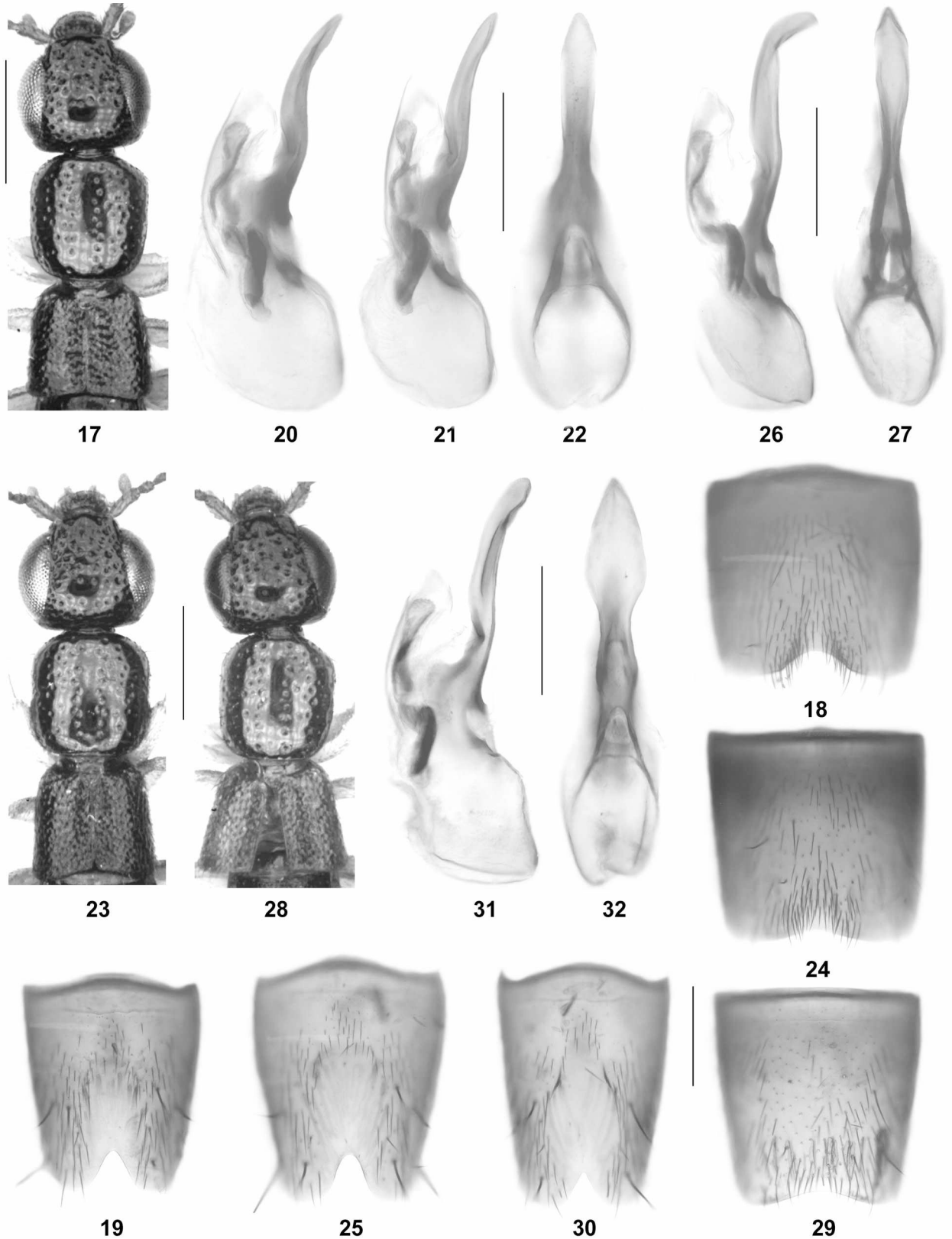

Figs 17–32: *Neosclerus khasicus* spec. nov. (17–22), *N. fractus* spec. nov. (23–27), and *N. sagittatus* spec. nov. (28–32): forebody (17, 23, 28); male sternite VII (18, 24, 29); male sternite VIII (19, 25, 30); aedeagus in lateral and in ventral view (20–22, 26–27, 31–32). Scale bars: 17, 23, 28: 0.5 mm; 16–22, 24–27, 29–32: 0.2 mm.

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of long black setae; sternite VIII (Fig. 10) weakly oblong, posterior portion extensively impressed and without pubescence, anteriorly with a median cluster of short setae, posterior excision of triangular shape, its depth approximately one-sixth the length of sternite; aedeagus (Figs 20–22) 0.55–0.58 mm long; ventral process long and slender, bisinuate in lateral view, and apically moderately acute.

Comparative notes: *Neosclerus khasicus* is readily distinguished from all other described species recorded from India by the conspicuously short elytra, the completely reduced hind wings, and the absence of a palisade fringe at the posterior margin of the abdominal tergite VII alone. Micropterous *Neosclerus* species were previously known only from South China and Taiwan. For characters distinguishing *N. khasicus* from the similarly micropterous and geographically close *N. fractus* and *N. sagittatus* see the descriptions and comparative notes in the two following sections.

Distribution and natural history: The known distribution is confined to two localities in the Khasi Hills in Meghalaya, Northeast India (Map 6). The altitudes range from 1800 to 1950 m. Some of the paratypes are more or less distinctly teneral.

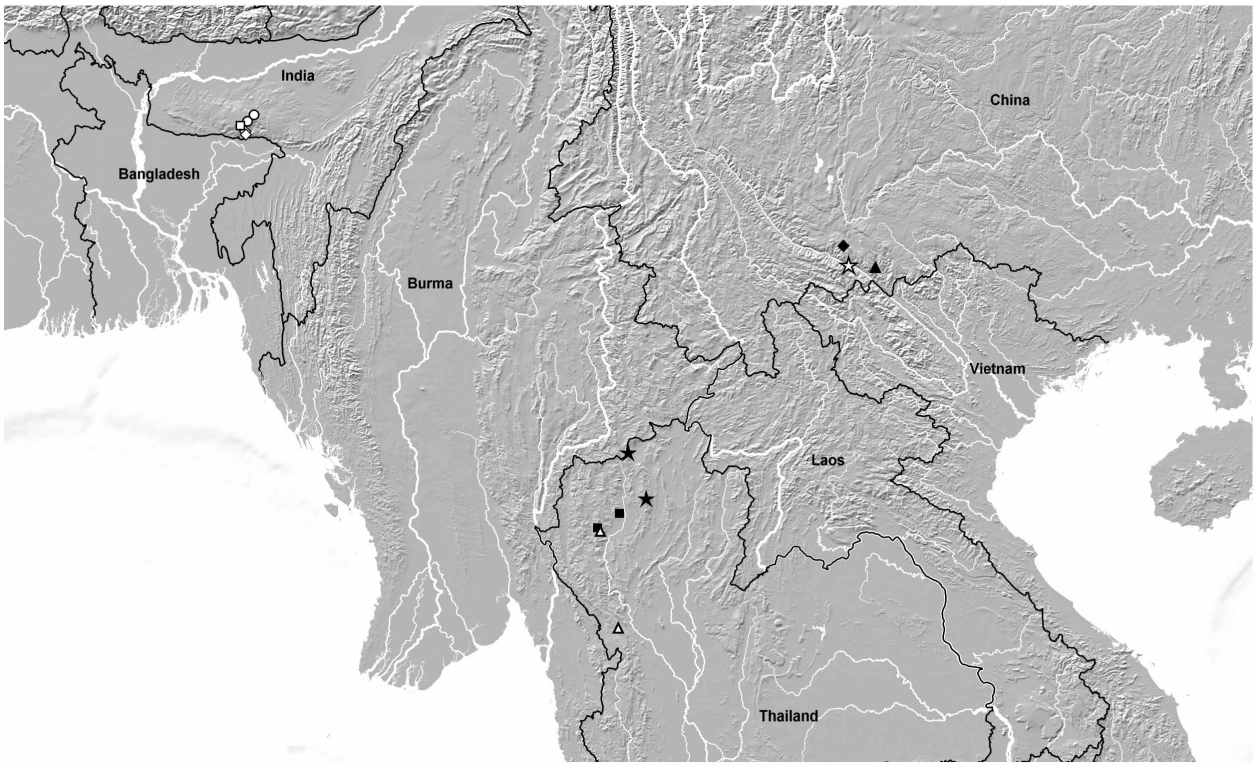
Neosclerus fractus spec. nov.

(Figs 23–27, Map 6)

Type material: Holotype ♂: "INDIA Meghalaya, Khasi Hills 1700 m, Cherrapunjee, 26.X.78, Besuchet-Löbl / Holotypus ♂ *Neosclerus fractus* spec. nov. det. V. Assing 2015" (MHNG).
Paratype ♀: "INDIA Meghalaya, Khasi Hills 26.X.78, ss/ Cherrapunjee, 1200 m, Besuchet Löbl" (cAss).

Etymology: The specific epithet is the past participle of the Latin verb frangere (to break, to bend) and alludes to the shape of the ventral process of the aedeagus in lateral view.

Description: Body length 3.5–3.7 mm; length of forebody 1.7–1.8 mm. Other external characters (Fig. 23) as in *N. khasicus*.
♂: sternite VII (Fig. 24) moderately transverse, approximately 1.15 times as broad as long, posteriorly with shallow median impression and with a cluster of dense brownish setae, posterior margin broadly concave; sternite VIII (Fig. 25) distinctly oblong, approximately 1.2 times as long as broad, posterior portion extensively impressed and without pubescence, anteriorly with a median cluster of short setae, posterior excision of triangular shape, its depth approximately one-fifth the length of sternite; aedeagus (Figs 26–27) 0.65 mm long; ventral process long and slender, subapically strongly bent in lateral view.



Map 6: Distributions of *N. khasicus* (white circles), *N. sagittatus* (white square), *N. fractus* (white diamonds), *N. figens* (black diamond), *N. trisinuatus* (white star), *N. daweianus* (black triangle), *N. semicalvus* (black stars), *N. rougemonti* (black squares), and *N. biangulatus* (white triangles).

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Comparative notes: Based on the male primary and sexual characters, as well as on the practically identical external characters, *N. fractus* is closely allied to *N. khasicus*, from which it differs by slightly greater body size, the more transverse male sternite VII without a pronounced median excision posteriorly and with different chaetotaxy, the more oblong male sternite VIII with a deeper posterior excision, and by the larger aedeagus with a subapically strongly bent ventral process.

Distribution and natural history: The type specimens were collected in two localities near Cherrapunjee in the Khasi Hills, Meghalaya (Map 6), at altitudes of 1200 and 1700 m.

Neosclerus sagittatus spec. nov.
(Figs 28–32, Map 6)

Type material: Holotype ♂: "INDIA Meghalaya, Khasi Hills 27.X.78, Weiloi 1700 m, Besuchet-Löbl / Holotypus ♂ *Neosclerus sagittatus* spec. nov. det. V. Assing 2015" (MHNG).

Etymology: The specific epithet is an adjective derived from the Latin noun sagitta (arrow) and alludes to the shape of the ventral process of the aedeagus in ventral view.

Description: Body length 3.1 mm; length of forebody 1.65 mm. External characters (Fig. 28) as in *N. khasicus*.
♂: sternite VII (Fig. 29) very weakly transverse, approximately 1.05 times as broad as long, posterior margin broadly concave, pubescence not distinctly modified; sternite VIII (Fig. 30) distinctly oblong, approximately 1.2 times as long as broad, posterior portion extensively impressed and without pubescence, anteriorly with a median cluster of short setae, posterior excision of triangular shape, its depth approximately one-sixth the length of sternite; aedeagus (Figs 31–32) 0.63 mm long; ventral process long and slender in lateral view, distinctly dilated subapically in ventral view.

Comparative notes: Based on the male primary and sexual characters, as well as on the practically identical external characters, *N. sagittatus* is closely allied to the geographically close *N. fractus* and *N. khasicus*. It differs from both species by the less transverse male sternite VII with unmodified pubescence and by the distinctive shape of the ventral process of the aedeagus.

Distribution and natural history: The type locality is situated in the Khasi Hills in Meghalaya, Northeast India (Map 6), at an altitude of 1700 m.

Neosclerus discolor spec. nov.
(Figs 33–39, Map 4)

Type material: Holotype ♂: "BURMA Chin prov., env. Saw 900–1500 m, 27.–28.02.1996, leg. S. Kurbatov / Holotypus ♂ *Neosclerus discolor* spec. nov. det. V. Assing 2015" (MHNG).
Paratypes: 3 ♂♂: same data as holotype (MHNG, cAss); 6 exs.: "THAILAND: Mae Hong Son, Tom Lok, 8 km N Mae Lang, 700 m, 11, 13.XI.1985, Burckhardt-Löbl" (MHNG, cAss); 1 ♀: "THAILAND 24.II.87, prov. Chiang Mai, Doi Inthanon 1080 m, P. Schwendinger" (MHNG).

Etymology: The specific epithet (Latin, adjective: colourful) alludes to the distinctive coloration.

Description: Body length 2.9–3.7 mm; length of forebody 1.6–1.9 mm. Coloration: head black; pronotum pale-reddish; elytra yellowish, with the sutural portion often more or less distinctly and more or less extensively infuscate; abdomen reddish, with the apex often more or less distinctly darker; legs and antennae yellowish.
Head (Fig. 33) approximately 1.25 times as broad as long; punctation very coarse and dense, sparser in posterior dorsal portion; interstices without microsculpture. Eyes very large, nearly extending to posterior angles of head. Antenna approximately 1.0 mm long.
Pronotum (Fig. 33) approximately as broad as long and 0.8 times as broad as head; punctation dense, similar to that of head; interstices without microsculpture; midline with narrow impunctate band of variable length.
Elytra (Fig. 33) of rather variable length, 1.02–1.15 times as long as pronotum; punctation rather fine and very dense. Hind wings present. Metatarsomere I approximately as long as the combined length of II and III.
Abdomen noticeably narrower than elytra; punctation extremely fine and dense; interstices with distinct microsculpture; posterior margin of tergite VII with palisade fringe.
♂: sternite VII (Figs 34–35) moderately transverse, 1.15–1.20 times as broad as long, and with pubescence of variable density, posterior margin with, rarely without, concavity of variable depth in the middle, near this concavity with a cluster of short dark setae; sternite VIII (Figs 36–37) as broad as long or weakly oblong, anteriorly without process or elevation, but with sparse cluster of setae, postero-median portion depressed and largely without pubescence, posterior excision broadly V-shaped and approximately 0.2 times as deep as length of sternite; aedeagus (Figs 38–39) 0.48–0.54 mm long, with ventral process and internal structures of distinctive shapes.

Intraspecific variation: This species is subject to rather pronounced variation not only of external characters, such as the coloration (particularly of the elytra and the abdominal apex) and the length of the elytra, but also of the chaetotaxy (pubescence moderately sparse to rather dense) and shape of the male sternite VII (posterior

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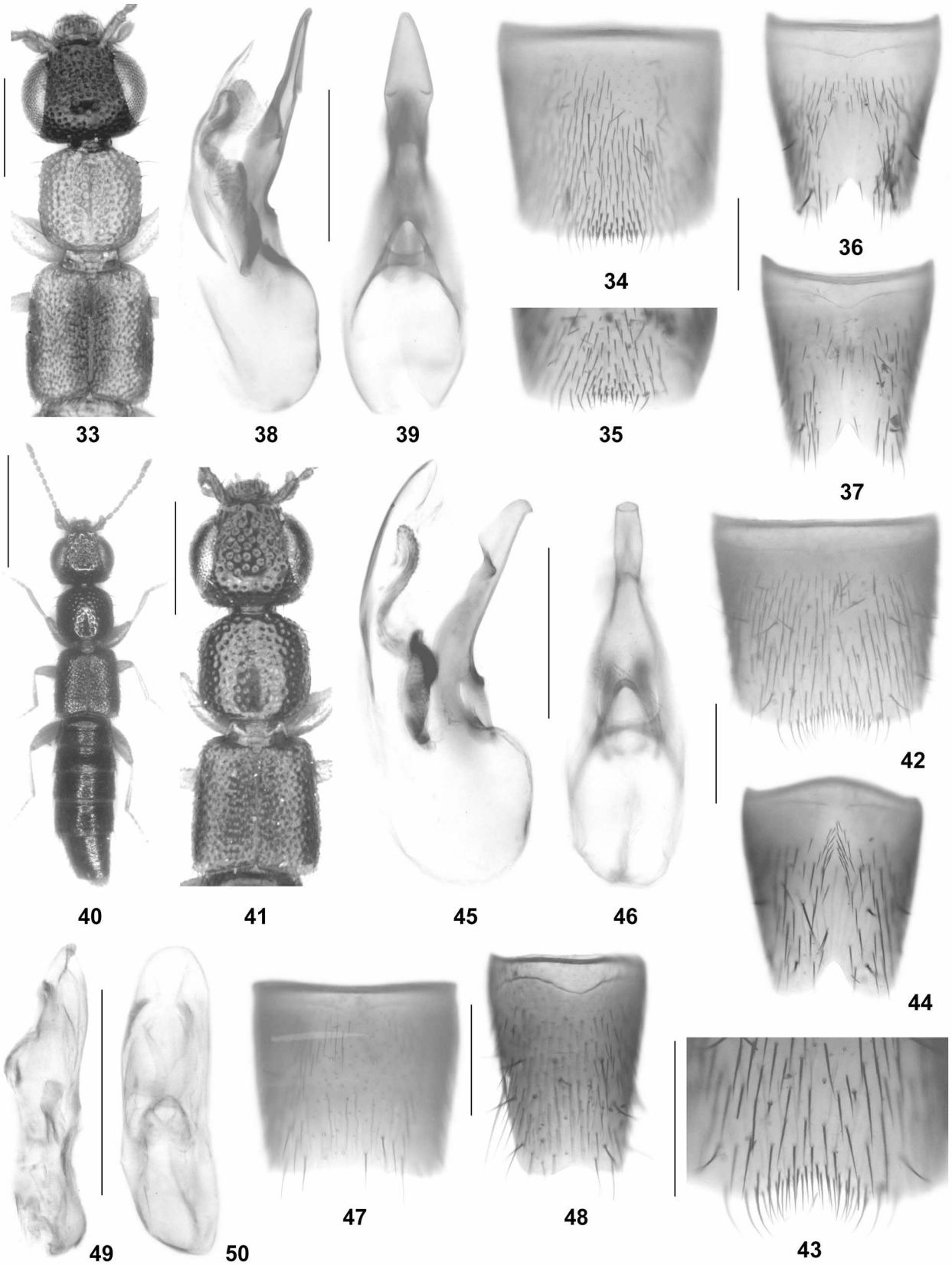

Figs 33–50: *Neosclerus discolor* spec. nov. (33–39; 33–34, 36, 38–39: Burma; 35, 37: Thailand), *N. trisinuatus* spec. nov. (40–46), and *N. granulicollis* Cameron (47–50): forebody (33, 41); male sternite VII (34, 42, 47); male sternite VIII (36–37, 44, 48); aedeagus in lateral and in ventral view (38–39, 45–46, 49–50); posterior portion of male sternite VII (35, 43); habitus (40). Scale bars: 40: 1.0 mm; 33, 41: 0.5 mm; 34–39, 42–50: 0.2 mm.

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concavity more or less pronounced, in one male even absent; Figs 34–35), the density of the pubescence of the male sternite VIII (Figs 36–37), and also the shape of the ventral process in ventral view (basally more or less distinctly narrowed).

Comparative notes: Using the key in Assing (2011a), *N. discolor* would key out together with *N. assamensis*, a species not only of similar coloration and general appearance, but also closely related, as can be inferred from the similar modifications of the male secondary sexual characters and the similar morphology of the aedeagus (shapes of ventral process and of internal structures). The new species differs from *N. assamensis* particularly by the coloration of the elytra (*N. assamensis*: elytra uniformly yellowish) and by the shape of the ventral process of the aedeagus. For illustrations of *N. assamensis* see Assing (2011a, b).

Distribution and natural history: The known distribution is confined to three localities, one in Burma and two in Thailand (Map 4). The specimens were collected at altitudes between 700 and 1500 m.

Neosclerus trisinuatus spec. nov.
(Figs 40–46, Map 6)

Type material: Holotype ♂: "CHINA [15] – Yunnan, valley S Gejiu, road margin, 23°08'38"N, 103°11'42"E, 1010 m, 21.VIII.2014, V. Assing / Holotypus ♂ *Neosclerus trisinuatus* spec. nov. det. V. Assing 2015" (cAss).
Paratype: 1 ♀: same data as holotype, but leg. Schülke (cSch).

Etymology: The specific epithet (Latin, adjective) alludes to the shape of the internal structures of the aedeagus in lateral view.

Description: Body length 2.8–3.3 mm; length of forebody 1.7 mm. Habitus as in Fig. 40. Coloration: head, pronotum, and abdomen blackish; elytra blackish-brown with the posterior margin and the humeral portions diffusely paler; legs yellowish; antennae reddish.
Head (Fig. 41) approximately 1.15 times as broad as long; punctation very coarse and dense, somewhat sparser and slightly less coarse in posterior dorsal portion; interstices without microsculpture, in median dorsal portion much narrower than diameter of punctures. Eyes very large, nearly extending to posterior angles of head. Antenna approximately 0.9 mm long.
Pronotum (Fig. 41) approximately 1.05 times as broad as long and 0.9 times as broad as head; punctation dense and slightly less coarse than that of head; interstices without microsculpture.
Elytra (Fig. 41) approximately as long as pronotum; punctation moderately coarse and very dense. Hind wings probably present. Metatarsomere I approximately as long as the combined length of II and III.
Abdomen noticeably narrower than elytra; punctation extremely fine, slightly denser on anterior than on posterior tergites; microsculpture of tergites III–VI extremely shallow (visible only at high magnification), that of tergite VII more distinct; posterior margin of tergite VII with palisade fringe.
♂: sternite VII (Figs 42–43) weakly transverse, approximately 1.1 times as broad as long, and with dense pubescence, posterior margin weakly concave in the middle, near this concavity with a dense cluster of long black setae; sternite VIII (Fig. 44) oblong, approximately 1.1 times as long as broad, anteriorly without process or elevation, but with sparse cluster of short black setae, median portion not distinctly modified, posterior excision V-shaped and approximately 0.15 times as deep as length of sternite; aedeagus (Figs 45–46) 0.46 mm long, with ventral process and internal structures of distinctive shapes.

Comparative notes: Based on the external and male sexual characters, *N. trisinuatus* is related to *N. brevipennis* (Cameron, 1943) and allied species. Regarding the shape and chaetotaxy of the male sternite VII (posterior margin concave, near this concavity with cluster of long setae), the shape of the male sternite VIII (anteriorly without process or elevation), and the morphology of the aedeagus (shapes of ventral process and internal structures), the new species is most similar to *N. rimatus* Assing, 2011 and *N. incisus* Assing, 2011, both known only from the Chinese province Guangxi. It is distinguished from both by the longer elytra, the larger and denser posterior cluster of longer setae on the male sternite VIII, the presence of an anterior cluster of short setae and the presence of setae in the median portion of the male sternite VIII, as well as by the shapes of the ventral process and the internal structures of the aedeagus, from *N. incisus* additionally by the much broader posterior excision of the male sternite VIII. For illustrations of *N. rimatus* and *N. incisus* see Assing (2011a).

Distribution and natural history: The type locality is situated to the south of Gejiu in southeastern Yunnan, South China, not far from the border with Vietnam (Map 6). The specimens were sifted from litter and soil at a road margin with sparse vegetation at an altitude of 1010 m.

Neosclerus figens spec. nov.
(Figs 51–58, Map 6)

Type material: Holotype ♂: "CHINA [20] – Yunnan, mt. W Gejiu, mixed forest, 23°24'13"N, 103°07'28"E, 1990 m, 23.VIII.2014, V. Assing / Holotypus ♂ *Neosclerus figens* spec. nov. det. V. Assing 2015" (cAss).
Paratypes: 3 ♂♂, 15 ♀♀ [partly teneral]: same data as holotype (cAss, MNHUB); 1 ♂, 5 ♀♀: same data, but leg. Schülke (cSch); 2 ♀♀: "CHINA [20a] – Yunnan,

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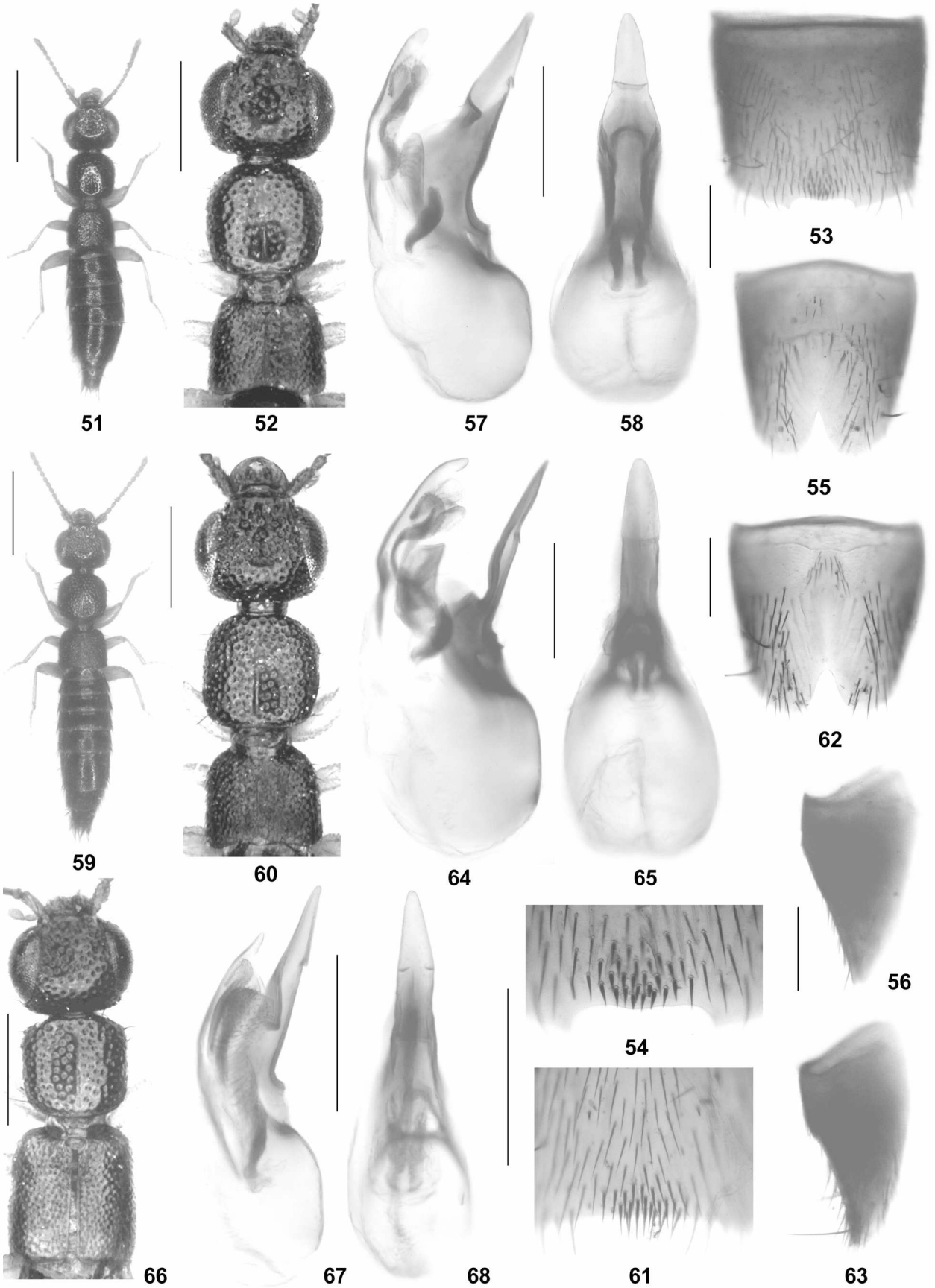

Figs 51–68: *Neosclerus figens* spec. nov. (**51–58**), *N. daweianus* spec. nov. (**59–65**), and *N. biangulatus* spec. nov. (**66–68**): habitus (**51, 59**); forebody (**52, 60, 66**); male sternite VII (**53**); postero-median portion of male sternite VII (**54, 61**); male sternite VIII (**55, 62**); male sternite VIII in lateral view (**56, 63**); aedeagus in lateral and in ventral view (**57–58, 64–65, 67–68**). Scale bars: 51, 59: 1.0 mm; 52, 60, 66: 0.5 mm; 53–58, 61–65, 67–68: 0.2 mm.

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mt. W Gejiu, mixed forest, 23°24'13"N, 103°07'28"E, 1990 m, 24.VIII.2014, V. Assing" (cAss, MNHUB); 4 ♀♀: same data, but leg. Schülke (cSch); 2 ♂♂, 3 ♀♀ [partly teneral]: "CHINA [20b] – Yunnan, mt. W Gejiu, mixed forest, 23°24'13"N, 103°07'28"E, 1990 m, 25.VIII.2014, V. Assing" (cAss, MNHUB); 7 ♀♀: same data, but leg. Schülke (cSch).

Etymology: The specific epithet is the present participle of the Latin verb figere (to stab, to pierce) and alludes to the long, straight, and apically very acute ventral process of the aedeagus.

Description: Body length 2.8–3.5 mm; length of forebody 1.5–1.7 mm. Habitus as in Fig. 51. Coloration: head and abdomen blackish; pronotum and elytra dark-brown to blackish brown, with the posterior margins and the humeral portions of the elytra indistinctly and diffusely paler; legs yellowish; antennae reddish.
Head (Fig. 52) 1.20–1.25 times as broad as long; punctation moderately coarse and moderately dense, rather sparse in posterior dorsal portion; interstices without microsculpture, on frons and between eyes on average approximately as broad as diameter of punctures. Eyes very large, nearly extending to posterior angles of head. Antenna 0.8–0.9 mm long.
Pronotum (Fig. 52) 1.01–1.04 times as broad as long and approximately 0.85 times as broad as head; punctation similar to that of head; interstices without microsculpture.
Elytra (Fig. 52) short, 0.60–0.65 times as long as pronotum; punctation moderately fine and dense. Hind wings completely reduced. Metatarsomere I approximately as long as the combined length of II and III.
Abdomen broader than elytra; punctation very fine; microsculpture of tergites III–VI extremely shallow, that of tergite VII more distinct; posterior margin of tergite VII without palisade fringe.
♂: sternite VII (Figs 53–54) transverse, approximately 1.15 times as broad as long, and with dense pubescence, posterior margin in the middle with sharply delimited concavity, anterior to this concavity with distinct dense cluster of strongly modified short and stout black setae; sternite VIII (Figs 55–56) indistinctly oblong, posteromedian portion extensively depressed and without pubescence, near anterior margin with few black setae in the middle, without process or elevation, posterior excision narrowly V-shaped and 0.20–0.25 times as deep as sternite; aedeagus (Figs 57–58) approximately 0.6 mm long; ventral process straight, gradually tapering apicad, and apically acute; internal sac with a pair of distinctly sclerotized basal structures and a pair of dark and long membranous structures.

Comparative notes: The male sexual characters of *N. figens* are similar to those of *N. brevipennis*, from which the new species differs by shorter elytra (*N. brevipennis*: elytra at least 0.85 times as long as pronotum), the completely reduced hind wings, the absence of a palisade fringe at the posterior margin of tergite VII, the modifications of the male sternite VII (*N. brevipennis*: posterior margin weakly concave, but without pronounced median concavity; posterior cluster with weakly modified setae), the less oblong male sternite VIII with a narrower posterior excision, and by the morphology of the aedeagus (ventral process ventrally more or less distinctly angled at apical third and less acute in lateral view, broader in ventral view; internal structures of different shapes). For illustrations of the external and male sexual characters of *N. brevipennis* see Assing (2011a). From the syntopic *N. praeacutus*, *N. figens* is easily distinguished by the much shorter elytra, the distinctly less coarse and less dense punctation of the head and pronotum, and the absence of a palisade fringe at the posterior margin of tergite VII alone.

Distribution and natural history: The type locality is situated on a mountain to the west of Gejiu in southeastern Yunnan, South China (Map 6). The specimens were sifted from litter and various debris in, and at the margin of, a mixed forest at an altitude of nearly 2000 m, together with *N. praeacutus*. Several of the paratypes are teneral. The sex ratio is remarkably biased: only seven (16 %) in a total of 43 specimens are males.

Neosclerus daweianus spec. nov.
(Figs 59–65, Map 6)

Type material: Holotype ♂: "CHINA [21] – Yunnan, NNE Pingbian, broad-leaved for., 23°00'39"N, 103°42'10"E, 1500 m, 26.VIII.2014, V. Assing / Holotypus ♂ *Neosclerus daweianus* spec. nov. det. V. Assing 2015" (cAss).
Paratypes: 4 ♂♂, 7 ♀♀ [partly teneral]: same data as holotype (cAss, MNHUB); 4 ♂♂, 15 ♀♀ [partly teneral]: same data, but leg. Schülke (cSch, cAss).

Etymology: The specific epithet (adjective) is derived from the name of the mountain, where the type locality is situated.

Description: Body length 3.3–4.0 mm; length of forebody 1.7–1.9 mm. Habitus as in Fig. 59. Coloration: head blackish; pronotum, elytra, and abdomen blackish-brown to blackish, with the elytra sometimes slightly paler; legs yellowish; antennae reddish.
Head (Fig. 60) 1.20–1.25 times as broad as long; punctation coarse and very dense, only slightly less dense in posterior dorsal portion; interstices without microsculpture in anterior dorsal portion and with shallow microsculpture in posterior dorsal portion, on average much narrower than diameter of punctures even in posterior dorsal portion. Eyes very large, nearly extending to posterior angles of head. Antenna approximately 1.0 mm long.

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Pronotum (Fig. 60) 1.02–1.04 times as broad as long and approximately 0.85 times as broad as head; punctation very dense and coarse, similar to that of head; interstices without microsculpture.
Elytra (Fig. 60) short, 0.60–0.65 times as long as pronotum; punctation extremely dense, weakly defined, and rather coarse, rendering the surface matt or nearly so. Hind wings completely reduced. Metatarsomere I usually slightly shorter than the combined length of II and III.
Abdomen broader than elytra; punctation very fine and rather dense; interstices with distinct transverse microsculpture; posterior margin of tergite VII without palisade fringe.
♂: sternite VII (Fig. 61) transverse, approximately 1.15 times as broad as long, and with dense pubescence, posterior margin in the middle with broad and very shallow, but distinctly delimited concavity, anterior to this concavity with distinct cluster of modified short and stout black setae; sternite VIII (Figs 62–63) approximately as long as broad, postero-median portion extensively depressed and without pubescence, near anterior margin with a cluster of fine black setae in the middle, without process or elevation, posterior excision narrowly V-shaped and approximately 0.2 times as deep as sternite; aedeagus (Figs 64–65) approximately 0.75 mm long; ventral process straight and apically very acute; internal sac with a pair of short sclerotized basal spines and with dark apical structures.

Comparative notes: Regarding its external and male sexual characters, *N. daweianus* is similar to *N. assamensis* (Cameron, 1931) from Northeast India, from which the new species differs by the darker coloration, the more transverse male sternite VII with a broader and distinctly delimited posterior concavity, the less oblong male sternite VIII with a more extensive depression, only few setae in the antero-median portion, and a much narrower posterior excision, and by an aedeagus with a longer ventral process pointing more strongly ventrad and with differently shaped internal structures. For illustrations of the external and male sexual characters of *N. assamensis* see Assing (2011a, 2013).

Distribution and natural history: The type locality is situated at the foot of the Dawei Shan near Pingbian in southeastern Yunnan, South China (Map 6). The partly teneral specimens were sifted from litter in a subtropical broad-leaved forest at an altitude of 1500 m.

Neosclerus biangulatus spec. nov.
(Figs 66–68, 84–85, Map 6)

Type material: Holotype ♂: "THAILAND [34] - Doi Inthanon, route to Mae Wang, 18°35'N, 98°31'E, 1580 m, 9.I.2014, leg. Ob / Holotypus ♂ *Neosclerus biangulatus* sp. n. det. V. Assing 2015" (cAss).
Paratypes: 2 ♀♀: same data as holotype (cAss); 1 ♂, 2 ♀♀: "THAILAND [1] - Doi Inthanon, Mae Aum, 18°32'N, 98°31'E, 1560 m, sifted near stream, 18.XII.2013, leg. Ob" (cAss); 1 ♀: "THAILAND [37] - Doi Inthanon, Khun Huay Hang, 18°34'N, 98°31'E, 1290 m, along stream, 11.I.2014, leg. Ob" (cAss); 1 ♂, 2 ♀♀: "THAILAND: Taksin Maharat N. P., 1000 m 9.2.1993. Schwendinger" (MHNG, cAss).

Etymology: The specific epithet (Latin, adjective: with two angles) alludes to the shape of the posterior margin of the male sternite VII.

Description: Body length 2.7–3.0 mm; length of forebody 1.7–1.8 mm. Coloration: head and pronotum dark-brown to blackish; elytra brown with slightly and diffusely paler humeral angles and posterior margins; abdomen dark-brown to blackish-brown with paler apex; legs yellow; antennae reddish-yellow.
Head (Fig. 66) approximately 1.2 times as broad as long; punctation coarse and very dense, less dense in posterior dorsal portion; interstices without microsculpture. Eyes very large, nearly extending to posterior angles of head. Antenna approximately 0.9 mm long.
Pronotum (Fig. 66) 1.02–1.04 times as broad as long and 0.80–0.85 times as broad as head; punctation dense and coarse, similar to that of head; interstices without microsculpture.
Elytra (Fig. 66) long, approximately 1.1 times as long as pronotum; punctation dense and rather fine. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II and III.
Abdomen narrower than elytra; punctation fine and moderately dense; interstices with distinct transverse microsculpture; posterior margin of tergite VII with palisade fringe.
♂: sternite VII (Fig. 84) approximately as broad as long, and with moderately dense pubescence, in postero-median portion with a cluster of approximately ten short setae, posterior margin with an angular projection on either side; sternite VIII (Fig. 85) weakly oblong, in posterior portion impunctate and without pubescence, except for few setae along the middle, posterior excision of triangular shape and approximately 0.15 times as deep as length of sternite; aedeagus (Figs 67–68) 0.5 mm long; ventral process straight, subapically dentate, and apically very acute; internal sac with dark membranous structures.

Comparative notes: The external and male sexual characters are most similar to those of *N. rougemonti* Assing, 2011 (Thailand: Doi Inthanon, Doi Suthep), from which the new species is distinguished by the denser punc-

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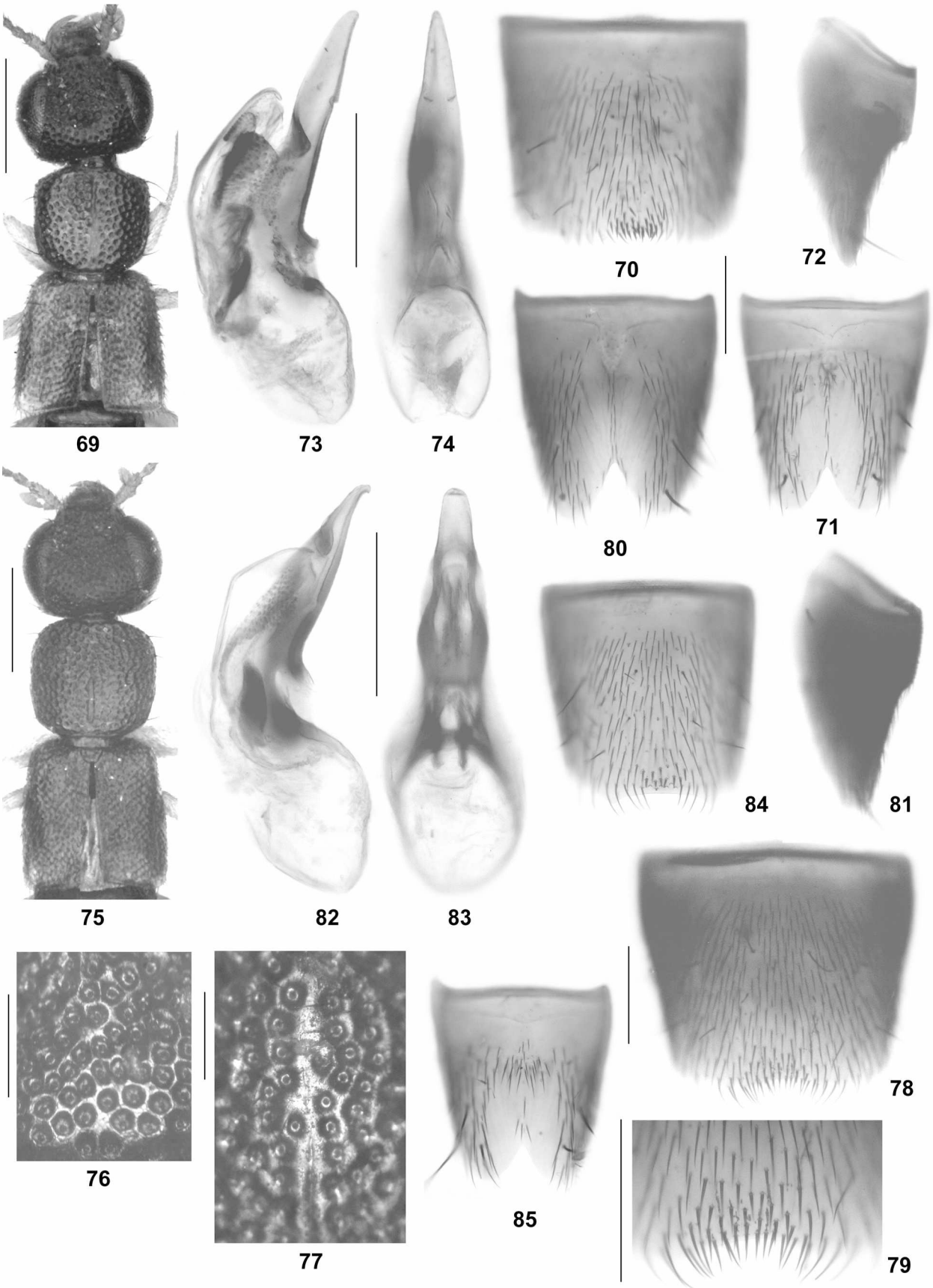

Figs 69–85: *Neosclerus semicalvus* spec. nov. (69–74), *N. areolatus* spec. nov. (75–83), and *N. biangulatus* spec. nov. (84–85): forebody (69, 75); male sternite VII (70, 78, 84); male sternite VIII (71, 80, 85); male sternite VIII in lateral view (72, 81); aedeagus in lateral and in ventral view (73–74, 82–83); median dorsal portion of head (76); median portion of pronotum (77); postero-median portion of male sternite VII (79). Scale bars: 69, 75: 0.5 mm; 70–74, 78–85: 0.2 mm; 76–77: 0.1 mm.

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tation of the head and pronotum, the less broad male sternite VII with fewer short setae in postero-median portion and with a pair of angular projections at its posterior margin (absent in *N. rougemonti*), a male sternite VIII with some setae along the middle in posterior portion and with a narrower posterior excision, and by the longer, more slender, and more acute apical portion of the ventral process of the aedeagus. For illustrations of *N. rougemonti* see Assing (2011a).

Distribution and natural history: The species is currently known from Doi Inthanon and Taksin Maharat National Park in northwestern Thailand (Map 6). The specimens were collected at altitudes between 1000 and 1580 m, those from Doi Inthanon by sifting litter and debris along streams.

Neosclerus semicalvus spec. nov.

(Figs 69–74, Map 6)

Type material: Holotype ♂: "THAILAND: Chiang Mai, Mae Nang Kaeo [19°04'N, 99°23'E], 900 m, 54 km NE Chiang Mai, Burckhardt-Löbl, 3.XI.85 / Holotypus ♂ *Neosclerus semicalvus* spec. nov. det. V. Assing 2015" (MHNG).
Paratypes: 6 exs.: same data as holotype (MHNG, cAss); 1 ♂: "THAILAND: Chiang Mai, Doi Angkhang [19°52'N, 99°03'E], 10 km W Fang 1500 m 20.III.87, P. Schwendinger" (cAss).

Etymology: The specific epithet (Latin, adjective: half-bald) alludes to the chaetotaxy of the male sternite VIII.

Description: Body length 2.8–3.8 mm; length of forebody 1.7–2.0 mm. Coloration: head blackish-brown to black; pronotum brown to blackish-brown; elytra pale-brown to brown, with slightly and diffusely paler humeral angles and posterior margins; abdomen brown to blackish-brown with paler apex; legs yellow; antennae dark-yellow.
Head (Fig. 69) approximately 1.25 times as broad as long; punctation coarse and very dense, only slightly less dense in posterior dorsal portion; interstices without microsculpture. Eyes very large, nearly extending to posterior angles of head. Antenna approximately 1.0 mm long.
Pronotum (Fig. 69) distinctly transverse, 1.05–1.07 times as broad as long and approximately 0.85 times as broad as head; punctation dense and coarse, similar to that of head; midline narrowly impunctate and usually with a fine median furrow in posterior half; interstices without microsculpture.
Elytra (Fig. 69) 1.00–1.05 times as long as pronotum; punctation dense and rather fine. Hind wings fully developed. Metatarsomere I slightly shorter than the combined length of II and III.
Abdomen narrower than elytra; punctation fine and dense; interstices with shallow transverse microsculpture; posterior margin of tergite VII with palisade fringe.
♂: sternite VII (Fig. 70) transverse, approximately 1.15 times as broad as long, and with moderately dense pubescence, in postero-median portion with a cluster of numerous short setae, posterior margin with an angular projection on either side, between these projections more or less distinctly concave; sternite VIII (Figs 71–72) oblong, in posterior portion impunctate and without pubescence, except for few setae along the middle, posterior excision of narrowly triangular shape and approximately 0.2 times as deep as length of sternite; aedeagus (Figs 73–74) 0.55–0.60 mm long; ventral process straight, rather stout, weakly dentate subapically, and apically very acute; internal sac with dark membranous structures.

Comparative notes: Based on the similar male sexual characters, *N. semicalvus* is closely allied to *N. rougemonti* and *N. biangulatus*. It differs from both of them by the broader body, the more transverse pronotum, the presence of a fine median furrow along the posterior half of the pronotal midline, the somewhat shorter elytra, and the stouter ventral process of the aedeagus with less pronounced subapical teeth, from *N. rougemonti* additionally by the much denser punctation of the forebody, the presence of angular projections at the posterior margin of the male sternite VII, and the presence of few setae along the middle of the posterior half of the male sternite VIII, from *N. biangulatus* also by the slightly denser punctation of the forebody, the distinctly transverse male sternite VII with more numerous short setae in the postero-median portion, the deeper posterior excision of the male sternite VIII, and the larger aedeagus.

Intraspecific variation: The male from Doi Angkhang is distinguished from those from the type locality by the slightly different shape of the male sternite VII (posterior margin more strongly concave between the angular projections). However, no additional differences were found suggesting that it should represent a different species.

Distribution and natural history: The known distribution is confined to two localities in northern Thailand (Map 6). The specimens were collected at altitudes of 900 and 1500 m.

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Neosclerus areolatus spec. nov.
(Figs 75–83)

Type material: Holotype ♂: "THAILAND [26] - Doi Inthanon, Mae Aum, 18°31'N, 98°30'E, 1640 m, moist evergr. forest, 11.I.2014, leg. Ob / Holotypus ♂ *Neosclerus areolatus* sp. n. det. V. Assing 2015" (cAss).
Paratypes: 8 ♂♂, 21 ♀♀ [1 ♂, 1 ♀ infested with Laboulbeniales]: same data as holotype (cAss, MNHUB); 8 exs. [partly teneral]: "THAILAND: Chiang Mai, Doi Inthanon, 1650 m, 7.XI.85, Burckhardt-Löbl" (MHNG, cAss); 1 ex.: same data, but 1720 m (MHNG); 1 ex.: same data, but 1250 m, 6.XI.85 (MHNG); 2 ♀♀: "THAILAND: Chiang Mai, Doi Angkhang [19°52'N, 99°03'E], 10 km W Fang 1500 m 20.III.87, P. Schwendinger" (MHNG); 3 ♀♀ [partly teneral]: "THAILAND: Chiang Mai, Doi Suthep, 1450 m, 4.XI.85, Burckhardt-Löbl" (MHNG, cAss).

Etymology: The specific epithet (Latin, adjective) alludes to the areolate punctation of the head and pronotum.

Description: Body length 3.2–4.0 mm; length of forebody 1.9–2.1 mm. Coloration: head blackish; pronotum dark-brown to blackish; elytra brown to blackish-brown, with the humeral angles indistinctly paler and the posterior margins usually broadly yellowish to reddish; abdomen blackish-brown to blackish; legs yellow; antennae dark-yellow.
Head (Fig. 75) approximately 1.25 times as broad as long; punctation umbilicate, moderately coarse and extremely dense on whole surface, including posterior dorsal portion, rendering dorsal surface matt (Fig. 76); interstices reduced to narrow ridges everywhere, with very shallow, nearly obsolete microsculpture visible only at high magnification. Eyes very large, nearly extending to posterior angles of head. Antenna approximately 1.1 mm long.
Pronotum (Fig. 75) transverse, approximately 1.05 times as broad as long and 0.86–0.88 times as broad as head; punctation umbilicate, very dense, and coarse, coarser than that of head (Fig. 77); impunctate median band very narrow, often present only in posterior half, with fine but distinct furrow in posterior half; interstices very narrow, without microsculpture.
Elytra approximately as long as pronotum; punctation dense and distinct. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II and III.
Abdomen narrower than elytra; punctation fine and dense; interstices with shallow transverse microsculpture; posterior margin of tergite VII with palisade fringe.
♂: sternite VII (Figs 78–79) weakly transverse, approximately 1.05 times as broad as long, and with dense pubescence, in postero-median portion with an ill-defined cluster of slightly stouter and darker setae, posterior margin distinctly concave in the middle; sternite VIII (Figs 80–81) approximately as broad as long, anteriorly with an oblong median elevation with dense setae, in posterior portion depressed, impunctate and without pubescence, except for a band of setae along the middle, posterior excision of triangular shape and approximately 0.25 times as deep as length of sternite; aedeagus (Figs 82–83) approximately 0.5 mm long; ventral process subapically abruptly narrowed and weakly curved, apically acute in lateral view; internal sac with short and stout sclerotized structures.

Comparative notes: Based on the morphology of the aedeagus (shapes of the ventral process and of the internal structures), as well as the similarly derived shapes and chaetotaxy of the male sternites VII and VIII, *N. areolatus* is closely allied to *N. barbatulus*, from which it differs by the distinctly broader body, the much denser and areolate punctation of the head and pronotum, the much narrower impunctate band on the pronotum, the less strongly modified pubescence in the postero-median portion and the more strongly concave posterior margin of the male sternite VII, the shape and chaetotaxy of the male sternite VIII (*N. barbatulus*: posterior excision less deep, posterior portion without setae along the middle), and by the smaller aedeagus (*N. barbatulus*: approximately 0.55 mm) with a ventral process of different shape both in lateral and in ventral view. For illustrations of *N. barbatulus* see Assing (2011a).

Distribution and natural history: The type specimens were found in several localities in northern Thailand at altitudes of 1250–1720 m. The material from the type locality was collected by litter sampling in a moist evergreen forest. Some of the paratypes are teneral; two are infested with Laboulbeniales.

Unnamed and unidentified species

Neosclerus spec. 1

Material examined: **Thailand**: 1 ♀, mountains N Umphang, Mae sot [?] Umphang, 1250 m, 10.II.1993, leg. Schwendinger (MHNG).

Neosclerus spec. 2

Material examined: **Thailand**: 1 ♀, 10 km W Wiang Pa Pao, Ban Huay Ya Sai, 780 m, 28.I.1988, leg. Schwendinger (MHNG).

Neosclerus spec. nov.

Material examined: **India**: 3 ♀♀, Kerala, Cardamon Hills, 46 km SE Munnar, Valara Fall, 25.XI.1972, leg. Besuchet, Löbl & Mussard (MHNG, cAss).

Comment: The above females are distinguished from all named *Neosclerus* species based on external characters alone and undoubtedly represent an undescribed species.

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4. Catalogue of the named species of *Neosclerus*

Species	Distribution	References
albens spec. nov.	Sri Lanka	**App**
areolatus spec. nov.	Thailand	**App**
armatus Assing, 2011	Taiwan: Hsinchu	**A11a**
assamensis (Cameron, 1931)	Northeast India: Assam, Meghalaya	**A11a**, **A13**, App
atsushii Shibata, 1992	Taiwan: Nantou	**A11a**
barbatulus Assing, 2011	Thailand; Burma; Laos; China: Yunnan	**A11a**, A13, App
barbatus Assing, 2011	Thailand; Burma	**A11a**, App
biaculeatus Assing, 2014	Taiwan: Nantou	**A14**
biangulatus spec. nov.	Thailand	**App**
bicarinatus Assing, 2011	Vietnam	**A11a**, App
bifidus Assing, 2011	Taiwan: Kaohsiung	**A11a**, A14
brevipennis (Cameron, 1943) = *brevipennis* (Coiffait, 1978) = *houlberti* (Coiffait, 1987)	Northeast India; Bhutan; Nepal	**A11a**, A13, App
brevispinosus Assing, 2014	Taiwan: Chiai	**A14**
carinatus Assing, 2011	Taiwan: Pingtung	**A11a**
configens Assing, 2011	Taiwan: Nantou, Taoyuan	**A11a**
daweianus spec. nov.	China: Yunnan	**App**
discolor spec. nov.	Burma; Thailand	**App**
dupleseriatus Assing, 2011	Northwest India; Nepal	**A11a**, A11b, A13, App
erubescens Assing, 2011	Malaysia: Borneo: Sabah	**A11a**, App
figens spec. nov.	China: Yunnan	**App**
forficatus spec. nov.	Sri Lanka	**App**
fortepunctatus Cameron, 1924	North India: Uttar Pradesh, West Bengal; Nepal	**A11a**, A11b, App
fractus spec. nov.	Northeast India: Meghalaya: Khasi Hills	**App**
granulicollis Cameron, 1924 = *frater* Cameron, 1924	North India: Uttar Pradesh, West Bengal; Nepal	**A11a**, A11b, **App**
glaber Assing, 2011	South China; Hongkong; Thailand; Malaysia	**A11a**, App
hlavaci Assing, 2011	China: Fujian, Jiangxi	**A11a**, App
immutatus Assing, 2011	Indonesia: Sumatra; Malaysia: Sabah	**A11b**, App
inarmatus Assing, 2011	Taiwan: Hsinchu	**A11a**
incisus Assing, 2011	China: Guangxi	**A11a**, App
javanus (Bernhauer, 1920)	Indonesia: Java	**A11a**, App
khasicus spec. nov.	Northeast India: Meghalaya: Khasi Hills	**App**
macer Assing, 2013	Laos; Thailand	**A13**, App
nigerrimus (Kraatz, 1859)	Sri Lanka	**A11a**, App
obscurus Assing, 2013	Northeast India: Assam	**A13**, App
praeacutus Assing, 2011	China: Yunnan; Thailand; Laos?	**A11a**, A11b, App
rimatus Assing, 2011	China: Guangxi	**A11a**, App
revolutus spec. nov.	South India	**App**
rougemonti Assing, 2011	Thailand	**A11a**, App
sagittatus spec. nov.	Northeast India: Meghalaya: Khasi Hills	**App**

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Species	Distribution	References
schillhammeri Assing, 2011	Burma	**A11a**, App
schuelkei Assing, 2011	China: Yunnan; Laos; Burma	**A11a**, A13, App
semicalvus spec. nov.	Thailand	**App**
smetanai Assing, 2011	Taiwan: Yilan	**A11a**, A13
trisinuatus spec. nov.	China: Yunnan	**App**

The articles listed in the references column are abbreviated as follows: A11a = Assing (2011a); A11b = Assing (2011b); A13 = Assing (2013); A14 = Assing (2014); App = present paper. References containing descriptions and/or illustrations are given in bold print.

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I am indebted to the colleagues indicated in the material section for the loan of material. Guillaume de Rougemont (Oxford) drew my attention to the presence of more than 500 previously unrevised specimens in the collections of the MHNG.

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Assing, V. 2014: A revision of *Neosclerus* Cameron IV. Two new species and additional records from Taiwan (Coleoptera: Staphylinidae: Paederinae). – Linzer Biologische Beiträge **46** (2): 1097–1101.

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Zeitschrift/Journal: Beiträge zur Entomologie = Contributions to Entomology

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Artikel/Article: A revision of Neosclerus V. Thirteen new species and additional records (Coleoptera: Staphylinidae: Paederinae). 263-285