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A review of the Oriental species of *Scolytoplatypus* Schaufuss (Coleoptera, Curculionidae, Scolytinae)

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Abstract

We review the Oriental species of *Scolytoplatypus* Schaufuss, and provide keys to both males and females. The importance at specific level of the characters of the male prosternum is stressed. The following new species are described: *Scolytoplatypus blandfordi* Gebhardt from Taiwan; *S. cirratus* Gebhardt from Indonesia (Sulawesi); *S. curviciliosus* Gebhardt from the Philippines; *S. exiguus* Beaver from Indonesia (Sulawesi), together with the previously unknown male of *S. ruficauda* Eggers from Nepal. Much of the published synonymy is confused. The following synonyms listed by Wood and Bright (1992) in their catalog of Scolytinae are reinstated as good species: *Scolytoplatypus bombycinus* Browne, *S. brahma* Blandford, *S. luzonicus* Eggers, *S. macgregori* Blackman, *S. ruficauda* Eggers. The following new synonymy is proposed: *Scolytoplatypus daimio* Blandford (= *Scolytoplatypus kunala* Strohmeyer); *Scolytoplatypus brahma* Blandford (= *Scolytoplatypus paucegranulatus* Eggers); *Scolytoplatypus luzonicus* Eggers (= *Scolytoplatypus benguetus* Blackman); *Scolytoplatypus pubescens* Hagedorn (= *Scolytoplatypus pubescens kabakovi* Axentjev). The synonymy of *Scolytoplatypus hamatus* Hagedorn and *Scolytoplatypus hirsutus* Blackman with *Scolytoplatypus brahma* is confirmed. New distributional records are given for some species. All species are ambrosia beetles which breed in a wide variety of host trees and show little specificity for particular host taxa, although they can be size-selective. Some details are given of the ambrosia fungus and mycangium of *S. blandfordi*.

Introduction

Schaufuss (1891) described the genus *Scolytoplatypus* for a single species, *S. permirus* Schaufuss, from Madagascar. He considered the genus belonged in the curculionoid family Platypodidae. Blandford (1893) described further species from Japan, and transferred the genus to the Scolytidae as a distinct subfamily. In the same paper, he described two new subgenera, *Spongocerus* Blandford and *Taeniocerus* Blandford, for the Japanese species, but these have not been generally accepted, and are not used in this paper. In the first half of the twentieth century, numbers of new species were described from the Afrotropical and Oriental regions (for References see Wood & Bright 1992). Browne (1971) revised the African species, and provided a key to nine species occurring on the mainland of Africa.

The first revision of the whole genus was that of Schedl (1975). He brought together the available information on distribution, biology and morphology, provided keys to the species of each region (Africa, Madagascar, Orient), and redescribed all the species that he considered valid. He also provided a reference list for each species. Unfortunately, this work is marred by errors, particularly in synonymy, and Schedl's

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failure to consider characters on the ventral side of the body. Nobuchi (1980) revised the four species which occur in Japan. Wood and Bright (1992) in their catalog have corrected some of the errors in synonymy included in Schedl's revision, but include as synonyms a number of species which we consider to be good species, based largely on the distinctive characters of the male prosternum. They list 36 species which they consider valid (12 from the African mainland, 3 from Madagascar, and 21 from the Oriental region).

Here we present keys to males and females of 28 Oriental species, describe new species from Indonesia (Sulawesi), the Philippines and Taiwan, and the previously undescribed male of *S. ruficauda*, and provide some corrections to the published synonymy. We also provide information on distribution and host trees, and briefly review the biology of the genus.

The paper is based upon type material and other specimens in the following collections:

B. H. Jordal's private collection, Trondheim	BHJT
Natural History Museum, London	BMNH
B. P. Bishop Museum, Honolulu	BPBM
Deutsches Entomologisches Institut, Eberswalde	DEI
H. Gebhardt's private collection, Tübingen, Germany	HGT
Museum für Naturkunde der Humboldt-Universität, Berlin;	MNHB
National Museum of Natural Science, Taichung	NMNS
Nationaal Natuurhistorisch Museum, Leiden	NNML
Naturhistorisches Museum, Wien	NHMW
Naturhistoriska Riksmuseet, Stockholm	NHRS
Naturkundemuseum, Erfurt	NKME
Queensland Museum, Brisbane	QMB
R. A. Beaver's private collection, Chiangmai, Thailand	RAB
S. L. Wood's private collection, Provo, Utah	SLW
Staatliches Museum für Naturkunde, Stuttgart	SMNS
Staatliches Museum für Tierkunde, Dresden	SMTD
Taiwan Agricultural Research Institute, Taichung	TARI
United States National Museum, Washington	USNM
Zoological Institute, St. Petersburg	ZISP
Zoölogisch Museum, Amsterdam	ZMA
Zoology Museum, Lund University	ZMLU

Further references to all the previously described species can be found in Wood and Bright (1992) and its supplements (Bright & Skidmore 1997, 2002). Wood and Bright (1992) also provide information on the types of all the species.

Scolytoplatypus Schaufuss

Scolytoplatypus Schaufuss 1891: 31.

Type species. By monotypy, *S. permirus* Schaufuss 1891. This is the only genus in the scolytine tribe Scolytoplatypodini (Wood & Bright 1992).

Diagnosis. Length 1.2–4.6 mm, 1.7–2.2 times as long as wide. Colour yellowish brown to black, elytra occasionally with dark sutural and lateral bands on a paler ground. Vestiture usually sparse dorsally, but some species with denser hairs on the elytral declivity. Sexual differences marked (see below). Head globose with convex frons in female, concave in male sometimes with brushes of hairs. Eyes elongate oval, entire. Antennal scape clavate, funicle six-segmented, club flattened, varying in shape from oval to elongate triangular, lacking sutures, covered by short sensory setae, sometimes with a few longer hairs at base, along ventral margin, and at apex. Pronotum usually as wide as or wider than long, the base bisinuate, the sides usually constricted towards the base to form femoral grooves, the posterolateral angles often right-angled or projecting, disc evenly curved without a summit. Scutellum small, normally triangular, often depressed, barely reaching the elytral surface. Elytra a little wider and clearly longer than the pronotum, the base simply angled or carinate, cylindrical, the sides parallel, the apex broadly or angularly rounded, occasionally with a sutural emargination, discal puncturation usually confused, less often seriate, interstriae often raised or carinate near top of declivity, sometimes with spines projecting over the declivity, the latter convex, steep. Procoxae large, widely separated, the prosternum often modified in males (see below), profemora strongly built, sometimes with a triangular tooth near the apex on the upper side, protibiae with the outer margin toothed, emarginate before the strong apical tooth. Abdomen horizontal or slightly rising posteriorly.

Sexual Dimorphism. The species of *Scolytoplatypus* show marked sexual dimorphism. The head of the male is antero-posteriorly compressed, the frons concave, abruptly separated from the vertex, and often bears brushes of long hairs arising from the lateral and/or upper margins; the female head is globose, the frons more or less convex, rounded into the vertex, and always lacks such hair brushes. The antenna of Asian species, as opposed to African species, is sexually dimorphic, longer and more triangular in the male. The pronotum of the female of most species bears a large, median mycangial pore in the anterior half that is absent only in seven Oriental species. In Asian species, the sides of the pronotum are constricted in both sexes; in African species, only in the females. The males of all Asian species, with two exceptions, but none of the African species, have a large, usually deep, fovea of unknown function at the anteroventral angle of the pronotum, absent from females. The sculpture of the elytra is always stronger in males than females, and there are sometimes interstrial spines at the top of the

male declivity, reduced or absent in the female. The vestiture of the elytral declivity may also differ between the sexes. The protibia of the male is narrower than that of the female, the teeth on the outer margin smaller, and the posterior surface mostly smooth; the female protibia is wider, more strongly toothed, and the posterior surface is strongly granulate, the granules in transverse or curved rows across the tibia, decreasing in size towards its base.

Male Prosternum. In the Oriental species of *Scolytoplatypus*, the male prosternum is modified in various ways, and these modifications provide useful characters at the specific level. The modifications were originally noted by Blandford (1893) for *S. daimio* Blandford and *S. mikado* Blandford. He noted (Blandford 1896) that "the structure of this male organ of unknown function is likely to furnish differential characters of great value, and its careful examination is therefore indispensable." Prosternal characters have been incorporated into species descriptions by Browne (1955), Tsai & Huang (1965) and Nobuchi (1980), but mostly ignored by other workers on the genus, with the result that a number of species have been incorrectly synonymised. The great variety of form and sculpture of the pros-

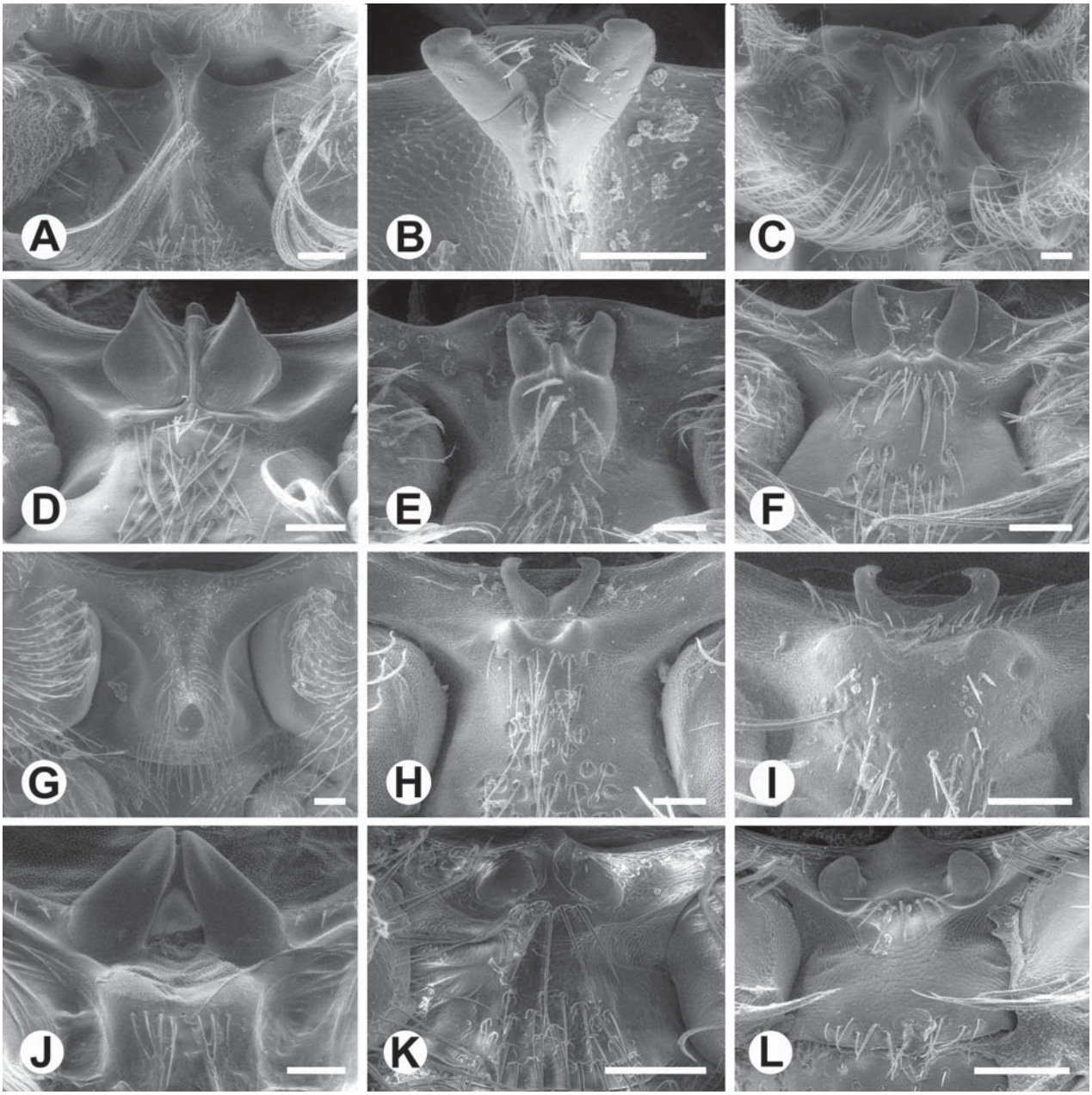

Fig. 1. Prosternum of *Scolytoplatypus* males. **A**, **B** – *S. eutomoides* Blandford; **C** – *S. macgregori* Blackman; **D** – *S. brahma* Blandford; **E** – *S. luzonicus* Eggers; **F** – *S. javanus* Eggers; **G** – *S. glaber* Eggers; **H** – *S. mikado* Blandford; **I** – *S. raja* Blandford; **J** – *S. pubescens* Hagedorn; **K** – *S. reticulatus* Bright; **L** – *S. minimus* Hagedorn. The bars represent 100 μm.

ternum of different species is shown in Figs 1 and 2. The prosternal modifications are absent from all African species examined, which have a simple flat plate. The function of the modifications has never been examined in living specimens. It seems possible that they are involved in courtship and pre-mating behaviour, and may provide some form of specific as well as sexual recognition. The females of *Scolytoplatypus* are far more similar to each other than the males, and often difficult to distinguish in the absence of associated males. It seems likely that some form of sexual selection is occurring in the Oriental species, leading to greater morphological divergence of males than females.

Biology. All species of *Scolytoplatypus* are ambrosia beetles (Beeson 1961, Browne 1961). With the possible exception of *S. bombycinus* (Browne 1961), they are not host-selective, and breed in a wide variety of trees. They usually attack fairly small stems, not twigs or large logs, and are secondary borers which do not attack healthy trees. The gallery system is started by the female. It consists of an entrance gallery leading to one or more circumferential branches

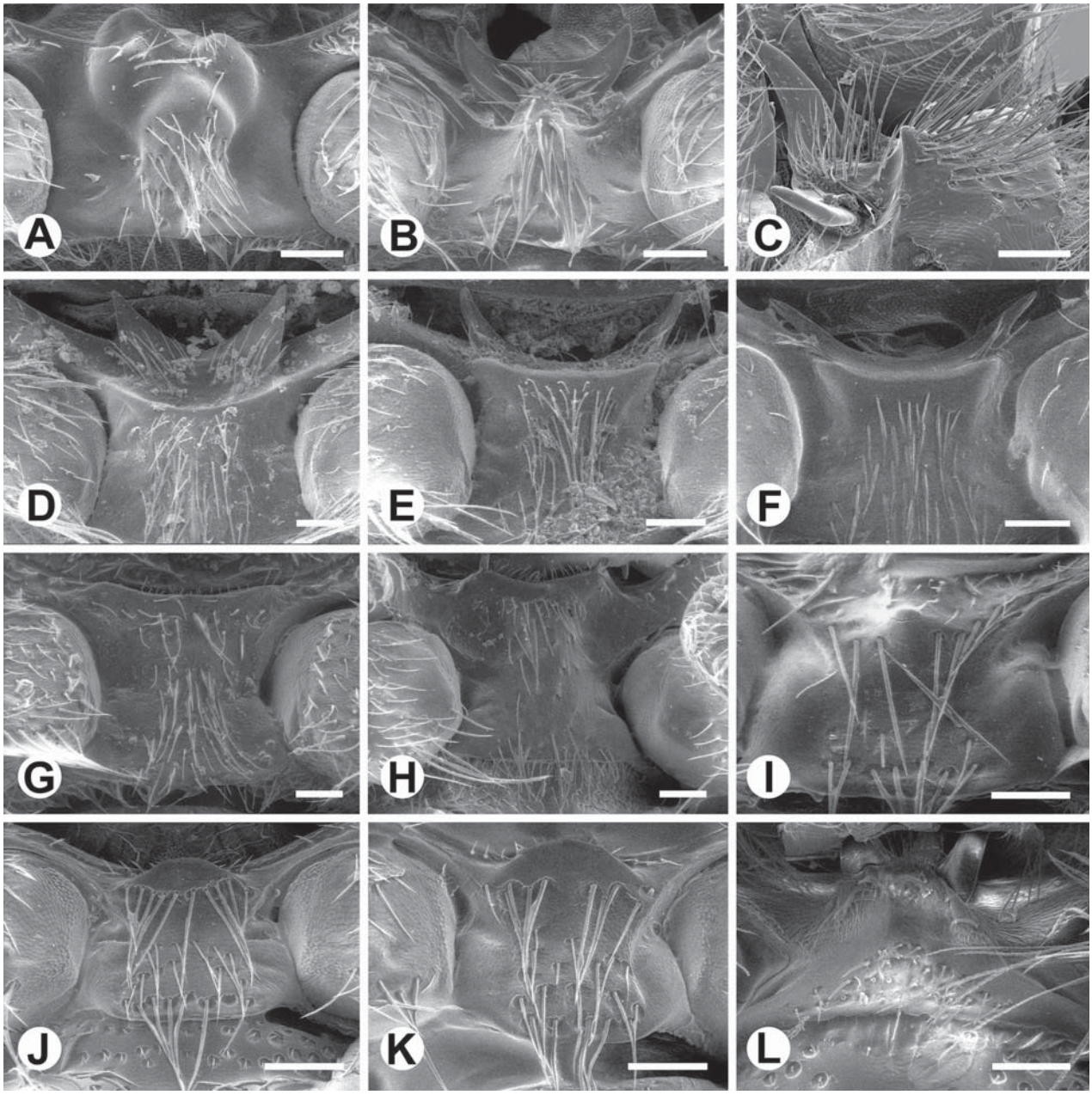

Fig. 2. Prosternum of *Scolytoplatypus* males, ventral view unless otherwise stated. **A** – *S. ruficauda* Eggers; **B** – *S. blandfordi* Gebhardt sp. n.; **C** – (lateral view); **D** – *S. shogun* Blandford; **E** – *S. daimio* Blandford; **F** – *S. darjeelingi* Stebbing; **G** – *S. tycon* Blandford; **H** – *S. nitidus* Eggers; **I** – *S. cirratus* Gebhardt sp. n.; **J** – *S. parvus* Sampson; **K** – *S. curviciliosus* Gebhardt sp. n.; **L** – *S. carinatus* Bright. The bars represent 100 μm.

in one transverse plane. The male joins the female soon after the entrance gallery has been started, and mating occurs at the gallery entrance. The male then remains in the entrance hole, and the female constructs the maternal gallery (Browne 1961, Kinuura & Hijii 1991). Eggs are laid in niches placed alternately in the floor and roof of the tunnel. The larva cuts a barrel-shaped cell just large enough to contain it and feeds on the ambrosia fungus growing on the walls of the cell. During development, faecal material is dropped into the maternal gallery and removed by the parent beetles (Beeson 1961, Browne 1961). Before pupation the larva turns so that its head lies towards the maternal gallery. The young adult can then bite its way out and emerge through the original entrance hole made by the parents. The sex ratio is about even. The species are not known to be of economic importance. Further References to the few studies on the biology of individual species are given in the notes on species below.

Keys to Oriental species of *Scolytoplatypus*

Because of the pronounced sexual dimorphism, it has been necessary to provide separate keys for males and females.

Key to Males:

1 Front femur with a tooth above near apex, weakly developed in *exiguus* **2**
– Front femur not toothed above **9**
2 Frons with narrow brushes of long hairs arising both above and below eyes. Frons with a pair of denticles on upper part just below vertex. Prosternum flat, with a small median tubercle at the anterior margin. Apical part of elytral declivity without trace of striae and interstriae, minutely punctured, the punctures with very short, appressed hairs. 1.6 mm long. (see also couplet 16) . . . . . ***S. exiguus* Beaver sp. n.**
– Frons without brushes of hairs, without tubercles on upper part. Prosternum not as alternate. Apical part of elytral declivity with or without evident striae and interstriae. Body length at least 2.2 mm **3**
3 Disc of elytra shining, irregularly punctate, declivity striate-punctate with interstriae 1 and 3 very weakly raised. Lateral projection of anterior coxa without a long incurving brush of hairs. Prosternum constricted laterally, raised and with a strong tubercle posteriorly (Fig. 1G). 4.0–4.1 mm long. . . . . ***S. glaber* Eggers**
– Disc of elytra semi-matt, with a silky sheen, longitudinally carinate. Lateral projection of anterior coxa with one or two brushes of long, inwardly curving golden hairs. Prosternum without a strong tubercle posteriorly. Less than 4.0 mm long **4**
4 Prosternum with a prominent median keel, and raised in the midline posteriorly (Fig. 1A, 1C) **5**
– Prosternum without a prominent median keel, flattened posteriorly (Fig. 1D, 1E, 1F) **6**
5 Prosternum with an anterior median projection expanded at the apex into two small, divergent, weakly tapering processes with rounded or subtruncate tip (Fig. 1A, 1B). Shining area around midline on upper part of frons almost flat, broadly oval. Indonesia (Sulawesi) and New Guinea. 2.9–3.3 mm long. . . . . ***S. eutomoides* Blandford**
– Prosternum without an anterior median projection, the anterior part vertical, strongly built, with behind it a small triangular area, its apex posterior, bearing the median keel (Fig. 1C). Shining area around midline on upper part of frons linear, raised to form a black carina. Philippines. 2.9–3.2 mm long . . . . . ***S. macgregori* Blackman**
6 Frons with a small, shining, oval swelling on an elevated median line just above the upper margin of the eyes. Flattened posterior part of prosternum separated from concave anterior part by an approximately transverse carina; ventral to the anterior concavity two concave processes with rounded sides and pointed tips (Fig. 1D). Elytral declivity with a row of long, fine hairs on interstriae 1, 3, 5, and 7 . . . . . **7**
– Frons without an oval swelling in the midline above the eyes, although a small, flattened, shining area on an elevated median line may be present. Prosternum not as alternate, lacking concave processes anteriorly (Fig. 1E, 1F). Elytral declivity with or without a row of long, fine hairs on interstriae 1, 3, 5, and 7. . . . . **8**
7 Concave processes of prosternum widely separated; anterior margin of prosternum extended either into a median bifurcate process, with the two arms at an angle of about 150°, and a shallow groove extending from tip to tip (West Malaysia), or into a transverse, truncate process (East Malaysia). Striae and interstrial carinae obsolescent on declivity, apical part closely and evenly granulate. Elytra 1.05–1.2 times longer than pronotum. Larger species, 3.6–3.7 mm long. . . . . ***S. bombycinus* Browne**
– Concave processes of prosternum almost contiguous in midline; anterior margin of prosternum with a small, triangular or rounded projection between processes (Fig. 1D). Impressed striae visible almost to apex of elytra. Elytra 1.4–1.5 times longer than pronotum. Smaller species, 2.6–3.1 mm long . . . . . ***S. brahma* Blandford**
8 Prosternum with two short, weakly divergent, subtruncate processes arising from a rounded, swollen base, with a small median process projecting ventrally between them (Fig. 1E). Pronotum 1.07–1.12 times wider than long. Elytral declivity with longer interstrial hairs in addition to ground vestiture. 2.8–3.2 mm long . . . . . ***S. luzonicus* Eggers**
– Prosternum with two short, divergent, truncate, translucent processes arising from a flattened base a little behind the anterior margin, without a median process between them (Fig. 1F). Pronotum a little more than 1.2 times wider than long. Elytral declivity with short ground vestiture only. 2.2–2.6 mm long . . . . . ***S. javanus* Eggers**
9 Elytra with distinct interstrial teeth, sometimes minute requiring careful observation, near summit of declivity (*pubescens, superciliosus*). Elytral disc usually sulcate-striate at least posteriorly, with striae impressed **10**
– Elytra without interstrial teeth at summit of declivity. Elytral disc irregularly punctured or seriate-punctate. Striae at most only feebly impressed **18**
10 Larger species, more than 2.8 mm long **11**
– Small species, not more than 2 mm long **14**

11 Frons with two brushes of hairs curving mesad and ventrad. Basal angles of pronotum not strongly produced. Interstrial spines at summit of elytral declivity small or minute **12**

– Frons with a dorsal fringe of hairs. Basal angles of pronotum strongly produced. Interstrial spines at summit of elytral declivity strongly developed **13**

12 Prosternum anteriorly with two triangular processes, widely separated at the base but converging towards the midline (Fig. 1J); median part of prosternum raised, broadest anteriorly, ending posteriorly in a small triangular process. Lateral margins of frons with a row of long, incurving hairs, but no denser brush of hairs; middle of frons with a clearly defined approximately triangular area with very dense, short setae. Pronotum with a large, deep fovea at the antero-ventral angle. Declivity with long fine hairs on interstriae, in addition to shorter pubescence. 3.5–3.7 mm long. . . . . ***S. pubescens* Hagedorn**

– Anterior margin of prosternum projecting in two rounded lobes, slightly asymmetrical, and with a translucent process on the right side only (similar to Fig. 2A); median part of prosternum raised, narrowed both anteriorly and posteriorly. Lateral margins of frons with a small brush of incurving hairs between the middle of the eye and the antennal insertion; middle of frons with a poorly defined area with dense, short hairs. Pronotum without a deep fovea at the antero-ventral angle. Declivity without long, fine hairs. 2.8–3.0 mm long . . . . ***S. superciliosus* Tsai & Huang**

13 Elytral spines with a few short hairs only, elytral declivity glabrous or almost so. Prosternum with two tubercles anteriorly, and anterior to them a pair of tapering processes diverging at an angle of up to 60°, their tips curved in toward the midline and hooked (Fig. 1H). 3.0–3.6 mm long. China, Japan, Korea, Taiwan . . . . . ***S. mikado* Blandford**

– Elytral spines with tufts of long hairs, elytral declivity with short interstrial hairs, longer on interstriae 1 and 3 in specimens from Taiwan. Prosternum with two tubercles anteriorly, and anterior to them a pair of tapering processes diverging at an angle of about 120°, the tips usually sharply inturned and hooked (Fig. 1I), but straight in specimens from Thailand. 3.0–3.2 mm long. N. India to Malaysia, Taiwan. . . . . ***S. raja* Blandford**

14 Frons with an even fringe of hairs around the upper half of the frontal impression. Elytra with distinct teeth at summit of declivity. **15**

– Frons with a pair of widely separated brushes of hairs arising above the eyes, curving ventrad and mesad, or with brushes of hairs arising both above and below the eyes. Elytra with minute, scarcely evident teeth at summit of declivity **16**

15 Teeth on elytral interstriae 1–5 of almost equal length. First interstriae raised and broadened towards apex of declivity, ending before elytral apex, shining on apical half. Prosternum with a small median, triangular projection anteriorly, and just behind this a pair of closely placed, small, shining tubercles (Fig. 1K). Borneo. 1.8 mm long. . . . . ***S. reticulatus* Bright**

– Teeth on elytral interstriae 1–5 alternately longer and shorter. First interstriae not raised and broadened towards elytral apex, not shining on apical half. Prosternum with a small triangular median projection anteriorly, behind this a pair of more widely separated, weakly shining, flattened areas (Fig. 1L). N. India, Thailand. 1.6 mm long . . . . . ***S. minimus* Hagedorn**

16 Frons with a pair of widely separated brushes of hairs arising above the eyes, only a few shorter hairs below eyes, without a pair of tubercles on upper part just below vertex. Prosternum flat without processes or tubercles. Apical part of elytral declivity either with (*nanus*) or without (*pusillus*) definite striae and interstriae. **17**

– Frons with narrow brushes of hairs arising both above and below eyes, and with a pair of tubercles on upper part just below vertex. Prosternum flat, with a small median tubercle at the anterior margin. Apical part of elytral declivity without trace of striae and interstriae, minutely punctured, the punctures with very short, appressed hairs. 1.6 mm long. Indonesia (Sulawesi). . . . . ***S. exiguus* Beaver sp. n.**

17 Elytral disc near the declivity with striae deeply channeled, interstriae raised, keel-like. Striae 1 and 2 more weakly impressed on the declivity, obsolescent towards the apex, not strongly punctured. 1.4–1.6 mm long. Philippines. . . . . ***S. pusillus* Eggers**

– Elytral disc with striae more weakly impressed, interstriae only lightly keeled. Striae 1 and 2 more strongly impressed on the declivity, not obsolescent apically, strongly punctured, as are striae 7 where they join striae 2 near the elytral apex. 1.1–1.4 mm long. West Malaysia, Java, Borneo . . . . . ***S. nanus* Schedl**

18 More elongate species, elytra 1.7–2.0 times as long as pronotum, declivity beginning at about apical third of elytra. Usually at least 3.0 mm long **19**

– Stouter species, elytra not more than about 1.5 times as long as pronotum, declivity usually beginning anterior to or at middle of elytra. Less than 3.0 mm long **24**

19 Prosternum raised in middle in a triangle, the apex anterior or posterior **20**

– Prosternum flat or weakly convex, not raised in a triangle **21**

20 Apex of prosternal triangle anterior, with a single pointed tubercle; anterior margin with two symmetrical, divergent, triangular, translucent processes (Fig. 2B). Fovea at antero-ventral pronotal angle rather shallow, with obliquely sloping sides, extending to ventral margin. 3.1–3.3 mm long . . . . . ***S. blandfordi* Gebhardt sp. n.**

– Apex of prosternal triangle posterior, anterior margin projecting in two rounded lobes, slightly asymmetrical, and with a translucent process on the right side only (Fig. 2A). Fovea at antero-ventral pronotal angle deep, with vertical sides, not extending to ventral margin. 2.8–3.0 mm long . . . . . ***S. ruficauda* Eggers**

21 Upper half of frons clearly punctured, lower half impunctate, with a rather sparse fringe of hairs on each side curving inwardly, but not extending to lower half of frons. Prosternum without a pair of translucent processes anteriorly (Fig. 2G). Rows of punctures on elytral dorsum feebly but clearly impressed before declivity. 3.5–4.5 mm long. . . . . ***S. tycon* Blandford**

– Frons impunctate throughout, the incurved brushes of hairs denser and longer, extending beyond middle of frons. Prosternum with a pair of widely separated, translucent, divergent processes anteriorly (Figs 2D, 2E, 2F). Rows of punctures on elytral dorsum not impressed, usually indistinct **22**

22 Antennal club about 3 times as long as wide, lanceolate acuminate. Frontal brushes wider, curving into centre of frontal concavity. Interstriae 7 of male not carinate at summit of declivity. Prosternum (Fig. 2D). 3.5–4.1 mm long. . . . . ***S. shogun* Blandford**

– Antennal club ovate to elliptical, not more than twice as long as wide. Frontal brushes narrower, curving inwardly and ventrally, reaching epistomal margin or just above. Interstriae 7 of male carinate at summit of declivity. 2.9–3.3 mm long. **23**

23 Elytral declivity angularly separated from disc. Elytral sculpture stronger, declivity with a row of distinct tubercles on interstriae 1 and 3. Elytral colour brown, gradually becoming darker posteriorly, without a distinct darker band along suture. Prosternum (Fig. 2E) ... ***S. daimio* Blandford**
Elytral disc evenly rounded into declivity. Elytral sculpture weaker, declivity with indistinct tubercles on interstriae 1, sometimes lacking on interstriae 3. Elytral colour yellowish anteriorly, suddenly becoming brown shortly before summit of declivity, and with darker extensions along suture and sides of elytra to base. Prosternum (Fig. 2F). ... ***S. darjeelingi* Stebbing**

24 Frons with separate transverse brushes of very long hairs above and below eyes, directed toward, and crossing in the midline between the eyes ... **25**

– Frons either with a continuous fringe of longer hairs at the sides and above, or lacking long hairs ... **27**

25 Prosternum flat, smooth, with a small, flat, broadly rounded process anteriorly (Fig. 2J, 2K). Vertex without a pair of denticles. Brush of transverse hairs above the eyes approximately as strong as that below the eye. 1.6–1.9 mm long ... **26**

– Prosternum with a small, flat process anteriorly and a prominent tubercle posterior to the process (Fig. 2I). Vertex with a denticle on each side near the middle. Brush of transverse hairs above the eye distinctly stronger than that below the eye. 2.8 mm long ... ***S. cirratus* Gebhardt sp. n.**

26 Interstriae 1–3 on lower part of declivity with conspicuous, short, white hairs, uniseriate denticulate, the denticles very closely placed on interstriae 1, more scattered on interstriae 2 and 3. Prosternum (Fig. 2J). East and West Malaysia ... ***S. parvus* Sampson**

– Interstriae 1–3 obsolete on lower part of declivity, without denticles or conspicuous, short, white hairs. Prosternum (Fig. 2K). Philippines ... ***S. curviciliosus* Gebhardt sp. n.**

27 Frons with a dense fringe of long hairs at the sides and above. Pronotum with a large, deep fovea just behind the antero-ventral angle. Prosternum weakly concave anteriorly, with a small, translucent process on each side at the side of the concavity (Fig. 2H). Second interstriae not ending in a small pointed tubercle a little above the elytral apex ... ***S. nitidus* Eggers**

– Surface of frons covered with numerous, short fine setae, lacking a fringe of longer hairs at sides and above. Pronotum lacking a deep fovea just behind the antero-ventral angle. Prosternum raised in a triangle, the apex anterior (Fig. 2L). Second interstriae ending above the elytral apex in a small, pointed tubercle ... ***S carinatus* Bright**

Species omitted: *nitidicollis* Eggers. Only female known.

Key to Females:

1 Front femur with a tooth above near apex, weakly developed in *exiguus* ... **2**

– Front femur not toothed above ... **10**

2 Pronotum without a mycangial pore. 1.75–2.2 mm long ... **3**

– Pronotum with a mycangial pore. At least 2.4 mm long ... **4**

3 Pronotum polished, shining. Elytral interstriae broad and flat near the base, narrowing and becoming carinate on the upper part of the declivity, the carinae not stronger on the uneven interstriae; lower part of declivity with an easily visible, dense vestiture of short hairs. 2.0–2.2 mm long ... ***S. nitidicollis* Eggers**

– Pronotum semi-matt, coriaceous. Elytral interstriae weakly carinate on the upper part of the declivity, the carinae not extending to the base of the elytra, and those on interstriae 3, 5, 7, 9 stronger than the others; lower part of declivity minutely granulate with a vestiture of minute hairs, visible only under high magnification. 1.75–1.8 mm long ... ***S. exiguus* Beaver sp. n.**

4 Disc of elytra shining, irregularly punctate, declivity striate-punctate with interstriae 1 and 3 very weakly raised. 4.3–4.6 mm long ... ***S. glaber* Eggers**

– Disc of elytra semi-matt, with a silky sheen, longitudinally carinate, the carinae often weak. Less than 4.0 mm long. **5**

5 Elytral declivity with long, erect, multiseriate hairs on interstriae, as well as scattered short, erect hairs. Interstriae carinate on upper part of declivity, at least interstriae 1, 3, 5, 7 with a row of minute granules apically; impressed striae visible almost to apex of elytra ... **6**

– Elytral declivity glabrous or pubescent with dense, short, fine, appressed hairs, but without long, conspicuous, erect, interstrial hairs. Striae and interstrial carinae almost obsolete on lower part of declivity, apical part evenly granulate-punctate ... **7**

6 Smaller species, body length 2.8–2.9 mm. Interstriae 2 weakly impressed in apical third of declivity, and usually without granules except for a larger granule at the apex ... ***S. brahma* Blandford**

– Larger species, body length 3.7–3.9 mm. Interstriae 2 not impressed in apical third of declivity, often with granules. ... ***S. bombycinus* Browne**

7 Pronotum almost glabrous, except for the usual few scattered erect hairs, and minute, very fine hairs near anterior margin. Pubescence on elytral declivity minute or absent ... **8**

– Pronotum with a dense covering of fine, appressed hairs. Pubescence on elytral declivity distinct, consisting of a dense covering of short, fine hairs ... **9**

8 Smaller species, 2.4–2.6 mm long. Pubescence on elytral declivity minute, the declivity not impressed on either side of suture ... ***S. javanus* Eggers**

– Larger species, 3.2–3.3 mm long. Elytral declivity glabrous, interstriae 2 weakly impressed in apical part of declivity. ... ***S. macgregori* Blackman**

9 Pronotum and elytra matt. Rugulosities on pronotum extending to or close to anterior margin. Vestiture on anterior 1/4 of pronotum short and semi-appressed, all hairs directed anteriorly. 3.2–3.4 mm long. ... ***S. eutomoides* Blandford**

– Pronotum and elytra weakly shining. Rugulosities obsolescent on anterior half of pronotum, not extending to anterior margin. Vestiture on anterior 1/4 of pronotum a little longer and semi-erect, hairs not all directed anteriorly. 3.0–3.4 mm long ... ***S. luzonicus* Eggers**

10 Pronotum without a median mycangial pore ... **11**

– Pronotum with a median mycangial pore ... **15**

11 Larger species, 2.8–3.3 mm long ... **12**

– Smaller species, less than 2.3 mm long **13**
12 Striae linearly impressed on elytral declivity, interstriae 1 and 3 very feebly raised, interstrial tubercles very small. 2.8–3.0 mm long. . . . . ***S. superciliosus* Tsai & Huang**
– Striae more broadly and deeply impressed on elytral declivity, interstriae 1 and 3 more strongly raised, convex, interstrial tubercles larger. 3.0–3.3 mm long . . . . . ***S. ruficauda* Eggers**
13 Pronotum and disc of elytra shining, the pronotum almost smooth between punctures. Elytral striae at most weakly impressed on basal half of elytra, becoming obsolete towards apex of elytra, interstriae flat. **14**
– Pronotum and disc of elytra semi-matt, with a silky sheen, the pronotum coriaceous between punctures. Elytral striae distinctly impressed on basal half of elytra, the impressions extending almost to apex of elytra, interstriae weakly convex. 1.9 mm long. . . . . ***S. reticulatus* Bright**
14 1.8–1.9 mm long. Posterior angles of pronotum less strongly angulate. . . . . ***S. parvus* Sampson**
– 2.0–2.1 mm long. Posterior angles of pronotum more strongly angulate. . . . . ***S. curviciliosus* Gebhardt sp. n.**
15 Basal angles of pronotum triangularly produced laterally, acute apically. Pronotal disc with large shallow punctures. Discal striae narrow, strongly impressed; discal interstriae raised, convex **16**
– Basal angles of pronotum not strongly produced laterally, approximately rectangular or rounded apically. Pronotal disc with fine punctures. Discal striae weakly or not impressed; interstriae weakly or not raised on disc. **17**
16 On average larger species, 2.7–4.0 mm long. Puncturation of pronotum, elytra and abdominal ventrites coarser, and rugosities on declivital interstriae stronger. Interstriae 2 only weakly impressed on lower part of declivity . . . . . ***S. mikado* Blandford**
– On average smaller species, 3.0–3.2 mm long. Puncturation of pronotum, elytra and abdominal ventrites finer, andrugosities on declivital interstriae weaker. Interstriae 2 more strongly impressed on lower part of declivity . . . . . ***S. raja* Blandford**
17 Elytral striae weakly impressed before declivity; elytral disc with fine hairs on both striae and interstriae. Body length 3.8–4.5 mm . . . . . ***S. tycon* Blandford**
– Elytral striae not impressed before declivity, or if impressed, then length less than 2 mm; elytral disc glabrous or almost so **18**
18 Elytral declivity with dense vestiture of long, yellowish hairs. Elytra either bicolored with a well-defined paler patch on the basal third to half, the pale area not extending to the suture or to the lateral margin, or unicoloured. **19**
– Elytral declivity with sparse vestiture of very short hairs or glabrous. Elytra unicoloured lacking distinct paler patches on the basal half. **21**
19 Smaller species, 2.9–3.0 mm long. Striae 1 distinctly impressed on elytral declivity; interstriae 1, 2, 3 each with a row of granules on declivity . . . . . ***S. blandfordi* Gebhardt sp. n.**
– Larger species, 3.3–4.1 mm long. Striae 1 weakly impressed on declivity; interstriae 1 with a row of granules on declivity; occasionally a few scattered granules on interstriae 3 . . . . . **20**
20 Striae 1–2 very weakly impressed on elytral declivity. Elytra bicolored with a well-defined pale basal area. Smaller, more elongate species, about 2.4 times longer than broad, 3.5–3.7 mm long . . . . . ***S. darjeelingi* Stebbing**
– Striae 1–6 impressed on elytral declivity. Elytra unicolored. Larger, stouter species, 2.1–2.2 times longer than wide, 3.9–4.1 mm long. . . . . ***S. pubescens* Hagedorn**
21 More elongate species, the elytra 1.7–1.9 times as long as pronotum, declivity beginning in apical third. Larger species, 3.0– 4.1 mm long **22**
– Less elongate species, the elytra at most 1.5 times as long as pronotum, declivity beginning near middle of elytra. Smaller species, usually less than 3.0 mm long (except *nitidus* 2.8–3.3 mm). **23**
22 Larger species, 3.6–4.1 mm long. Frons very finely, indistinctly punctured, with short hairs, with a very weak, broadly V-shaped, almost matt impression above the epistoma. Elytra less elongate, about 1.30 times as long as wide, interstriae 1–7 granulate on declivity . . . . . ***S. shogun* Blandford**
– Smaller species, 3.0–3.5 mm long. Frons finely but distinctly punctured, with longer hairs, a shining bell-shaped impression above the epistoma. Elytra a little more elongate, about 1.35 times as long as wide, only the unevenly numbered interstriae granulate on the declivity . . . . . ***S. daimio* Blandford**
23 Apex of interstriae 2 with a small acutely pointed tooth. **24**
– Apex of interstriae 2 without a tooth **25**
24 All interstriae very narrow with fine carinae extending to elytral apex, a discontinuous raised line on either side of each carina. Smaller species, 2.6–2.7 mm long. Borneo . . . . . ***S. carinatus* Bright**
– Interstriae broader, without fine carinae extending to elytral apex, but with minute granules. Larger species, 2.8–3.3 mm long. Java, Sumatra . . . . . ***S. nitidus* Eggers**
25 Striae and interstriae obsolete on apical part of elytral declivity. Larger species, 1.6–1.8 mm long **26**
– Striae and interstriae extending to apex of declivity, striae weakly impressed, interstriae weakly convex. Smaller species, 1.2–1.4 mm long . . . . . ***S. nanus* Schedl**
26 More elongate species, 2.2 times as long as wide, pronotum about as long as wide. . . . . ***S. minimus* Hagedorn**
– Less elongate species, 2.0 times as long as wide, pronotum about 1.1 times wider than long. . . . . ***S. pusillus* Eggers**

Species omitted: *cirratus* Gebhardt **sp. n.** Only male known.

New Species

Scolytoplatypus blandfordi Gebhardt sp. n.

Male. 3.1–3.3 mm long, about 2.2 times as long as wide. Frons concave, flattened triangularly above the epistoma and with a fine median impressed line on the upper half; the lower flattened part without punctures and setae, surface distinctly reticulate, the upper part with minute punctures bearing fine, erect, yellowish hairs, subnitid towards apex and margins, central area

micro-reticulate, margin with a sparse fringe of long, yellowish hairs curving towards the middle. Antennal club acuminate, 1.6 times as long as wide, surface densely covered with appressed setae, posterior surface with dark, coarser setae, anterior face with finer, pale setae and scattered, longer, erect setae, anteroventral margin with a row of about 8 long, erect setae, curving towards the antennal apex in their apical third, apex with a few long setae. Pronotum 0.9 times as long as wide, anterior margin with distinct median emargination, posterior margin bisinuate, slightly produced in the middle, posterolateral corners angular, sides rounded and constricted basally, dorsal surface reticulate, minutely, rather irregularly punctured, the punctures bearing fine hairs, anteroventral angles of pronotum with a relatively shallow, rounded fovea separated from anterior and ventral margins only by narrow ridges. Prosternum in the middle with a raised triangle, the apex anterior, anterior margin with two symmetrical, divergent, triangular, translucent processes (Fig. 2B, 2C). Elytra about 1.5 times longer than wide, about 2.0 times longer than pronotum, wider than thorax, sides parallel on basal three-fourths, then strongly converging to rounded apex, the base carinate, disc of elytra shining, rather irregularly punctured, striae and interstriae only clearly visible on upper part of declivity where striae feebly impressed, striae 1 divergent at the apex, striae 1, 3 and 6, 7, 8 on declivity with small tubercles, strongest on interstriae 1 and 8, interstriae 9 finely carinate posteriorly, the carina extending to the elytral apex and with a few minute teeth, declivity densely covered with fine, yellowish hairs.

Female. Resembling male, and of similar size and proportions, but frons convex, slightly flattened between the upper part of the eyes, and triangularly above the epistoma, with a fine median impressed line extending from vertex to the apex of the impressed triangle, surface of these parts and around the eyes microreticulate, otherwise shining, the entire surface moderately densely punctured, the punctures with short, erect hairs. Antennal club oval, 1.4 times as long as wide, densely covered with appressed setae, lacking erect setae present in male. Pronotum generally as male, anterior margin with shallower median emargination, posterolateral angles a little more than right-angled, an oval mycangial pit surrounded by erect setae dorsally in the midline in front of the middle (Fig. 3A, B), anteroventral angle without a fovea. Prosternum a flattened plate lacking specific distinctions. Elytra generally as in male, about 1.8 times longer than pronotum, the declivital tubercles indistinct or lacking except on first interstriae.

Holotype (♂). Taiwan: Distr. ChiaYi, Alishan, c. 2000 m, 19. v. 2000 (Gebhardt). In Staatliches Museum für Naturkunde, Stuttgart (SMNS).

Paratypes (6 ♂♂, 7 ♀♀). Same data as holotype. 2 ♂♂, 3 ♀♀ (SMNS); 1 ♂, 1 ♀ (NMNS); 2 ♂♂, 2 ♀♀ (HGT); 1 ♂, 1 ♀ (RAB).

Additional specimens (not included in type series): [Taiwan] Formosa, Arisan [= Alishan], 30. v. 1934 (M.Chujo) (2 ♂♂, 1 ♀, determined by Eggers as *Scolytoplatypus darjeelingi* Stebbing) (TARI); C. Taiwan, Nantou Hsien, Tsuifeng, 2300 m, 25–27. vi. 1981 (K. S. Lin & W. S. Tang) (1 ♀); as previous except: Meifeng, 2150 m, 19.–21. iv. 1983 (K. C. Chou & S. P. Huang) (1 ♂); as previous except: 8.–11. v. 1984 (C. C. Chou & C. C. Pan) (1 ♀) (TARI, misdetermined as *Scolytoplatypus siomio* Blandford).

The species is named for W.F.H. Blandford to commemorate his contributions to our knowledge of *Scolytoplatypus,* and many other scolytines.

The species is related to *S. daimio and S. darjeelingi.* The males can be distinguished by the lack of long incurving frontal hair brushes, an antennal club not more than 1.6 times longer than wide without capitate hairs near its base, the lack of carinae at the summit of the declivity and the prosternal characteristics given in the key. Females differ in the impressed striae on the elytral declivity and an oval antennal club not more than 1.4 times longer than wide. The species is endemic to Taiwan.

Biology. All type specimens were collected from *Cyclobalanopsis morii* (Hayata) Schott. (Fagaceae), a Taiwanese endemic species, in dead branches from 4–6 cm diameter. The gallery system consisted of a short radial entrance gallery which divided into two circumferential branches running in one transverse plane around the branch. The eggs are laid in separate niches above and below the gallery, and the larvae develop in individual larval cradles in the wood feeding on the ambrosia fungus which lines the walls of the cradle, and gradually enlarging the cradle as they grow. The predominant fungus on the tunnel walls formed a continuous mat consisting of a stroma of interwoven pseudoparenchymatous cells bearing erect monilioid conidiophores with a single conidium apically. The globose to subglobose conidia germinate to produce large mounds of thin-walled, highly vacuolated sprout cells which cover the mycelium as a slimy mass. The characteristics of the fungus fit the morphological concept of the genus *Ambrosiella* given by Von Arx & Hennebert (1965) and

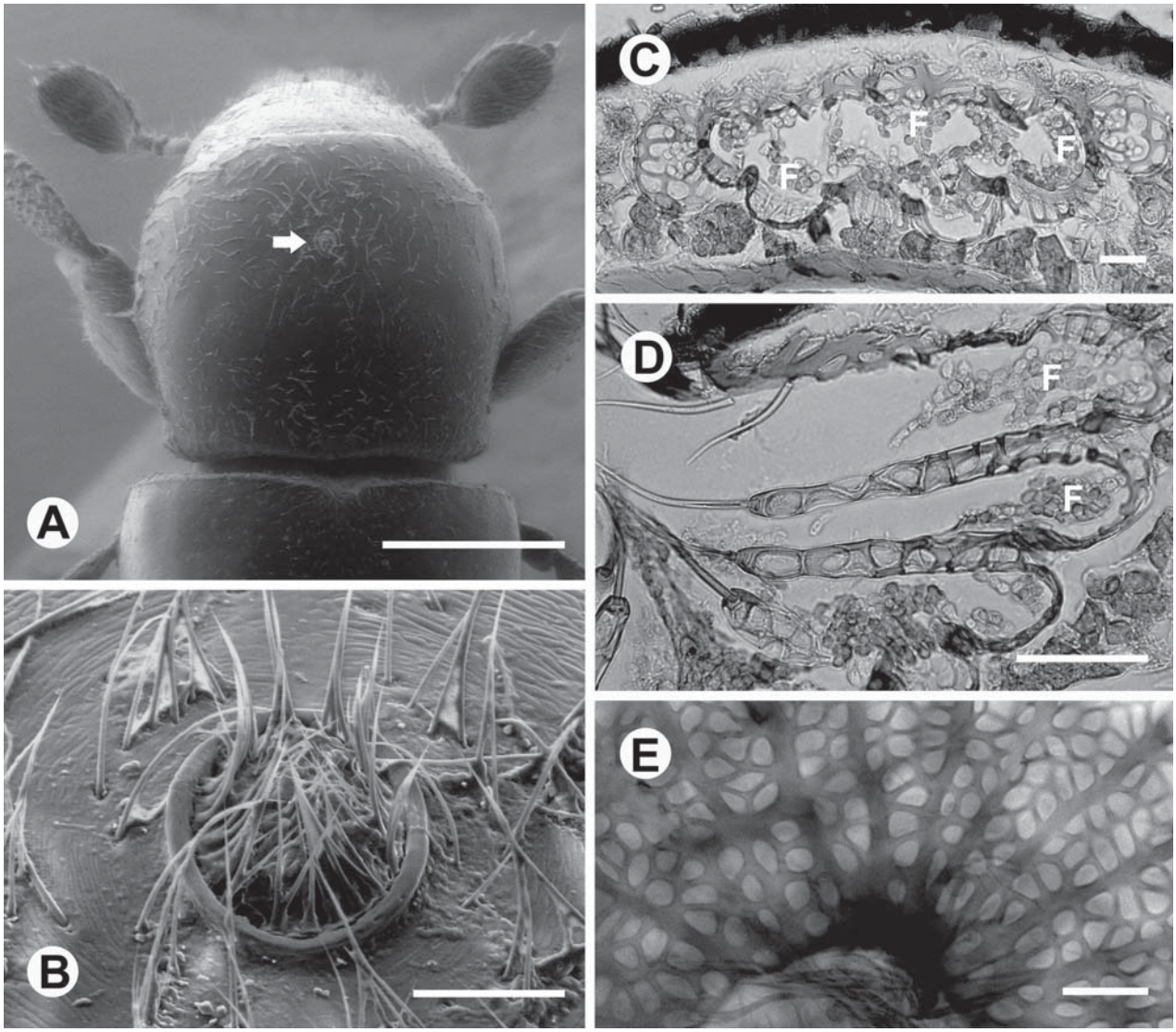

Fig. 3. Mycangium of adult female of *Scolytoplatypus blandfordi*: **A** – Scanning electron micrograph showing head and pronotum (dorsal view) with mycangial pore (arrow); **B** – Mycangial pore (SEM) surrounded by setae and with multiple setae rise above; **C** – Cross section through dorsal part of the pronotum with mycangium and ambrosia fungus (F) inside; **D** – Section through a part of the mycangium with ambrosia fungus cells (F) between cone-shaped hollow cells with net-like cuticular structure and a long apical seta that partly extends above the mycangial pore; **E** – Cuticular structure of the mycangial wall. The bar represents 400 μm in Fig. 3A; 40 μm in Fig. 3B–E.

Batra (1967). In all previously investigated species of the genus *Scolytoplatypus*, *S. daimio*, *S. mikado*, *S. shogun* and *S. tycon*, the nutritional fungus was classified within the genus *Ambrosiella* (Nakashima et al. 1987, Nakashima 1989, Nakashima et al. 1992, Kinuura 1995). However, phylogenetic analyses based mainly on 18S rDNA sequences have revealed the polyphyly of the genus *Ambrosiella* (Cassar & Blackwell 1996, Farrell et al. 2001, Rollins et al. 2001, Gebhardt et al. 2005), and a recent morphological investigation has shown distinct differences of the conidial development, leading to an emendation of the definition of the genus *Ambrosiella* (Gebhardt et al. 2005). An investigation of the important features of conidial development was not practical for the ambrosia fungus of *S. blandfordi* and has not been mentioned for any of the previously reported ambrosia fungi associated with *Scolytoplatypus* species. Consequently the taxonomical placement of the morphologically reduced fungal associates of *Scolytoplatypus* is currently in question. The fungus is transmitted from generation to generation via the mycangium of the female (Fig. 3A–E), an invaginated structure on the dorsal side of the pronotum which stores and protects the fungus. The structure of the mycangium has been investigated in four other species of *Scolytoplatypus* (*S. daimio*, *S. mikado*, *S. shogun* and *S. tycon*) (Schedl, W. 1962, Nakashima et al. 1987), and found to be very similar to that of the present species.

Scolytoplatypus cirratus Gebhardt sp. n.

Male. 2.8 mm long, 1.8 times as long as wide. Frons deeply, broadly concave, surface micro-reticulate, with numerous small granules bearing fine, yellowish hairs, vertex margin with a tooth on each side of the middle and a fringe of long hairs, the longer hairs curved downwards to reach two transverse brushes of hairs; one large, brush originating above each eye and a second smaller, brush below each eye, the large brushes extending in an arc transversely over the frontal cavity, their ends curved downwards on the opposite side, the small brushes curved upwards to reach the large brushes half-way over the frontal cavity, but with their tips curved ventrally. Antennal club widest at the base, 2.25 times longer than wide, narrowly rounded at the apex, surface densely covered with setae. Pronotum 1.2 times wider than long, surface micro-reticulate, with minute punctures bearing fine setae; anterior margin emarginate medially and dorsal surface along the anterior margin with larger punctures, posterior margin bisinuate, weakly produced in the middle, posterolateral angles obtusely angulate, sides widest in the middle, weakly constricted basally; disk with a weak, oval impression in the median line in front of the middle, a median, longitudinal line extending from this impression posteriorly; anteroventral angles of prothorax with a deep pit anteriorly to the forecoxae. Prosternum with a prominent median tubercle anteriorly (Fig. 2I). Elytra about 1.1 times longer than wide, nearly 1.5 times longer than pronotum, sides parallel on basal three-fourths, then abruptly rounded to the apex, basal quarter and extreme sides shining, striae punctured and interstriae smooth on basal quarter, behind this interstriae narrow, recognizable up to the declivity as a longitudinal line, otherwise opaque, rugulose, striae and interstriae obsolete on the declivity, apex with fine, pale setae near suture.

The female is unknown.

Holotype (♂). [Indonesia], Sulawesi, Malino, Gn. Lompobatang, 1800 m, 119.53.31 E, 5.17.50 S, 13.–14. vii. 2001 (BOLM). In Staatliches Museum für Naturkunde Stuttgart (SMNS).

The specific epithet refers to the fringe of curved hairs on the frons.

The species is related to *S. parvus* Sampson, *S. curviciliosus* Gebhardt and *S. exiguus* Beaver in having a deeply concave frons with transverse brushes of long hairs, and stout elytra (less than 1.5 times as long as pronotum) with an opaque declivity on which striae and interstriae are obsolete. *S. cirratus* differs from *S. parvus* and *S. curviciliosus* in its larger size, the presence of a pair of teeth on the upper margin of the frons, and the tubercle on the prosternum. It is most closely related to *S. exiguus*, from which it can be distinguished by its much larger size (2.8 mm vs. 1.55 mm in *S. exiguus*), and the absence of interstrial teeth on the upper part of the elytral declivity. It resembles *S. carinatus* Bright in its general aspect, but the latter differs in the carinate elytral interstriae on the declivity, the lack of frontal hair brushes and the prosternal characteristics. The species is endemic to Sulawesi.

Scolytoplatypus curviciliosus Gebhardt sp. n.

Male. 1.8–1.9 mm long, 1.6 times as long as wide, yellowish-brown. Frons deeply, broadly concave, surface smooth, margin of vertex with long, yellowish-brown hairs curved downwards reaching the middle of the frons, a brush of yellowish-brown hairs above each eye and a second brush orginating below each eye, extending in an arc transversely over the frontal cavity, their tips curved ventrally. Antennal club elongate, widest at base, 2.8 times longer than wide, narrowly rounded at the apex, surface densely covered with setae. Pronotum 0.75 times wider than long, with micro-reticulate surface and minute punctures, larger punctures along the bisinuate posterior margin, anterior margin with emargination in the middle, sides widest in the middle, posterior lateral angles angulate; sides of prothorax with a deep pit anteriorly to the forecoxae. Prosternum not raised in the middle, with a shallow, broadly rounded process anteriorly (Fig. 2K). Elytra about 0.9 times longer than wide, nearly 1.5 times longer than pronotum, sides parallel on basal half, then rounded to the apex, basal quarter and the sides shining, on basal half striae punctured, interstriae smooth, behind this interstriae narrow, recognizable as a longitudinal line up to the declivity, otherwise opaque, rugulose, striae and interstriae obsolete on the declivity, apex with fine, pale setae near suture.

Female. 2.0–2.1 mm long, 1.9 times as long as wide, yellowish-brown. Distinguished from male by frons shallowly convex, flattened above the epistoma, surface micro-reticulate, entire surface punctured, in the midline a fine line extending on the vertex and ending above the upper margin of the eyes in a small shining area. Antennal

club elongate, 2.3 times as long as wide, densely covered with setae. Pronotum 0.9 times as long as wide, shining, with minute punctures, posterior margin bisinuate, posterior lateral angles distinctly angulate, sides arcuate in the middle, distinctly constricted basally, without a mycangial pore dorsally or a pit at the anteroventral angles. Prosternum a flat plate without specific distinctions. Elytra as long as wide, about 1.3 times longer than pronotum disk of elytra shining, impressed, punctate striae visible, interstriae irregularly punctured, declivity opaque, irregularly punctate with short ground vestiture, striae obsolescent.

Holotype (♂). [Philippines] Mindanao: Misamis Occ., Don Victariano, app. 1700 m, 1.–3. v. 1996 (BOLM). In Staatliches Museum für Naturkunde Stuttgart (SMNS).

Paratypes. (8 ♂♂, 4 ♀♀). Same data as holotype. (6 ♂♂, 3 ♀♀) (SMNS); (1 ♂, 1 ♀) (HGT); (1 ♂) (RAB).

The specific epithet refers to the long curved hairs on the frons.

The species is most closely similar to *S. parvus* and *S. reticulatus*. The male can be distinguished from *S. parvus* by the absence of granules and conspicuous white hairs on the lower part of the elytral declivity, and from *S. reticulatus* by the lack of teeth on the interstriae at the summit of the elytral declivity, and the impressed elytral striae. The females of all three species lack a mycangial pore on the pronotum. The female of *S. curviciliosus* can most easily be distinguished from *S. parvus* by its slightly larger size (2.0–2.1 mm vs. 1.8–1.9 mm in *S. parvus*), and the more strongly angulate posterior angles of the pronotum, and from *S. reticulatus* by the non-impressed elytral striae, obsolescent on the declivity, and flat, not convex, interstriae. It is endemic to the Philippines.

Scolytoplatypus exiguus Beaver sp. n.

Male. 1.6 mm long, 1.7 times as long as wide, pale brown. Frons deeply, broadly concave, surface micro-reticulate with fine scattered punctures bearing short hairs, a small denticle on each side just below vertex margin, a brush of very long hairs above and below each eye, the hairs of the upper brush extending in an arc across the frons and reaching the epistoma on the opposite side, those of the lower brush arching up and over the upper brush and then curving downwards on the opposite side, upper and lower brushes of approximately equal size, a sparse fringe of shorter, downcurved hairs on the vertex margin lateral to the two denticles. Antennal club about 2.6 times longer than wide, widest near base, narrowly rounded at apex, surface densely covered with setae. Pronotum nearly 1.4 times wider than long, surface micro-reticulate, sparsely, finely punctured, a trace of a median line, anterior margin shallowly emarginate medially, sides concave in middle, wider anterior to constriction, posterior margin bisinuate, posterolateral angles obtuse; anteroventral angles of prothorax with a deep pit in front of procoxae, separated from anterior and ventral margins only by narrow ridges. Prosternum similar to *S. cirratus* (Fig. 2I), flattened posteriorly, with a median tubercle anteriorly. Elytra as long as wide, 1.4 times longer than pronotum, arched in profile with summit about one-third from base, sides parallel on basal three-quarters then rounded to apex, basal quarter and sides shining, declivity opaque, the base not carinate, striae finely punctured only near base, interstriae smooth, flat on basal quarter, behind this narrowed and carinate, the carina extending onto the declivity and ending in a small, acute tooth, the carinae on interstriae 1, 2, 4 and 6 shorter than the others, interstriae 9 continued to the elytral apex and with some minute teeth on the carina, both striae and interstriae otherwise obsolete on apical part of declivity, which is minutely granulate with a moderately dense covering of very short, appressed hairs visible only at high magnification. Anterior femur with a weakly developed tooth on upper side near apex; anterior tibia with posterior surface smooth.

Female. 1.75–1.8 mm long, 1.8 times as long as wide, generally resembling male but frons convex, with a shallow V-shaped impression above the epistoma, almost glabrous except towards the lower part of the eyes, a short, impressed median line extending from the vertex to the level of the upper margins of the eyes. Antennal club 2.3 times longer than wide, widest about one-third from base, apex more broadly rounded. Pronotum about 1.2 times wider than long, anterior margin more shallowly emarginate, posterolateral angles more angulate, lacking a mycangial pore dorsally, and a pit at the anteroventral angle. Prosternum a flat plate. Elytra as long as wide, about 1.3 times longer than the pronotum, less strongly arched in profile than the male with summit closer to middle of elytra, basal half shining, striae and interstriae indistinct near base, but interstriae evident as weakly raised lines on upper part of declivity, ending

abruptly but without a terminal tooth, lower part of declivity resembling male. Anterior femur with a stronger tooth on upper margin than male; anterior tibia with transverse rows of granules on posterior surface.

Holotype (♂). Indonesia, Sulawesi Utara, Dumoga-Bone N.P., Tumpah transect, Site 5, 300 m, at light, February 1985. In Natural History Museum, London (BMNH).

Paratypes (3 ♀♀). Same data as holotype except: site 11, 664 m (1 ♀) (BMNH); as holotype except: Plot A, lowland forest, ca 200 m, flight interception trap, October 1985 (1 ♀) (BMNH); as previous except: Plot B, ca 300 m, February 1985 (1 ♀) (RAB).

The specific epithet refers to the small size of the species.

The species appears to be most closely related to *S. cirratus* Gebhardt, known only from the male, but also found only in Sulawesi. It resembles that species in its general form, the hair brushes and denticles on the male frons, the form of the male prosternum, and the opaque declivity with obsolete striae and interstriae on its apical part. It can be distinguished from *S. cirratus* by its much smaller size, and the presence of small teeth terminating the interstrial carinae on the declivity. The presence of a tooth on the upper side of the anterior femur suggests a relationship to the *eutomoides* group of species. The female belongs to the species which lack a mycangial pore on the dorsal surface of the pronotum (see key).

Notes on Species

Our intention in these notes is to clarify the status and synonymy of the species which we recognise, and to provide information on the distribution and host trees of the species. New distribution records are given only where they significantly extend the known distribution, or provide an interesting new record of a poorly known species from a particular geographical area.

Scolytoplatypus bombycinus Browne

Scolytoplatypus bombycinus Browne 1955: 361.

Taxonomy. We have examined the male holotype, female allotype and a paratype of each sex (BMNH). The species was synonymised with *S. eutomoides* Blandford by Schedl (1975), and is still listed as a synonym of that species by Wood and Bright (1992). However, it is considerably larger than *S. eutomoides* (3.6–3.9 mm vs 2.8–3.0 mm long), and the male prosternum is quite different in the two species. In *S. bombycinus*, as Browne (1955) noted, the prosternal process is expanded anteriorly to form a pair of concave wing-like plates, with the outer anterior angles acute and somewhat produced. These plates are somewhat similar to those found in *S. brahma* (Fig. 1D), but are much more widely separated. Between the plates the anterior margin of the pronotum is extended either into a median bifurcate process, with the two arms at an angle of about 150°, and a shallow groove extending from tip to tip (West Malaysian specimens), or into a transverse, truncate process (East Malaysian specimens). The prosternum lacks a median keel. In *S. eutomoides* (Fig. 1A, B), the prosternum has a median keel, and the anterior median projection is expanded at the apex into two small, divergent, weakly tapering processes with rounded or subtruncate tips. Accordingly, *S. bombycinus* is here reinstated as a good species.

Distribution. Recorded from southern Thailand, West Malaysia and East Malaysia (Sarawak).

New Record. [East Malaysia, Sabah], Borneo, Sandakan, (C. F. Baker) [No date given, but pre-1919] (1 ♂, BMNH).

Biology. Browne (1961) describes the biology and gallery system of the species, and suggests that it has a preference for trees of the family Dipterocarpaceae. Such a preference would be unusual within the genus. Most species attack a wide range of host families without evident preferences (see below).

Scolytoplatypus brahma Blandford

Scolytoplatypus brahma Blandford 1898: 425.
Scolytoplatypus hamatus Hagedorn 1904a: 260. Synonymy: Schedl 1952a: 159.
Scolytoplatypus hirsutus Blackman 1943: 124. Synonymy: Schedl 1952a: 159.
Scolytoplatypus paucegranulatus Eggers 1935: 242. **Syn. n.**

Taxonomy. *Scolytoplatypus brahma* was described by Blandford (1898) from a single female collected in the Chittagong Hills in what is now Bangla Desh. Hagedorn (1904a) described both sexes of *S. hamatus* from Java, and provided a somewhat sketchy drawing of the male prosternum. Both sexes of *S. paucegranulatus* were described by Eggers (1935) from Java. Both sexes of *S. hirsutus* were described and figured by Blackman (1943), again from Java. Over

the years, the four species have been placed in and out of synonymy with each other, and with *S. eutomoides*. *S. brahma* has been treated as a good species by Stebbing (1914), Schedl (1952a, 1954, 1962), and Beeson (1961), but as a synonym of *S. eutomoides* by Browne (1955), Kalshoven (1959), Schedl (1975) and Wood and Bright (1992). *S. hamatus* was treated as a synonym of *S. brahma* by Schedl (1952a, 1954), as a good species by Browne (1955), and as a synonym of *S. eutomoides* by Schedl (1975) and Wood and Bright (1992). *S. hirsutus* was treated as a synonym of *S. brahma* by Schedl (1952a), and of *S. eutomoides* by Browne (1955), and entirely omitted by Schedl (1975) from his revision of the genus. *S. paucegranulatus* was redescribed by Schedl (1975) as a good species. Wood and Bright (1992) list *S. paucegranulatus* and *S. hirsutus* as good species.

We have examined the female holotype of *S. brahma* (BMNH). The types of *S. hamatus* were destroyed in World War II, but specimens of both sexes compared with the types by Eggers are present in BMNH and NHMW, and we have examined these, and directly compared the pair in BMNH with the holotype of *S. brahma*. We can confirm the synonymy given by Schedl (1952a). Schedl's (1979) designation of a male and female neotype from the specimens of *S. hamatus* in NHMW is invalid. The lectotype female of *S. paucegranulatus* is in USNM (designated by Anderson & Anderson 1971), whilst two male paralectotypes are in NHMW (Schedl 1979). Examination of these specimens, and the descriptions and figures of *S. hirsutus* (Blackman 1943), clearly indicate that all belong to the same species. The species is most closely related to *S. bombycinus*, but is considerably smaller. The male of *S. brahma* is characterised by its characteristic prosternal plate (Fig. 1D and key to males), which is structurally similar to that of *S. bombycinus*, and by a small elongate swelling in the midline on the upper part of the frons (fig. 12 in Blackman 1943), a feature also shared with *S. bombycinus*. The females of both *S. brahma* and *S. bombycinus* are characterised by the many conspicuous, long, curved yellow hairs on the declivity (fig. 10 in Blackman 1943). Distinguishing characters between *S. brahma* and *S. bombycinus* are given in the keys to males and females.

Distribution. The species is distributed from Northeast India and Bangla Desh to Borneo, but is not found East of Wallace's Line. It is newly recorded below from East Malaysia (Sabah), Indonesia (Sumatra) and Thailand.

New Records. [E. Malaysia, Sabah] North Borneo, Liawan, 14.–17. i. 1959 (T. C. Maa) (1 ♂ determined as *S. paucegranulatus*, BPBM); Sabah, Sipitang, Mendolong, 6. v. 1988 (S. Adebratt) (1 ♀, RAB); [Indonesia] NE Sumatra, Deli Kuala Simpang, Semadan Estate, lowland forest, xi. 1954 (A. Sollaart) (1 ♀ determined as *S. paucegranulatus*, NNML); as previous except: Alur Djamba Estate (1 ♀ determined as *S. paucegranulatus*, NNML); Thailand, Chiangmai, Doi Chiang Dao, 12.–13. vii. 2002 (A. Cognato) (1 ♀, RAB).

Biology. The biological observations of Kalshoven (1959) on *S. eutomoides* in Java almost certainly refer to *S. brahma* because *S. eutomoides* is not known to occur West of Wallace's Line, and specimens in the Browne collection in BMNH from Java determined by Kalshoven as *S.eutomoides*, are in fact *S. brahma*. The many host records given by Blackman (1943 as *S. hirsutus*), Schedl (1951 as *S. hamatus*), Kalshoven (1959 as *S. eutomoides*) and Beeson (1961), indicate that the species is polyphagous attacking a wide range of host trees in many families.

Scolytoplatypus carinatus Bright

Scolytoplatypus carinatus Bright 1994: 269.

Taxonomy. This is a small species easily distinguished by the fine elevated carinae on all the declivital interstriae. In his description, Bright (1994) does not mention the male prosternum which is raised in a triangle, the apex anterior (Fig. 2L), nor the lack of a large, deep fovea just behind the antero-ventral angle of the pronotum. As in *S. superciliosus*, there is only a shallow, elongate impression.

Distribution. Known only from Malaysia (Sabah).

Biology. The species was collected from unidentified species of *Artocarpus* and *Ficus* (Moraceae), *Lithocarpus* and *Quercus* (Fagaceae), and *Cinnamomum* (Lauraceae) (Bright 1994).

Scolytoplatypus daimio Blandford

Scolytoplatypus daimio Blandford 1893: 433.
Scolytoplatypus siomio Blandford 1893: 436. Synonymy: Nobuchi 1980: 51.
Scolytoplatypus muticus Hagedorn 1904b: 124. Synonymy: Schedl 1952b: 61.
Scolytoplatypus kunala Strohmeyer 1908: 161 **Syn. n.**

Taxonomy. We have directly compared male and female syntypes of *S. daimio* and *S. siomio* (BMNH), and further specimens of *S. daimio* in

RAB's collection, with the female holotype of *S. kunala* (DEI). The male of *S. kunala* was not described. We consider all three species to be synonymous. The female syntypes of *S. muticus* were destroyed in World War II, but a male syntype remains in the Musée National d'Histoire Naturelle, Paris (Wood & Bright 1992). We accept the synonymy of this species with *S. daimio* given by Schedl (1952b) and Nobuchi (1980). Both Schedl (1975) and Nobuchi (1980) considered *S. siomio* to be a synonym of *S. daimio*, although Wood and Bright (1992) list *S. siomio* as a good species. The prosternum of the male syntype of *S. siomio* is exactly the same as that of *S. daimio* (Fig. 2E). Wood (1989) synonymised *S. kunala* with *S. siomio*. The holotype of *S. kunala* has the weaker elytral sculpture of *S. siomio*, but the proportions of pronotum and elytra of *S. daimio* providing evidence of the morphological intergradation of the species.

Distribution. Bhutan, India (Kashmir), Japan, Nepal, Russia (Sakhalin I., S. Kurile Is. (Iturup, Kunashir, Shikotan)).

Biology. The species, like most other members of the genus, is polyphagous attacking a wide range of broad-leaved and coniferous host trees (Beeson 1961, Schedl 1975, Nobuchi 1980). Nakashima et al. (1992) briefly characterise and figure the associated ambrosia fungus.

Scolytoplatypus darjeelingi Stebbing

Scolytoplatypus darjeelingi Stebbing 1914: 607.

Taxonomy. Schedl (1975) synonymised this species with *S. kunala* Strohmeyer, but Wood and Bright (1992), and Saha and Maiti (1996) correctly list it as a good species. We have been unable to see the syntypes in the Forest Research Institute, Dehra Dun, but through the courtesy of Dr. N. Saha, have seen her excellent redescription and figures of the species, and have compared these with specimens in BMNH and NKME. The male prosternum is very similar to that of *S. daimio* with a pair of widely separated, divergent, straight processes on the anterior margin (compare Fig. 2E and 2F), but *S. darjeelingi* can be distinguished by the evenly rounded upper margin of the declivity, the weaker elytral sculpture, and the colour pattern of the elytra (see key to males). The females of *S. darjeelingi* can be distinguished by the much longer and denser vestiture of the elytral declivity, and the bicoloured elytra, with a well-defined pale basal area (see key to females).

Distribution. The species is recorded from northern India (Assam, W. Bengal, Uttar Pradesh) from the forests on the slopes of the Himalayas. New records from India (Himachal Pradesh), Nepal and Thailand are given below. It appears to be a montane species occurring between 2400–4250 m. The record from Taiwan (Eggers 1939) is incorrect, and the specimens should be referred to *S. blandfordi* described above.

New Records. (Because of the large number of specimens from Nepal, and the large number of slightly different localities, the Nepalese locality data have been partly condensed. Full details can be obtained from the senior author on request.) India: Himachal Pradesh, Manali, Solang-Valley, 2500 m, 20. vii. 1989 (Riedel) (6) (SMNS); Nepal: Mustang Distr., Purano Marpha, 3200 m, 9.–11. v. 1995 (Martens & Schawaller) (2); Solukhumbu Distr., Sanam, 2700–2800 m, 22.–23. v. 1997 (Schawaller) (3) (SMNS); Prov. Seti, Distr. Bajura, Kuwadi Khola, 29°53′ N, 81°38′ E, 2900–3700 m, 4–6. vii. 2001 (Hartmann, Kopetz, Weigel) (22); Prov. Karnali, Distr. Humla, env. Simikot, 29°51′–30°58′ N, 81°37′–81°51′ E, 2500–4250 m, 24.–29. vi., 8. vii. 2001 (Hartmann, Kopetz, Weigel) (6); Distr. Dolpa, SE Kalgaon, 29°05′ N, 82°37′ E, 3500–3800 m, 3. vii. 1997 (Hartmann) (1); Distr. Jumla, 29°10–29°22′N, 82°09′–82°51 E, 2600–3280 m, 18.–19. iv. 1995, 6.–13. vi. 1997, 21. vi–9. vii. 1999 (Hartmann, Weigel) (67); Karnali region, SE Churta, 3300–3500 m, 18. v. 1995 (Weipert) (19); Annapurna Mts., Mardi Himal, W Mardi Khota, 3000–3200 m, 13. v. 2001 (Schmidt) (7); Annapurna, South Himal, below Khopra, 3000 m, 24.–25. v. 2001 (Schmidt) (1); Prov. Janakpur, distr. Dolakha, Rolwaling valley, 3300 m, 19. v. 2000 (Schmidt) (1) (NKME, RAB); Thailand, Chiangmai, Doi Inthanon, 2400 m, 28. vii. 2004 (Cognato) (1) (RAB).

Biology. Seven genera of host trees in seven different families are listed by Wood and Bright (1992), indicating polyphagous habits.

Scolytoplatypus eutomoides Blandford

Scolytoplatypus eutomoides Blandford 1896: 196.
Scolytoplatypus papuanus Eggers 1923: 165. Synonymy: Schedl 1975: 200.
Scolytoplatypus setosus Schedl 1942: 192. Synonymy: Schedl 1975: 200.

Taxonomy. Schedl (1975) synonymised ten previously described species under this name, confusing six distinct species. Of the synonyms given by Schedl, we recognise only the following two species as synonyms of *S. eutomoides*: *S. papuanus* Eggers, *S. setosus* Schedl. The following are good species which can be distinguished by characters given in the keys: *Scolytoplatypus brahma* Blandford, *S. javanus* Eggers, *S. luzonicus* Eggers, *S. macgregori* Blackman, and *S. bombycinus* Browne. We have examined two male syntypes of *S. eutomoides* from Indonesia (Sula-

wesi) (BMNH), and series in BMNH and RAB from Sulawesi and Papua New Guinea in which males can be definitely associated with females. We have compared these with the male holotype of *S. papuanus* (MNHB), the male holotype of *S. setosus* (NHMW), and type material of almost all the other species included as synonyms by Schedl (1975). We confirm the synonymy given above. In the syntypes of *S. eutomoides,* the holotype of *S. papuanus* Eggers, and in specimens from Sulawesi, the elytral declivity has a dense covering of short, fine, appressed hairs, without any longer, erect hairs on the interstriae. In the holotype of *S. setosus,* and most specimens from Papua New Guinea, the elytral declivity of the male has in addition a row of longer setae on interstriae 1, 3, 5, 7. However, these specimens can not be separated from specimens of *S. eutomoides* by other characters, including the male prosternum, and, contrary to Wood and Bright (1992), we consider *S. papuanus* to be a synonym of *S. eutomoides. S. eutomoides* is rather variable in size, specimens from Papua New Guinea being generally larger than those from Sulawesi.

Distribution. The species is known with certainty only from Indonesia (Sulawesi and Irian Jaya) and Papua New Guinea. Records from other countries are almost certainly the result of misidentification. In view of the errors in previous records, we include here previously unpublished records from Indonesia and Papua New Guinea.

New Records. Indonesia, Irian Jaya, Nabire, 50 km S Flaga Road Pusppenssat, 3°29′53″ S 139°43′83″ E, 18. ii. 1998 (Weigel) (1) (NKME); Sulawesi Tengah, nr. Morowali, Ranu river area, at light, 27. i.–20. iv. 1980 (Sutton & Rees) (1) (BMNH); Sulawesi Tenggara, NE of Kolaka, nr Gng Watowila, c.3°49′ S 121°40′ E, 1100 m, undisturbed hilly rain forest, at light (Duffels) (1) (ZMA); Sulawesi Utara, Dumoga-Bone N.P., 200–1008 m, light, malaise and flight intercept traps, various dates from i.–xi. 1985 (Wallacea Expedition members) (45) (BMNH, RAB). Papua New Guinea, Morobe Distr., Bulolo, Kunai Ck, 1500 m, ex *Castanopsis* sp., 5. ix. 1972, 14. ix. 1972 (Beaver) (4) (RAB); as previous except: Snake Ck, 1100 m, ex *Myristica* sp., 12. ix. 1972 (Beaver) (4) (RAB); as previous except: Wau, WEI, 1100 m, ex twig, 5. ii. 2000 (Jordal & Sequeira) (1) (BHJT).

Biology. Due to the confusion with other species, the many host records listed under this species in Schedl (1975) are probably almost entirely incorrect. In Papua New Guinea, the species has been collected by RAB from *Castanopsis* sp., and *Myristica* sp. There are no host records from Sulawesi, where the species was collected most frequently in flight intercept traps and at light.

Scolytoplatypus glaber Eggers

Scolytoplatypus glaber Eggers 1935: 240.

Taxonomy. We have examined a male paralectotype (BMNH), and other specimens of both sexes in BMNH. This is a large species, lacking spines and almost glabrous dorsally, with a characteristic male prosternum with a large tubercle posteriorly (Fig. 1G). Schedl (1975) redescribed both sexes, but as usual, omitted characters of the ventral side.

Distribution. Indonesia (Sumatra), Malaysia, W., Malaysia E. (Sabah, Sarawak). Almost all published records and specimens seen are from altitudes between 1200–1560 m.

Biology. Bright (1994) records the species from unidentified species of *Lithocarpus* and *Quercus* (Fagaceae), and *Cinnamomum* (Lauraceae).

Scolytoplatypus javanus Eggers

Scolytoplatypus javanus Eggers 1923: 164.
Scolytoplatypus piceus Blackman 1943: 122. Synonymy: Schedl 1952a: 159.

Taxonomy. *S. javanus* was described by Eggers from Java and Sumatra, *S. piceus* from the Philippines. *S. piceus* was synonymised with *S. javanus* by Schedl (1952a) and this synonymy was repeated in Schedl's (1966) review of the scolytine fauna of the Philippines. However, Schedl (1975) incorrectly synonymised both species with *S. eutomoides.* Wood and Bright (1992) reverted to the old synonymy, and we agree with their action. The male prosternum is quite distinct (compare Figs 1F and 1B). Other distinguishing characters are given in the keys.

Distribution. Indonesia (Java, Kalimantan, Sumatra), Malaysia, W., Malaysia, E. (Sabah, Sarawak), Philippines (Luzon), Thailand, S.

New Record. [Philippines] Mindanao: Misamis Occ., Don Victoriano, 1700 m, 1.–3. v. 1996 (BOLM) (18 ♂, 2 ♀♀, SMNS).

Biology. Browne (1961) briefly reviews the hosts and biology of the species, which has been recorded from trees in at least 18 different families.

Scolytoplatypus luzonicus Eggers

Scolytoplatypus luzonicus Eggers 1935: 244.
Scolytoplatypus benguetus Blackman 1943: 123. **syn. n.**

Taxonomy. We have examined the lectotype female of *S. luzonicus* and compared it directly

with the holotype female of *S. benguetus* (both USNM). The latter is damaged but is clearly conspecific with *S. luzonicus*. The male of *S. benguetus* was not described, but we have examined male paratypes of *S. luzonicus* (NHMW). Both species were described from the province of Benguet on the island of Luzon in the Philippines, *S. luzonicus* from Baguio, and *S. benguetus* from Mt Santo Tomas, which is close to Baguio. *S. luzonicus* was considered to be a synonym of *S. papuanus* by Schedl (1966), and this synonymy is repeated by Wood (1989) and Wood and Bright (1992). *S. benguetus* was listed as a good species by Schedl (1966), but both species were included as synonyms of *S. eutomoides* by Schedl (1975), the latter species misspelt as *S. benguetensis*. The male prosternum of *S. luzonicus* is quite distinct from other superficially similar species in the *eutomoides* group (compare Fig. 1E with Figs 1A–1F). The female is very similar to *S. eutomoides*, but can be distinguished by the characters given in the key.

Distribution. The species is known only from the Philippine island of Luzon.

Biology. Schedl (1966) lists *Mallotus ricinoides* (Euphorbiaceae), *Ficus benguetensis* and *Ficus* sp. (Moraceae) as host trees.

Scolytoplatypus macgregori Blackman

Scolytoplatypus macgregori Blackman 1943: 121.

Taxonomy. We have examined the holotype, allotype and nine male and female paratypes of this species (USNM). The species superficially resembles *S. eutomoides*. It was synonymised with *S. papuanus* Eggers by Schedl (1952a, 1966), and with *S. eutomoides* by Schedl (1975). Wood and Bright (1992) retain the species as a synonym of *S. papuanus*. However, the prosternum of the male is quite different from that of *S. eutomoides*. It lacks the anterior median projection expanded at the tip into two divergent processes which is present in *S. eutomoides* (Fig. 1A, 1B). Instead the anterior part is vertical, strongly built, with behind it a small triangular area, the apex posterior, bearing the median keel (Fig. 1C). Other distinguishing characters are given in the keys. *S. macgregori* is here removed from synonymy with *S. eutomoides* and reinstated as a good species. An examination of the female allotype of *S. papuanus* described by Schedl (1951) revealed a misinterpretation. The series from the Phillipines (Mindoro, Pto Galera) of one female allotype and three males (not an additional three females as stated by Schedl (1951)) determined as *S. papuanus* (NHMW), are in fact identical to *S. macgregori*.

Distribution. The species is known only from the Philippines (Mindoro).

Biology. There is a single host record from *Ficus hauili* Blanco (Moraceae) (Schedl 1951, as *S. papuanus*).

Scolytoplatypus mikado Blandford

Scolytoplatypus mikado Blandford 1893: 437.
Scolytoplatypus sinensis Tsai & Huang 1965: 121 (chinese), 123 (english). Synonymy: Wood 1989: 175.

Taxonomy. By courtesy of Dr. S. L. Wood, we have been able to examine a paratype of each sex of *S. sinensis* from his collection, and have compared them with specimens (RAB) compared earlier with syntypes of *S. mikado* (BMNH). Until material of *S. sinensis* in the Institute of Zoology, Academy of Sciences, Beijing becomes available for loan, and an assessment of the range of variation found within the species can be made, we accept the synonymy of the two species. The male prosternum of *S. sinensis* is of similar form to that of *S. mikado*, with the two anterior processes diverging at an angle of about 60°, but behind them, instead of the two tubercles present in *S. mikado*, there is a median process (see fig. 1b in Tsai & Huang 1965). *S. sinensis* is smaller than the majority of specimens of *S. mikado*, but other characters agree. Schedl (1975) synonymised *S. raja* (and its synonym *S. himalayensis*) with *S. mikado*, but for the present we prefer to keep the two species separate.

Distribution. China (Fujian, Sichuan), Japan, Korea, Taiwan. Records from Bhutan, Malaysia, India, and Indochina (Schedl 1975) almost certainly all refer to *S. raja*. On the whole, this species has a more northerly distribution than *S. raja,* but it does also occur on Taiwan (Murayama 1928), and in the Chinese province of Fujian, immediately West of Taiwan. The species does not occur on Sakhalin I. (Krivolutskaja 1996), contrary to the statement by Yanovskij (1999).

New Records. Taiwan, Taichung, Lishan, 2240 m, v. 1966, K. S. Lin (1 ♂, 1 ♀, TARI); C. Taiwan, Meifeng, Nantou Hsien, 2130 m, 2.–12. x. 1979 (2 ♀♀, TARI).

Biology. Schedl (1975), and Choo and Woo (1985) give long lists of host trees. Even when host trees of *S. raja* are removed from these lists, it is clear that the species is strongly polypha-

gous. The life cycle, gallery system, fecundity and survival, and associated symbiotic fungi have been studied in detail in Japan by Kinuura and Hijii (1991), and Kinuura *et al.* (1991). Nakashima *et al.* (1992) also briefly characterise and figure the ambrosia fungus.

Scolytoplatypus minimus Hagedorn

Scolytoplatypus minimus Hagedorn 1904b: 125.

Taxonomy. Only the female was described by Hagedorn (1904b) from Darjeeling (W. Bengal). Schedl (1975) described the male from a specimen collected about 1000 km to the East in Mussooree (Uttar Pradesh). The male appears to be related to *S. reticulatus* which has a similar prosternum (compare Figs 1K and 1L). The females are also very similar, but the female of *S. reticulatus* lacks the typical mycangial pore on the pronotum.

Distribution. India (Uttar Pradesh, West Bengal), Thailand (Chiangmai). Known only from montane areas at or above 1500 m.

New Record. Thailand, [Mae Hong Son], Soppong, 1500 m, 10.–13. v. 1993 (Bocák) (1 ♂, SMNS).

Biology. Recorded from species of *Alnus* (Betulaceae), *Cornus* (Cornaceae), and *Prunus* (Rosaceae) (Beeson 1961), *Cinnamomum* (Lauraceae) (Beaver & Browne 1975), and *Acrocarpus* (Leguminosae) (Saha and Maiti 1996). Evidently polyphagous. In Thailand, the species was found in smaller branches (1–2 cm diameter) of *Cinnamomum iners* than attacked by *S. raja* and *S. pubescens* (Beaver & Browne 1975).

Scolytoplatypus nanus Schedl

Scolytoplatypus nanus Schedl 1931: 118.

Taxonomy. This is the smallest species of *Scolytoplatypus*, only 1.2–1.4 mm long.

Distribution. Previously known only from Java, we record it below for the first time from East Malaysia (Sabah).

New Record. Malaysia, Sabah, Sipitang, Mendolong, 8. xii. 1987, 11. v. 1988, 23. iii. 1989 (S. Adebratt) (3 ♀♀, ZMLU).

Host Trees. Recorded only from *Vernonia arborea* (Asteraceae) (Kalshoven, 1959).

Scolytoplatypus nitidicollis Eggers

Scolytoplatypus nitidicollis Eggers 1935: 241.

Taxonomy. This species was described from the female, and the male remains unknown. We have examined the female holotype (NHMW) from Java, and have also seen a second female from East Malaysia (Sabah). The species is one of those in which the female completely lacks a mycangial pore on the pronotum. Schedl's (1975) statement that the pore is 'kaum erkennbar' is incorrect. Schedl (1975) in his redescription of the species also incorrectly notes 'Vorderschenkel ohne Zähnchen'. A well-developed tooth is present on the upper side of the anterior femur, as Eggers (1935) noted in his original description.

Distribution. Indonesia (Java) and Malaysia (Sabah). The record from India (West Bengal) (Saha and Maiti, 1996) may be based on a misidentification.

Biology. No host trees are known.

Scolytoplatypus nitidus Eggers

Scolytoplatypus nitidus Eggers 1923: 166.

Taxonomy. Eggers (1923) originally described the female, and later (Eggers 1927), the male. Schedl (1975) redescribed both sexes, and figured the male.

Distribution. Indonesia (Java, Sumatra). Kalshoven (1959) suggests that it is a montane species found at altitudes from 1000–2400 m.

Biology. Five host tree species are known in four different families (Schedl 1975).

Scolytoplatypus parvus Sampson

Scolytoplatypus parvus Sampson 1921: 36.

Taxonomy. Sampson (1921) described only the male. The female was described, and further characters of the male given by Browne (1949). We have examined the male holotype (BMNH) and other specimens of both sexes (BMNH, QMB, RAB, ZMLU). Wood and Bright (1992) inexplicably placed the species in synonymy with *S. ruficauda*. Direct comparisons of the types with other specimens of both species indicate that the synonymy is incorrect.

Distribution. Malaysia W., Malaysia, E. (Sarawak). The species is newly recorded here from Brunei and Sabah. The inclusion of Burma and India in the distribution by Bright (1994) appears to be incorrect, presumably due to confusion with *S. ruficauda*.

New Records. Brunei: E 115°7′ N 4°34′, Kuala Belalong FSC, Dipterocarp forest, various dates from

2. vi. 1991–18. vii. 1991, 3. iii. 1992 (N. Mawdsley) (5 ♂♂, 3 ♀♀, BMNH); as previous except: E 115°09.4′, N 4°32.8′, 19.–20. viii. 1995 (R. L. Kitching, H. Mitchell) (3 ♂♂, QMB); Malaysia, Sabah, Sipitang, Mendolong, various dates from 1. v. 1988–11. v. 1988, 31. iii. 1989 (S. Adebratt) (1 ♂, 3 ♀♀, ZMLU).

Biology. Browne (1961) lists eight host species in six families, and notes that it attacks cut branches and poles from 3–10 cm diameter. The life cycle can take less than 50 days (Browne 1961).

Scolytoplatypus pubescens Hagedorn

Scolytoplatypus pubescens Hagedorn 1904b: 123.
Scolytoplatypus pubescens kabakovi Axentjev 1992: 192 **Syn. n.**

Taxonomy. Hagedorn (1904b) described the female, and later (Hagedorn, 1905) the male. Both sexes were redescribed and figured by Schedl (1975). Axentjev (1992) described a new subspecies from Vietnam. Topotypical and other specimens of both sexes of this subspecies in ZISP have been carefully examined on our behalf by M. Mandelshtam. He considers that they are no more than abraded specimens of *S. pubescens* (M. Mandelshtam, pers. comm. 2005). We have, therefore, synonymised the subspecies. The larva of *S. pubescens* was described by Gardner (1934). Seventy years later, this remains the only larva described in the genus.

Distribution. India (Assam, W. Bengal, Uttar Pradesh), Myanmar, Taiwan, Thailand, Vietnam.

New Record. Nepal, Prov. Bagmati, distr. Rasuwa, Langtang Tal zw. Syabru Bensi u. Ghora Tabela, 1600–3000 m, iv. 1998 (S. Roth) (1 ♀, NKME).

Biology. Beeson (1961) describes the biology and figures the gallery system. He lists eight species of host tree in eight different families in India. Murayama (1934) adds four species in an additional four families in Taiwan. Beaver and Browne (1975) noted that this was the largest of three species of *Scolytoplatypus* breeding together in branches of *Cinnamomum iners* (Lauraceae), and tended to attack the largest stems. Brood size can reach 70–80 individuals (Beeson 1961).

Scolytoplatypus pusillus Eggers

Scolytoplatypus pusillus Eggers 1935: 243.

Taxonomy. We have examined male and female paralectotypes of this species (BMNH) from the type locality in the Philippines. It is closely related to *S. nanus* Schedl, but is larger, the male elytra with more strongly sulcate striae just before the declivity, but striae 1 and 2 more weakly impressed on the declivity.

Distribution. At present, the species is reliably known only from the Philippines (Luzon). It has been incorrectly recorded from West Malaysia by Browne (1961). Browne's record actually refers to *S. nanus* Schedl (specimens examined in BMNH). The record from India (Uttar Pradesh) in Schedl (1971) is not included in his notes on the species (Schedl, 1975), and the record should be considered doubtful, possibly referring to misidentified *S. minimus*. Schedl's statement (1975: 201) that the species is restricted to India is incorrect, and contradicted by the information that he gives later in the same paper (1975: 254–255).

Biology. *S. pusillus* has been recorded attacking species of *Dryobalanops* (Dipterocarpaceae), *Ficus* (Moraceae), *Mallotus* (Euphorbiaceae) and *Pinus* (Pinaceae) in the Philppines (Schedl, 1966, 1975).

Scolytoplatypus raja Blandford

Scolytoplatypus raja Blandford 1893: 440.
Scolytoplatypus himalayensis Stebbing 1914: 604. Synonymy: Beeson 1922: 500.

Taxonomy. We have examined the male syntype of *S. raja* (BMNH) and compared it with syntypes of *S. mikado* (BMNH) and other male and female specimens of both species in RAB. The males can be distinguished by the form of the prosternum (compare Figs. 1H and 1I) and characters of the elytral declivity (see key to males). The females are very similar, but can be distinguished by the characters given in the key. The species is closely related to *S. mikado*, and Schedl (1975) synonymized the two species. However, at present, we consider that the species are sufficiently morphologically distinct to be considered as separate species. We have not seen the holotype of *S. himalayensis* in the Forest Research Institute, Dehra Dun, but accept the synonymy given by Beeson (1922) and accepted by all later authors.

Distribution. China (Xizang), India (Assam, Himachal Pradesh, Kashmir, Uttar Pradesh, West Bengal), Nepal, Pakistan, Taiwan, Thailand, Vietnam, West Malaysia. The species has a more southern and western distribution than *S. mikado*. It generally occurs in mountain forests.

New records. Nepal: Mustang Distr., Lethe Khola, near Lethe, 2400 m, 5.–7. v. 1995 (Martens & Schawaller) (3 ♀♀); Myagdi Distr., Myagdi Khola, Dobang, 2800–3100 m, 22.–24. v. 1995 (Martens & Schawaller) (1 ♀); Dailekh Distr., Talpokhari S Dailekh, 1800 m, 29. v. 1998 (Schawaller) (2 ♀♀); Dolakha Distr., Khara Khola, 1050–1400 m, 29. v. 2000 (Schawaller) (1 ♀); as previous except, N slope of Khara Khola, 2200 m, 30. v. –1. vi. 2000 (Schawaller) (1 ♀); as previous except, S slope of Khara Khola, 2100 m, 2. vi. 2000 (Schawaller) (1 ♀) (all SMNS).

Biology. The species is clearly polyphagous attacking both conifers and angiosperms (Beeson 1961, Wood & Bright 1992, Saha & Maiti 1996). In Thailand, it tended to attack branches of *Cinnamomum iners* intermediate in size between those attacked by the smaller *S. minimus* and the larger *S. pubescens*, suggesting some division of resources among the three species according to their size (Beaver & Browne 1975).

Scolytoplatypus reticulatus Bright

Scolytoplatypus reticulatus Bright 1994: 270.

Taxonomy. The species was described from specimens collected in East Malaysia (Sabah). We have seen further specimens from Sabah (BPBM, ZMLU). Bright (1994) does not describe the male prosternum. This is rather similar to that of *S. minimus* (compare Figs 1K and 1L). It has a small median, triangular projection anteriorly, and just behind this a pair of closely placed, small, shining tubercles. *S. reticulatus* is one of several species (*S. curviciliosus*, *S. exiguus*, *S. nitidicollis, S. parvus, S. ruficauda, S. superciliosus*) in which the female does not have a mycangial pore on the pronotum. The mechanism by which the symbiotic ambrosia fungus is transmitted in these species is unknown.

Distribution. Known only from East Malaysia (Sabah).

New Records. Malaysia, Sabah, Sipitang, Mendolong, P1L, 10. iii. 1989 (S. Adebratt) (2 ♂♂, ZMLU, RAB); [British North Borneo], Tenompak, 10.–14. ii. 1959 (T. C. Maa) (1 ♂, BPBM).

Biology. Collected from *Quercus* sp. (Fagaceae) and *Cinnamomum* sp. (Lauraceae) (Bright 1994).

Scolytoplatypus ruficauda Eggers

Scolytoplatypus ruficauda Eggers 1939: 9.

Taxonomy. This species was described from a single female collected by Malaise in Northeast Myanmar. Schedl (1975) redescribed the species, but omitted it from his key to Oriental species. He also (Schedl 1975) 'corrected' the date of collection from 1934 to 1919. However, Malaise did not visit Burma until 1934 (Malaise 1945), so that Eggers' date is correct. Wood (1992) placed the species as a synonym of *S. parvus* Sampson, based on specimens identified by Eggers. However, we have examined the holotype of *S. ruficauda* (NHRS), and the holotype male, and females described later by F. G. Browne, of *S. parvus* (BMNH), and find that the proposed synonymy is incorrect. The species can be distinguished using the characters given in the keys. Eggers' original description contains some small errors, most of which were corrected by Schedl (1975) in his redescription, although without any indication that he had done so. The length of the holotype is 3.0 mm, not 2.8 mm. The ratio of width to length of the pronotum is 1.15 rather than 1.0. The elytra are 1.65 times as long as the pronotum, not 1.5 times. The rows of strial punctures are evident on the elytral disc, not unrecognisable.

Recently, further specimens of the species have been collected in Nepal. The females differ in certain characters from the holotype, primarily in the length of the elytra relative to the pronotum. In the holotype, the elytra are 1.65 times as long as the pronotum. In six females collected in Nepal, the ratio varies from 1.7–1.9. In addition, the colouration of the Nepalese specimens is lighter and more uniform, without lighter areas on the posterior part of the pronotum and elytra, and the pronotum is less shiny than in the holotype. In the absence of further specimens (particularly males) from Myanmar, we do not consider these differences sufficient to characterise a new species. The previously unknown male of the species is described below.

Male. 2.9–3.2 mm long, about 2.2 times longer than wide, light to dark brown, upper part of frons, pronotum and posterior part of elytra often darker than remainder of body. Frons broadly, shallowly concave, a broad V-shaped area above epistoma usually smooth, shining, remainder micro-reticulate, moderately densely, finely, evenly punctured, the punctures with long, erect hairs, lacking hair brushes. Antennal club 2.3 times longer than wide, widest near the base, apex narrowly rounded, densely covered with setae, a row of 8–10 long erect hairs with tips curved towards antennal apex along the ventral margin, four of these in the basal half capitate, a few long hairs at apex. Pronotum about 1.2 times wider than long, widest about the middle, the

sides constricted posteriorly, anterior margin with a wide, shallow, V-shaped emargination, posterior margin very weakly bisinuate, posterolateral angles almost right angles, anteroventral angles with a small, deep, oval pit, dorsal surface shining, coriaceous, moderately finely punctured, the punctures more closely placed towards anterior and posterior margins and bearing short, fine hairs. Prosternum with median part raised in a triangle, its apex posterior, anterior margin with a pair of slightly asymmetrical, rounded lobes between which is a more weakly sclerotised, translucent process on the right side only (Fig. 2A). Elytra 1.3–1.4 times longer than wide, 2.0 times as long as pronotum, shining, the sides slightly diverging posteriorly, widest in the apical quarter, the apex slightly angularly rounded, declivity beginning in apical third, steeply convex, elytral base carinate, discal interstriae flat, irregularly, finely punctured, striae usually distinct, punctures of similar size to those on interstriae, declivity with striae impressed, the punctures coarser than on the disc, interstriae slightly raised, convex, granulate, the granules a little stronger on interstriae 1 and 3, with an inconspicuous covering of short, fine hairs.

Distribution. Previously known only from the holotype from Myanmar. Schedl's (1975: 201) statement that the species is known only from Thailand is incorrect. It is newly recorded here from many localities in western Nepal. This is a montane species known only from altitudes between 2000–3500 m.

New Records. Nepal: Parbat Distr., betw. Deorali and Chitre, 2700 m, 1.–2. v. 1995 (Martens & Schawaller) (1 ♂); Mustang Distr., Lethe Khola, near Lethe, 2400 m, 5.–7. v. 1995 (Martens & Schawaller) (1 ♂, 2 ♀♀); Myagdi Distr., Myagdi Khola, Dobang, 2400 m, 25. v. 1995 (Martens & Schawaller) (2 ♂♂, 2 ♀♀); Ramechap Distr., Mohabir Khola E Shivalaya, 2500–2600 m, 6.–7. v. 1997 (Schawaller) (1 ♂); Solukhumbu Distr., E Pangkongma La, 3000 m, 17. v. 1997 (Schawaller) (1 ♀); as previous except, Nashing Dingma W Surkie La, 2700 m, 20. v. 1997 (Schawaller) (3 ♀♀); as previous except., Sanam, 2700–2800 m, 22.–23. v. 1997 (Hauser) (4 ♂♂, 5 ♀♀); Dailekh Distr., Dailekh to Mabuchin Pass, 2300 m, 3.–4. vi. 1998 (Miksch) (2 ♀♀); Jumla Distr., Khali-Lagna Pass, 3500 m, 16.–17. vi. 1998 (Schawaller) (1 ♀) (All SMNS); Prov. Seti, Distr. Bajura, 16–19 km SW Similkot, Kuwadi Khola env. Chachaur, 2900–3500 m, 6. vii. 2001 (Kopetz) (1 ♂); Prov. Karnali, Distr. Humla, 12 km S Similkot, env. Raya, 2500–3400 m, 8. vii. 2001 (Kopetz) (1 ♀); Prov. Karnali, Distr. Dolpa, Pahada, W.Tal, 29°04.33′ N, 82°42.4′ E, 3000–3500 m, 2. vi. 1997 (Hartmann) (1 ♂, 1 ♀); Prov. Karnali, Distr. Jumla, N Khari Lagna, Bachtal, 29°22.14′ N, 82°09.17′ E, 3250 m, 21. vi. 1999 (Hartmann, Weigel) (2 ♀♀); as previous except, 12 km N Jumla, 3280 m (Weigel) (1 ♂); as previous except, 25 km N Jumla, Pina W Jhyari Kh, 29°29.47′ N, 82°07.51′ E, 2500 m, 23. vi. 1999 (Weigel) (1 ♀); as previous except, Maharigaon N, 29°20.24′ N, 82°23.21′ E, 3250 m, 8.–9. vii. 1999 (Hartmann) (1 ♂, 2 ♀♀); Prov. Karnali, Churta, W. Munigaon, 2600–2900 m, 19. v. 1995 (Weigel) (1 ♀); Prov. Gandaki, Distr. Kaski, env. Banthanti, 2300 m, 21. iv. 2000 (Wolf) (1 ♀); Annapurna Mts. Mardi Himal, W of Mardi Khola, 3000–3200 m, 13. v. 2001 (Schmidt) (1 ♀) (NKME, RAB).

Biology. No host trees are known.

Scolytoplatypus shogun Blandford

Scolytoplatypus shogun Blandford 1894: 126.

Taxonomy. Both sexes were described by Blandford (1894). He did not specify the depository of the types, but Wood and Bright (1992) note syntypes in the Institut Royal des Sciences Naturelles de Belgique in Brussels. We have examined specimens of both sexes in BMNH, including one male labelled as 'Type', as well as further specimens from Japan in RAB. Blandford's brief description of both sexes was amplified by Schedl (1975).

Distribution. Japan, Taiwan? Nobuchi (1967) states that Murayama added the species to the fauna of Taiwan between 1930 and 1936. Murayama (1936) includes Taiwan in the distribution of the species, but gives no details, and no other record has been found in Murayama's papers from that period. No specimens have been seen from Taiwan, and its presence there needs to be confirmed.

Biology. The species has been recorded from species of *Acer* (Aceraceae), *Carpinus* (Betulaceae), *Fagus, Quercus* (Fagaceae), *Magnolia* (Magnoliaceae), *Abies* (Pinaceae) (Schedl 1975, Nobuchi 1980). Nobuchi (1980) states that it is most commonly found in beech forests in the North of Japan, and that it is considered to be of economic importance in beech logs. The associated ambrosia and other fungi have been investigated by Nakashima and co-workers (e.g. Nakashima 1989, Nakashima et al. 1987, 1992).

Scolytoplatypus superciliosus Tsai & Huang

Scolytoplatypus superciliosus Tsai & Huang 1965: 121 (chinese), 124 (english).

Taxonomy. Through the courtesy of Dr. S. L. Wood, we have been able to examine a male and a female paratype of this species. As noted by Tsai and Huang (1965), the species is closely related to *S. ruficauda*. These authors give distinguishing characters between the two species, but not all of these are valid, and it seems unlikely that Tsai and Huang examined the holotype of *S. ruficauda*, because they repeat

the errors included in Eggers' (1939) description of that species (see above). The ratio of pronotal length to width in *S. superciliosus* is 0.85 (male), 0.78 (female). In *S. ruficauda,* it varies from 0.83–0.88, and is not 1.0. In their table of comparisons, Tsai and Huang (1965) give the 'Elytra/pronotum' ratio as 1.3 in *S. superciliosus*, but this value refers to the ratio of elytral length to width, as given in the actual description. The true ratio of elytral to pronotal length in *S. superciliosus* is 1.75 (male), 1.79 (female). In *S. ruficauda*, the ratio varies from 1.65 – 2.00, and is not 1.5. The prosternum of the males of both species has a similar asymmetrical structure (compare Fig. 2A in the present paper, and Fig. 3c in Tsai and Huang (1965)), but the male of *S. superciliosus* has two brushes of long hairs arising above the eyes, and curving inwardly and ventrally towards the epistoma. These are absent in *S. ruficauda*, in which the male frons has hairs of subequal length over the whole of the surface. The two species are also separable by the lack of a deep fovea at the antero-ventral angle of the pronotum in *S. superciliosus*, a character not mentioned by Tsai and Huang (1965). The females of the two species are not easily distinguishable, and in the absence of associated males may not always be separable (see key to females).

Distribution. In addition to the type series from China (Sichuan), Yin and Huang (1981, 1988) record the species from China (Xizang). All records are from mountain regions at altitudes of 2000–2750 m.

Biology. The type series was collected from *Castanopsis fargesii* (Fagaceae). Yin and Huang (1981) also list *Machilus* sp. (Lauraceae) and *Quercus (Cyclobalanopsis)* (Fagaceae).

Scolytoplatypus tycon Blandford

Scolytoplatypus tycon Blandford 1893: 432.
Scolytoplatypus ussuriensis Berger & Kholodkovskii 1916: 4. Synonymy: Schedl, W. 1962: 376.

Taxonomy. We have examined male and female syntypes (BMNH), and other specimens in BMNH and RAB. The location of the types of *S. ussuriensis* is not known (Wood & Bright, 1992) and we accept the synonymy given by W. Schedl (1962). Both sexes were redescribed by Schedl (1975).

Distribution. China (Heilongjiang), Japan, Korea, Russia (Primorskii Terr., Khabarovsk Terr., Amursk Prov., Kurile Is., Sakhalin I.), Taiwan. This is clearly a northern species reaching its southern limit in Taiwan.

Biology. Numerous hosts in many different families are listed by Schedl (1975), Nobuchi (1980) and Krivolutskaja (1996). Nakashima et al. (1992) briefly characterise and figure the associated ambrosia fungus.

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References

Anderson, W. H. & Anderson, D. M. 1971. Type specimens in the Hans Eggers collection of scolytid beetles (Coleoptera). – Smithsonian Contributions to Zoology **94**: 1–38.

Axentjev, S. I. 1992. The scolytid genus Scolytoplatypus Blandf. [sic] (Coleoptera, Scolytidae) in Vietnam. pp. 190–195. *In* Systematics and ecology of insects of Vietnam. – Moscow: Nauka (in Russian).

Batra, L. R. 1967. Ambrosia fungi: a taxonomic revision and nutritional studies of some species. – Mycologia **59**: 976–1017.

Beaver, R. A. & Browne, F. G. 1975. The Scolytidae and Platypodidae (Coleoptera) of Thailand. A checklist with biological and zoogeographical notes. – Oriental Insects **9**: 283–311.

Beeson, C. F. C. 1922. The food plants of Indian forest insects. Part VII. Scolytidae. – Indian Forester **47**: 494–500.

– 1961. The ecology and control of the forest insects of India and the neighbouring countries. – Government of India, New Delhi. 767 pp.

Berger, V. M. & Kholodkovskii, N. A. 1916. On some points of biology and anatomy of the genus *Scolytoplatypus* Blandford. – Revue Russe d'Entomologie **16**: 1–7 (in Russian with English summary).

Blackman, M. W. 1943. New species of *Scolytoplatypus* Schaufuss from Malaysia (Coleoptera: Scolytoidea). – Proceedings of the Entomological Society of Washington **45**: 121–126.

Blandford, W. F. H. 1893. The Scolyto-platypini, a new subfamily of Scolytidae. – Transactions of the Entomological Society of London **1893**: 425–442.
– 1894. The rhynchophorous Coleoptera of Japan. Part III. Scolytidae. – Transactions of the Entomological Society of London **1894**: 53–141.
– 1896. Descriptions of new Scolytidae from the Indo-Malayan and Austro-Malayan regions. Transactions of the Entomological Society of London **1896**: 191–228.
– 1898. On some Oriental Scolytidae of economic importance, with descriptions of five new species. – Transactions of the Entomological Society of London **1898**: 423–430.
Bright, D. E. 1994. New records and new species of Scolytidae from Borneo (Coleoptera: Scolytidae). – Koleopterologische Rundschau **64**: 257–274.
Bright, D. E. & Skidmore, R. E. 1997. A catalog of Scolytidae and Platypodidae (Coleoptera), Supplement 1 (1990–1994). – NRC Research Press, Ottawa. 368 pp.
– 2002. A catalog of Scolytidae and Platypodidae (Coleoptera), Supplement 2 (1995–1999). – NRC Research Press, Ottawa. 523 pp.
Browne, F. G. 1949. Notes on Malayan Scolytoidea (Coleoptera) with descriptions of new species. – Annals and Magazine of Natural History, series 12, **1**(1948): 892–912.
– 1955. Synonymy and descriptions of some oriental Scolytidae and Platypodidae (Coleoptera). – Sarawak Museum Journal **8**: 487–497.
– 1961. The biology of Malayan Scolytidae and Platypodidae. – Malayan Forest Records **22**: 1–255.
– 1971. The African species of *Scolytoplatypus* Schaufuss (Coleoptera: Scolytidae). – Revue de Zoologie et de Botanique Africaines **84**: 111–129.
Cassar, S. & Blackwell, M. 1996. Convergent origins of ambrosia fungi. – Mycologia **88**: 596–601.
Choo, H. Y. & Woo, K. S. 1985. Taxonomic studies on the Platypodidae and Scolytidae (Coleoptera) from Korea. 1. Platypodidae, Slolytoplatypinae [sic] and Scolytinae. – Insecta Koreana **5**: 31–47.
Eggers, H. 1923. Neue indomalaysiche Borkenkäfer (Ipidae). – Zoologische Mededeelingen **7**: 129–220.
– 1927. Neue indomalayische Borkenkäfer (Ipidae). I. Nachtrag. – Treubia **9**: 390–408.
– 1935. Fünf neue Arten der Gattung *Scolytoplatypus* (Col. Ipidae) aus dem indomalayischen Gebiet. – Entomologische Blätter **31**: 240–245.
– 1939. Entomological results from the Swedish expedition 1934 to Burma and British India. Coleoptera: Ipidae, gesammelt von René Malaise. – Arkiv för Zoologi **31A** (4): 1–14.
Farrell, B. D., Sequeira, A. S., O'Meara, B. C., Normark, B. B., Chung, J. H. & Jordal, B. H. 2001. The evolution of agriculture in beetles (Curculionidae: Scolytinae and Platypodinae). – Evolution **55**: 2011–2027.
Gardner, J. C. M. 1934. Immature stages of Indian Coleoptera (15) (Scolytidae). – Indian Forest Records **20** (8): 1–17.
Gebhardt, H., Weiss, M. & Oberwinkler, F. 2005. *Dryadomyces amasae*: a nutritional fungus associated with ambrosia beetles of the genus *Amasa* (*Coleoptera*: *Curculionidae*, *Scolytinae*). – Mycological Research **109**: 687–696.
Hagedorn, M. 1904a. Ein neuer *Scolytoplatypus* aus Java. – Insekten-Börse **21**: 260–263.
– 1904b. Enumeratio Scolytidarum e Sikkim et Japan natarum Musei historico-naturalis Parisiorum, quas Dominus J. Harmand annis 1890 et 1901 collegit descriptionibus specierum novarum adjectis. – Bulletin du Muséum d'Histoire Naturelle, Paris **1904**: 122–126.
– 1905. Über *Scolytoplatypus* Schauf. – Insekten-Börse **1905**: 63–64.
Kalshoven, L. G. E. 1959. Studies on the biology of Indonesian Scolytoidea. 4. Data on the habits of Scolytidae. Second part. – Tijdschrift voor Entomologie **102**: 135–173.
Kinuura, H. 1995. Symbiotic fungi associated with ambrosia beetles. – Japanese Agricultural Research Quarterly **29**: 57–63.
Kinuura, H. & Hijii, N. 1991. Life history and reproduction of the ambrosia beetle, *Scolytoplatypus mikado* Blandford (Coleoptera, Scolytidae). – Japanese Journal of Entomology **59**: 763–773.
Kinuura, H., Hijii, N. & Kanamitsu, K. 1991. Symbiotic fungi associated with the ambrosia beetle, *Scolytoplatypus mikado* Blandford (Coleoptera: Scolytidae) – Succession of the flora and fungal phases in the gallery system and the mycangium in relation to the developmental stages of the beetle. – Journal of Japanese Forestry **73**: 197–205.
Krivolutskaja, G. O. 1996. 113. Fam. Scolytidae. pp. 312–373. *In* Lehr P. A. (Ed.). Key to the insects of the Russian Far East. Vol. III, Coleoptera, Part 3. – Vladivostok, Dal'Nauka (in Russian).
Malaise, R. 1945. Entomological results from the Swedish expedition 1934 to Burma and British India. Hymenoptera: Tenthredinoidea Part 1. Subfamily Tenthredinidae collected by René Malaise. – Opuscula Entomologica, Supplementum **4**: 1–288.
Murayama, J. 1928. Supplementary notes on the Platypodidae of Formosa II. – Journal of the College of Agriculture Hokkaido Imperial University **19**: 283–290.
– 1934. On the Ipidae (Coleoptera) from Formosa with special references to their food plants. – Journal of the Society of Tropical Agriculture Taihoku Imperial University **6**: 505–512.
– 1936. Notes sur les scolytides (Coléoptères) de Honshû et Kiushû, Japon. – Tenthredo **1**: 121–149.
Nakashima, T. 1989. Observation on the ambrosia fungus, *Ambrosiella* sp., growing in the gallery of *Scolytoplatypus shogun* Blandford (Coleoptera: Scolytidae) and on the concurrent damage of wood tissue. – Journal of the Faculty of Agriculture Hokkaido University **64**: 99–105.
Nakashima, T., Goto, C. & Iizuka, T. 1987. The primary and auxiliary ambrosia fungi isolated from the ambrosia beetles, *Scolytoplatypus shogun* Blandford (Coleoptera: Scolytidae) and *Crossotarsus niponicus* Blandford (Coleoptera: Platypodidae). – Journal of the Faculty of Agriculture Hokkaido University **63**: 185–208.
Nakashima, T., Otomo, T., Owada, Y. & Iizuka, T. 1992. SEM observations on growing conditions of the fungi in the galleries of several ambrosia beetles (Coleoptera: Scolytidae and Platypodidae). – Journal of the Faculty of Agriculture Hokkaido University **65**: 239–273.
Nobuchi, A. 1967. Formosan Scolytoidea (Coleoptera). – Bulletin of the Government Forest Experiment Station **207**: 11–30.
– 1980. The ambrosia beetles of the subfamily Scolytoplatypinae (Coleoptera, Scolytidae) in Japan. – Kontyû **48**: 42–52.
Rollins, F., Jones, K. G., Krokene, P., Solheim, H. & Blackwell, M. 2001. Phylogeny of asexual fungi associated with bark and ambrosia beetles. – Mycologia **93**: 991–996.
Saha, N. & Maiti, P. K. 1996. Insecta: Coleoptera: Scolytidae. pp. 775–866. *In* Director, Zoological Survey of India (Ed.). Fauna of West Bengal. Part 6B. (Insecta: Coleoptera). – Zoological Survey of India, Calcutta.
Sampson, F. W. 1921. Further notes on Platypodidae and Scolytidae collected by Mr. G. E. Bryant and others. – Annals and Magazine of Natural History, series 9, **7**: 25–37.
Schaufuss, C. F. C. 1891. Beitrag zur Käferfauna Madagascar's II. – Tijdschrift voor Entomologie **34**: 1–35.
Schedl, K. E. 1931. *Scolytoplatypus nanus* n. sp. – Entomologische Blätter **27**: 118–122.
– 1942. Interessante und neue Scolytiden und Platypodiden aus der australischen Region. – Mitteilungen der Münchener Entomologischen Gesellschaft **32**: 162–201.
– 1951. Fauna Indomalayensis I. – Tijdschrift voor Entomologie **93**: 41–98.

– 1952a. Zur Synonymie der Borkenkäfer, I. – Entomologische Blätter **47/48**: 158–164.
– 1952b. Formosan Scolytoidea I. – Philippine Journal of Science **81**: 61–65.
– 1954. Fauna Indomalayensis, IV. – Philippine Journal of Science **83**: 137–159.
– 1962. Borken- und Ambrosiakäfer aus Hinterindien. – Verhandlungen der Naturforschenden Gesellschaft in Basel **73**: 184–193.
– 1966. Check list of the Scolytidae and Platypodidae from the Philippine islands. – Entomologische Abhandlungen Staatliches Museum für Tierkunde in Dresden **35**: 1–122.
– 1975. Die Unterfamilie Scolytoplatypinae (Coleoptera, Scolytidae). – Entomologische Abhandlungen Staatliches Museum für Tierkunde in Dresden **40**: 199–267.
– 1979. Die Typen der Sammlung Schedl Familie Scolytidae (Coleoptera). – Kataloge der Wissenschaftlichen Sammlungen des Naturhistorischen Museums in Wien, Entomologie **3**(2): 1–286.
Schedl, W. 1962. Ein Beitrag zur Kenntnis der Pilzübertragungsweise bei xylomycetophagen Scolytiden. – Sitzungsberichte der Österreichischen Akademie der Wissenschaften Wien, Mathematische-naturwissenschaftliche Klasse, Abteilung 1 **171**: 363–387.
Stebbing, E. P. 1914. Indian forest insects of economic importance. Coleoptera. – Eyre & Spottiswoode, London. 648 pp.
Strohmeyer, H. 1908. Beschreibung zweier neuer Borkenkäfer (Ipidae) aus dem westlichen Himalaya und des *Scolytoplatypus raja* Blandford. – Entomologisches Wochenblatt (Insekten-Börse) **25**: 161–164.
Tsai, P.-H. & Huang, F.-S. 1965. Two new species of the genus *Scolytoplatypus* Schauf. from China. – Acta Zootaxonomica Sinica **2**: 121–125.
Von Arx, J. A. & Hennebert, G. L. 1965. Deux champignons ambrosia. – Mycopathologia et Mycologia Applicata **25**: 309–315.
Wood, S. L. 1989. Nomenclatural changes and new species of Scolytidae (Coleoptera), part IV. – Great Basin Naturalist **49**: 167–185.
– 1992. Nomenclatural changes and new species of Platypodidae and Scolytidae (Coleoptera), part II. – Great Basin Naturalist **52**: 78–88.
Wood, S. L. & Bright, D. E. 1992. A catalog of the Scolytidae and Platypodidae (Coleoptera), Part 2: Taxonomic index. – Great Basin Naturalist Memoirs **13**: 1–1553.
Yanovskij, V. M. 1999. Annotated list of Scolytids (Coleoptera, Scolytidae) of North Asia. – Entomological Review **79**: 493–522.
Yin, H.-F. & Huang, F.-S. 1981. Coleoptera: Scolytidae. – Insects of Xizang **1**: 555–570.
– 1988. Coleoptera: Scolytidae, pp. 369–376. *In* Huang, F.-S. (Ed.). Insects of Mt Namjagbarawa region of Xizang, Science Press, Beijing.

