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The genus *Naddia* in Borneo (Coleoptera: Staphylinidae: Staphylininae)

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Abstract: Thirteen new species of *Naddia* FAUVEL: *N. argentifer* nov.sp., *N. asetosa* nov.sp., *N. aureomontis* nov.sp., *N. barbarossa* nov. sp., *N. brendelli* nov.sp., *N. calcicola* nov.sp., *N. eleanorae* nov.sp., *N. germana* nov.sp., *N. iacobi* nov.sp., *N. ignipennis* nov.sp., *N. limbifer* nov.sp., *N. oxoniensis* nov.sp. and *N. sarahae* nov.sp. are described from Borneo. A key and illustrations are given for identification of the fifteen species of *Naddia* now known from the island.

Key words: Staphylinidae, Staphylininae, *Naddia*, Borneo, new species, key.

Introduction

Recent field work in Borneo has revealed many large species belonging to genera of the subfamily Staphylininae that are usually quite rare. These include, among others, 19 species of *Paratesba* CAMERON (BORDONI 2002, 2011, 2012, 2013), 11 species of *Algon* SHARP (SCHILLHAMMER 2006, 2008), 9 species of *Platydracus* THOMSON (Rougemont in press), 1 species of *Saniderus* FAUVEL (Rougemont, in press), and the 15 species of *Naddia* FAUVEL described in this paper. As far as is known, all but possibly one (*Naddia*) of these fifty-five species are endemic in Borneo.

The generic characters of *Naddia* have been re-described elsewhere (CAMERON 1932, SMETANA & DAVIES 2000, the latter reproduced in YANG & ZHOU 2010). Species of *Naddia* are easily recognised and distinguished from the otherwise similar genus *Platydracus* by the shape of the head with its salient postero-lateral lobes and consequently deep occipital emargination. Previous studies (SMETANA & DAVIES 2000; YANG & ZHOU 2010) have concluded that in *Naddia* the eyes are shorter than the temples; in two Bornean species (*N. iacobi* nov.sp., *N. aeneipennis* CAM.) the eyes are longer than the temples. Females are on average slightly larger than males. The pro-tarsi are very strongly dilated in both sexes in all but two Bornean species: *N. asetosa* and *N. aeneipennis*.

Y. Shibata, the first to illustrate the aedoeagus of species of this genus (1979, 1994), assumed that the aedoeagi of two of the three species he described from Taiwan were devoid of parameres, but SCHILLHAMMER (1996) and YANG & ZHOU (2010) later showed that in some species the paramere is atrophied and reduced to a pair of separate tiny elongate appendages (*N. chinensis* BNH., *N. wielobnowskiae* SCHILLH.), or to a single,

scarcely visible often short and very broad lamella adpressed to the median lobe, and that may only be recognisable as being a paramere by the presence of fine pale setae borne on its apex. The broad, adpressed lamella type of paramere is often invisible in lateral view and sometimes difficult to discern even in ventral view. Some *Naddia* (e.g. *N. hainanensis* YANG & ZHOU) have the more usual type of staphylinine paramere: a single narrow blade bearing terminal setae but no sensory peg setae, articulated at its base against the ventral face of the median lobe, albeit very small (e.g. *N. monticola* SHIBATA, *N. aeneipennis* CAM.). The known aedoeagi of all species in Borneo except *N. aeneipennis* are of the cryptic, adpressed lamella kind, although the shape and size of the paramere may vary. The tubular middle portion of the median lobe of *Naddia* species may contract in diameter upon drying, thus altering the appearance of the lobe and the relative size and shape of the spatulate apex from one specimen to another. A character of the aedeagus of *Naddia* that has not hitherto been mentioned is what I here term the "basal sclerite", because it encloses the basal bulb; this sclerite ends on the dorsum just above the basal bulb, but is produced along the ventral surface of the median lobe; this ventral extension is usually visible as an elongate, slightly protruberant part of the ventral surface of the median lobe, often darker in colour than the surrounding integument, and is apically rounded, truncate, bi-lobed or bifurcate in different species, thus providing a diagnostic character. This structure might easily be mistaken for the adpressed paramere; the true paramere is a much shorter, usually broadly transverse structure, paler than the ventral blade, and bearing fine terminal sensory setae (not always visible); it is superposed on the base of the extension of the basal sclerite, as is clearly seen in fig. 6al. This "basal sclerite" is not analogous to the structures which have variously been termed "ventral blade" or "parameroid lobe" in many tribes of Paederinae, or "pseudoparameres" in Xantholinini (Bordoni, in prep.). The latter are structures that have developed through modifications of the ventral sclerite of the median lobe to replace and function as the true paramere(s) which for unknown reasons have been lost in the evolution of certain lineages.

Since it seems to be of diagnostic value I describe it whenever possible (i.e. when it is clearly visible) separately from the paramere.

Most Bornean species (*N. aeneipennis* CAM. *N. borneensis* CAM., *N. barbarossa* nov.sp., *N. iacobi* nov.sp., *N. germana* nov.sp., *N. brendelli* nov.sp., *N. oxoniensis* nov.sp., *N. calcicola* nov.sp., *N. sarahae* nov.sp.) have a similar modification of the male 7th sternite: a broad, shallow, semicircular or arcuate postero-median depression, deeper at the anterior end and differently punctured and micro-sculptured than the surrounding surfaces, and fringed on its anterior border by an arc of very long, fine semi-erect setae (figs 4c, 10c, 12c); these setae may all become detached, for instance when torn off from a specimen glued to a card when the beetle is removed without thoroughly dissolving the glue (cf. fig. 12c). This secondary sexual character is the "modification of sternite VII" referred to in the key and descriptions below. One species, *N. aeneipennis* CAM., has a remarkable modification of the male 8th tergite; sexual modification of the 8th tergite is well known in genera of Aleocharinae, but to my knowledge has not hitherto been reported in the Staphylininae.

Determination of the species with black elytra is difficult without available comparison material; the most useful distinguishing features are the size, relative coarseness of the sculpture, the patterns of pubescence on the elytra and especially of coloured pubescence

on the abdominal tergites, colour of the terminal segments, and often the aedoeagus and the shape of antennomeres.

Almost all the specimens studied here were obtained in flight interception traps. In continental Asia I have taken *Naddia* spp. by sifting forest floor litter. None were taken in the many dung-baited pitfall traps set by Darren Mann in the Danum valley.

Material and methods

This study is based essentially on a very rich body of material from Sabah taken in flight interception traps in the Danum valley conservation area in 2004-5 by E. Slade, J. Villanueva and D. Mann, and in 2012 in riverine gallery forest in Tawau by C. Gray, housed in the Oxford University Museum of Natural History, and on material from collections made for the natural history museum in London in Gunung Mulu national park, Sarawak in 1978 and in central Kalimantan in 1981, plus a few specimens housed in the Vienna and Geneva natural history museums, and material gathered by the author in Sabah and Sarawak.

The photographs of whole insects and of the aedoeagi were made in the Oxford University Museum of Natural History's laboratory using a Leica DFC 490 digital camera linked to a Leica M165C microscope and Helicon Focus software producing composite stacked focus images. Descriptions and measurements were made using a VMZ 1x-4x stereo microscope with a mm eye-piece micrometer; measurements are given in mm.

The term "fore-body" is used to mean the head, pronotum and elytra combined, measured from the anterior margin of the clypeus to the posterior margins of the elytra. The length of elytra is measured along their greatest length, from the anterior to posterior margins of one elytron. Two measurements are made of the length of the head: the first ("length of head") from front of clypeus to the base in the median axis, the second ("total length of head") from front of clypeus to an imaginary line drawn between the posterior margins of the postero-lateral lobes; this gives an approximate measurement of the size of those lobes, or alternatively of the depth of the occipital emargination. The "breadth of head" does not include the eyes.

"Tergite III" is the first exposed abdominal tergite. The colour patterns are crucial for recognition of most species. In the past authors have often not made clear whether the colour, in particular of the elytra, is that of the integument or of the pubescence (for instance in the cases of *Naddia aeneipennis* CAMERON, and *Platydracus aeneipennis* CAMERON, also from Borneo, the "aeneous" (= brassy) colour of the elytra is that of the pubescence, the integument being black; in *Naddia asetosa*, described below both the pubescence and the major part of the integument are brassy). For this reason I describe them separately, first the colour of the integument, followed by that of the pubescence. The diagnostic characters of each species are presented in the following order: size, eyes, antennae and any other relevant external features, followed by colour, sculpture, and lastly the male sexual characters.

This paper does not address the phylogeny of taxa, but it may be noted that the Bornean species appear to belong to three different phyletic lines: 1. *N. asetosa* (if it is indeed a *Naddia*); 2. *N. aeneipennis*, characterised by its freely articulated paramere, narrow pro-tarsi and the unique modification of the male 8th abdominal

segment, and 3. all the other species, which have broad protarsi and sessile adpressed parameres. The sole purpose of the paper is to make the Bornean species known and to enable their identification.

Abbreviations and acronyms used on data labels and in this article are as follows:

B.R.L..... Borneo Rainforest Lodge, Danum valley, Sabah

F.I.T. Flight interception trap

Collections:

CRO Rougemont collection, Oxford

LL Landesmuseum, Linz

MHNG Natural History Museum, Geneva

NHML..... Natural History Museum, London

NHMW Natural History Museum, Vienna

OUMNH Oxford University Museum of Natural History, Oxford

Key to the Bornean species of *Naddia*

(To fully appreciate the patterns of pubescence it is sometimes necessary to shift the angle of illumination of specimens under the microscope to different positions.)

- 1 Temples convergent towards base; sides of head, elytra and pleurites of the genital segment devoid of large setae in addition to the fine pubescence; penultimate antennomeres as long as wide, not evidently asymmetrical; puncturation finer; posterior 2/3rd of elytra with a strong brassy reflex, the entire disc bearing long coppery pubescence; length 12-13 mm. Habitus: fig *asetosa* nov.sp.
- Temples parallel-sided or dilated towards base: sides of head, elytra and pleurites of the genital segment with several large setae in addition to pubescence; penultimate antennomeres distinctly transverse and usually more or less asymmetrical; puncturation coarse3
- 3 Elytra red or rufo-testaceous4
- Elytra black, fuscous, or black with a (sometimes faint) metallic tinge6
- 4 Pronotum and abdominal tergite III black; temples sub-parallel; elytra red5
- Pronotum reddish brown; abdominal tergite III entirely rufo-testaceous; temples dilated towards base; elytra rufo-testaceous; male unknown *germana* ab.?
- 5 Eyes longer than temples seen in dorsal view; puncturation of head and pronotum coarser and sparser, the surface therefore more shiny; temples and antero-lateral areas of pronotum with only a few scattered pale brassy setae. Smaller insect (ca.12 mm) Habitus: fig. 2; aedoeagus: figs 2a, 2al *iacobi* nov.sp.
- Eyes shorter than temples seen in dorsal view; puncturation of head and pronotum finer and denser, the surface therefore duller; temples and antero-lateral areas of pronotum with a conspicuous patch of pale brassy setae. Larger insect (ca. 15 mm).Habitus: fig. 3; aedoeagus: fig. 3a, 3al..... *germana* nov.sp.
- 6 Elytra with a distinct greenish brassy reflex; small species (10-12mm); diameter of eyes in dorsal view greater than length of temples; pronotum with an entire shiny impunctate mid-longitudinal axis. Habitus: fig 4; male tergite VIII (figs 4b, 4bl) with a characteristic modification; aedoeagus: ig. 4a, 4al, the paramere elongate, freely articulated..... *aeneipennis* CAMERON
- Elytra black or fuscous, sometimes slightly rufescent behind humeral angles, or with a faint bluish tinge; paramere short, adpressed11

- 7 Posterior margins of elytra with a conspicuous dense fringe of pale pubescence; pronotum without trace of an impunctate mid-longitudinal line; tergite VIII entirely reddish-brown; large species (19-22 mm); male sternite VII unmodified. Habitus: fig. 5; aedeagus: figs 5a, 5al *limbifer* nov.sp.
- Posterior margins of elytra with sparse pale and/or dark pubescence, but not forming a conspicuous entire fringe 13
- 8 Head and pronotum shiny; frons broadly impunctate, very shiny with only scattered smaller punctures, the vertex with an impunctate mid-longitudinal band stretching from impunctate area of frons almost to base; pronotum with a broad, entire impunctate mid-longitudinal band, the punctural interstices on sides flat, shiny, in parts broader than diameter of punctures; disc of elytra each with a large conspicuous dense fascia of long coppery-red pubescence, and sparser, pale brassy pubescence on humeral angles and lateral parts; large species (18-20 mm). Habitus: fig. 6; male sternite VII unmodified; aedeagus: figs 6a, 6al *ignipennis* nov.sp.
- Head and pronotum duller, head entirely rugosely punctate; pronotum rugosely punctate, at most with a very narrow, interrupted trace of a mid-longitudinal line 9
- 9 Small species (10-12 mm); elytra fuscous, slightly rufescent just behind humeral angles, with sparse long coppery red pubescence covering most of anterior portions of elytra, sometimes extending almost to posterior margins; male sternite VII modified: Habitus: fig.: 7; aedeagus: figs 7a, 7al *barbarossa* nov.sp.
- Larger species, (14-22 mm) 10
- 10 Elytra with a bluish tinge, contrasting with black pronotum; terminal abdominal tergites entirely black; length: ca. 17 mm; male sternite VII unmodified. Habitus: fig. 8; aedeagus: figs 8a, 8al *eleanorae* nov.sp.
- Elytra black, concolorous with pronotum, excepting colour of pubescence 11
- 11 Large species, ca. 21 mm; head at widest point (just in front of posterior angles) as wide as elytra (3.8 mm); pronotum with very coarse long vermiculate rugae; elytra depressed, with denser but scattered long pale pubescence laterally, but without distinct fascia of brassy or coppery pubescence; abdominal urites VII and VIII entirely black. Habitus: fig. 9 *aureomontis* nov.sp.
- Species either comparably large (19-21 mm), but elytra slightly wider than head, pronotum more homogeneously punctate, without very coarse long vermiculate rugae, and elytra convex, with a conspicuous arcuate line of brassy and coppery pubescence (*N. sarahae* nov.sp.), or smaller species (14-17 mm) with elytra very distinctly wider than head 12
- 12 Large species (19-29 mm), head ca. 3.5 mm. Elytra with a shallowly arcuate line of brassy pubescence fringed on inner side with coppery hairs extending from humeral angle, curving inward towards suture and then outwards towards but not reaching postero-lateral angle; sculpture of area between this line and suture obscured by short and dense black pubescence, sculpture laterad of the line coarse, evident and almost glabrous apart from longer sparse black pubescence; posterior 1/3rd of tergite VII and tergite VIII rufescent; male: sternite VII modified. Habitus: figs 15, 15al *sarahae* nov.sp.
- Smaller species, 14-17 mm long. Elytra with a diffuse patch of coppery pubescence extending as far as 1/3rd or 1/2 the length of elytron, or with scattered silvery pubescence behind humeral angles; sculpture in juxtatural areas not obscured by dense black pubescence, not differing in appearance from sculpture of lateral parts of disc; tergites VII and VIII entirely black (*N. borneensis*, *N. calcicola*, *N. argentifer*) or posterior margin of VII and whole of VIII rufescent 13
- 13 Elytra with a diffuse patch of coppery pubescence behind humeral angles; pubescence of lateral parts of tergites III-V and VII golden or coppery; male sternite VII modified .. 14
- Elytra with scattered silvery pubescence; pubescence of lateral parts of tergites III-V and VII silvery; male: sternite VII unmodified; sternite VIII with a very small, shallow emargination; length 16-17 mm. Habitus: fig. 14; aedeagus: figs 14a, 14al *argentifer* nov.sp.

- 14 Smaller species (ca. 14 mm); puncturation of head coarser; male sternite VII (fig. 10c); sternite VIII: fig. 10d; aedeagus: figs 10a, 10al. Habitus: fig. 10.....*borneensis* CAMERON
- Larger species (16-17 mm); puncturation of head finer; entire dorsal surface of forebody dull; patches of brassy pubescence on anterior parts of elytra monochrome, extending to inner 1/3rd of elytron; sculpture of abdominal tergites dull, dense, confused..... 15
- 15 Entire dorsal surface duller; brassy pubescence on anterior 2/3rds monochrome, brassy, not mixed with coppery red hairs, often extending to inner half of elytron; sculpture of tergites not shiny-sericeous, more confused..... 16
- Entire dorsal surface more shiny; brassy pubescence on anterior 2/3rds of elytra mixed with coppery red hairs, not extending to inner half of elytron; sculpture of tergites shiny-sericeous, with sparse large punctures and clearly defined micro-punctures. Habitus: fig. 13; aedeagus: figs 13a, 13al.....*calcicola* nov.sp.
- 16 Puncturation of head, pronotum and lateral of elytra coarser; pronotum longer (2.9) and narrower; patch of brassy pubescence on elytra less extensive; tergite VII shiny, with coarser and sparser punctures. Habitus: fig. 11; aedeagus: figs 11a, 11 al.....*brendelli* nov.sp.
- Puncturation of head, pronotum and lateral half of elytra finer, pronotum shorter (2.7) and less narrowed posteriorly; patch of brassy pubescence more extensive; tergite VII duller, with finer and denser punctures. Habitus: fig. 12; aedeagus: figs 12a, 12al*oxoniensis* nov.sp.

Material studied

Naddia asetosa nov.sp. (Fig. 1)

♀ Holotype: INDONESIA, Borneo, Kalimantan Tengah, Busang/Rekut confl. 0°03'S 113°59'E, Flight Intercept FIT 6, Brendell/Mendel, August 2001, 'Barito Ulu 2001', BMNH(E) 2001-191 (in NHML).

This species has the deep occipital emargination and salient postero-lateral lobes of the head characteristic of *Naddia*, but differs notably in the following respects:

- the sides of the head, instead of being parallel or expanded posteriorly as in *Naddia*, are retracted between the posterior margins of eyes and the postero-lateral angles, giving the insect a vague resemblance to some members of the *Eucibdelus* lineage;
- the antennae are long, with all segments symmetrical, and except for the second, at least as long as broad, the terminal antennomeres not transverse, asymmetrical, flattened or sub-serrate as in most other *Naddia*;
- the puncturation of head and pronotum is finer than in other *Naddia* species;
- the sides of head, elytra and pleurites of the genital segment are totally devoid of long setae, which are always present in other *Naddia*, (among the fine puncturation there are no larger punctures present from which setae might have broken off).

These differences suggest that a new genus should be described to accommodate this species; however given the present uncertain knowledge of phylogenetic lineages in the Staphylinini, and the absence of males, it seems more prudent to describe it, at least provisionally, as belonging to *Naddia*. As the specimen is glued to the card with a cement that does not seem to be soluble in water or ethyl-acetate, I am unable to examine the ventral structures for fear of damaging this unique specimen.

Description: Proportions of holotype: length: 13 mm; length of head: 1.7; total length of head: 2.0; maximum breadth of head: 2.0; breadth of head in front of postero-lateral angles: 1.8; length of eye: 0.8; length of temples: 1.00; length of antenna: 3.5; length of pronotum: 2.2; breadth of pronotum: 2.2; length of elytron: 2.9; breadth of elytra: 2.8. Habitus: fig. 1.

Temples retracted towards postero-lateral angles. Labrum divided into two separate lobes, each lobe bearing six terminal black setae; both mandibles with a broad and long single molar, the right one slightly but distinctly bicuspid; palpi as in most *Naddia* spp., the terminal segments shorter than in *Platydracus* and more inflated. Antennae almost filiform, all antennomeres elongate, antennomeres 7-10 less so, almost quadrate, all antennomeres symmetrical. Protarsi dilated, though much less so than in other species.

Integument of entire body black except posterior 2/3rd of elytra brassy metallic. Legs black. Head with a few short brassy setae, more conspicuous on temples; sides of pronotum with some sparse pale brassy pubescence; pubescence of scutellum black; elytra entirely covered with moderately dense long golden pubescence, except narrowly along anterior margin; abdominal tergites V-VII with a pair of narrow antero-lateral fasciae of short silvery pubescence; on tergite VII the two fasciae meeting in the centre to form a single transverse band.

Puncturation of head close, sub-rugose, composed of umbilicate punctures on posterior 1/3rd, the interstices coalescing to form long longitudinal rugae in anterior 2/3rd; puncturation of pronotum similar to that of posterior 1/3rd of head; the mid-longitudinal band interrupted near anterior and posterior margins and in the middle, leaving only two narrow elongate shiny calluses; puncturation of elytra very fine and dense.

Male: unknown

***Naddia iacobi* nov.sp. (Figs 2, 2a, 2al)**

♂ Holotype: SARAWAK, 2nd Division, River Skrang, XI.1976, G. de Rougemont (in CRO)

Additional material: 1 ex.: SARAWAK, 4th Division, Gn. Mulu NP, pitfall-trap, fish bait, MD forest, 500-800 m, *Naddia drescheri* Cam. P.M. Hammond det. 1979 (in NHML); 1 ♀: BRUNEI, ii-iii.1992, E115 7° N4 34' Kuala Belalong FSC, Ground Malaise trap, N. Mawdsley coll. BMNH(E) 1991-173, *Naddia drescheri* Cam. det. R.G. Booth 2009 (in NHML); 4 ♀: INDONESIA, Borneo, Kalimantan Tengah, Busang/Rekut confl. 0°03'S 113°59'E, Flight Intercept FIT 7, Brendell/Mendel, August 2001, 'Barito Ulu 2001', BMNH(E) 2001-191 (in NHML).

Description: Proportions of holotype: length: 12 mm; length of head: 1.8; total length of head: 2.0; breadth of head: 2.15; length of eye: 0.8; length of temple: 0.7; length of antenna: 2.4; length of pronotum: 2.1; breadth of pronotum: 2.1; length of elytron: 2.5; breadth of elytra: 2.7. Habitus: fig. 2.

Temples dilated posteriorly; eyes very large and prominent, their diameter in dorsal view greater than length of temples. Antennomeres 1-3 elongate; 3-4 globose, 7-10 increasingly transverse but not asymmetrical.

Integument of head, pronotum and abdomen black, that of elytra rufo-testaceous; genital segment brown; palpi reddish, antennae fuscous; legs rufo-testaceous. Head and pronotum with a few scattered pale hairs and some dark setae on the sides; pubescence of scutellum very dense, deep black elytra entirely covered with rather dense, pale brassy pubescence, the sides with a few dark setae; pubescence of abdominal tergites black; tergite III in addition with longer, sparse golden pubescence on entire surface; tergite IV

with a narrow lateral fasciae of golden pubescence extending the entire length of tergite; tergite V with only a small patch of such pubescence in antero-lateral corners; tergite VII with a pair of large patches of very bright golden pubescence, the hairs radiating outward from antero-median corner. Legs with pale pubescence and setae.

Sculpture of head very coarse, consisting of large umbilicate punctures near posterior margins, the interstices coalescing to form long parallel longitudinal rugae in front of this, so that individual punctures are no longer visible anteriorly; sculpture of pronotum very coarse, consisting of large close umbilicate punctures on entire surface, leaving only fragments of a mid-longitudinal band appearing as narrow shiny callosities; puncturation of elytra consisting of shallow umbilicate punctures, smaller than on head and pronotum, the interstices as or almost as wide as diameter of punctures and wrinkled, so that the surface is not very shiny; puncturation of abdominal tergites fine and dense near anterior margins, coarser and much sparser posteriorly.

Male: sternite VII modified, the sculpture of depression much finer and denser than that of rest of sternite; in the specimen figured the anterior margin of depression lacks the anterior fringe of long setae (probably detached and lost); sternite VIII with a small, very shallow emargination; aedoeagus: figs 2a, 2al, the median lobe in ventral view very different from that of *N. germana*, longer and narrower; basal sclerite narrowed to an obtuse point at apex; paramere very short, with an apico-median notch.

The specimens from Sarawak and Brunei in the NHML were determined as *Naddia drescheri* CAMERON, 1937, a species described on the basis of an unspecified number of females from Java. I compared the Bornean material with the paratype of *N. drescheri* in the NHML and found them to belong to a different species (*N. iacobi* nov.sp.). The two species are very similar, including the size of the eyes (fractionally smaller in *N. drescheri*, about as long as temples) and sculpture of the fore-body, but in *N. drescheri* the sculpture and coloured pubescence of the abdominal tergites are different: in *N. drescheri* the puncturation of all tergites is finer and sparser, the surface therefore more shiny; tergite VII has very strong and evident transverse micro-striation on its entire surface (micro-sculpture reduced to a few scattered micro-punctures in *N. iacobi*); the coloured pubescence of tergites is disposed in the same pattern, but is silvery in *N. drescheri* instead of golden-brassy. These differences may appear to be slight and inconclusive, but I am confident of the validity of the new species, and am convinced that *N. drescheri* does not occur in Borneo.

The female specimens from Kalimantan here attributed to *N. iacobi* are a little larger and more finely punctured than the type and the exx. from Sarawak and Brunei; in this respect they are somewhat intermediate between *N. iacobi* and *N. germana* nov.sp., but much closer to the former, including in the ratio of length of eyes/temples.

For comparison with *N. germana* nov.sp. and comment on the distribution of the two species see below, description of *N. germana* nov.sp.

Derivation of specific epithet: named in honour of James Brooke, first Rajah of Sarawak, who was A.R. Wallace's host, not only in his country but in his houses, during the naturalist's first scientific expedition to Borneo in 1854-56.

***Naddia germana* nov.sp. (Figs 3, 3a, 3al)**

♂ Holotype, 1♂ & 1♀ paratype: SABAH: Danum Valley, B.R.L., f.i.t., 14-16.II.2007, G. de Rougemont (in CRO); 1♂ paratype: MALAYSIA, Borneo, Sabah, Lahad Datu, Ulu Segama

Forest Reserve, Danum Valley Conservation area, ca. 10 km from Danum Valley F.C., Borneo Rainforest Lodge area Plot 4, 12.III.2004 F.I.Trap, ca. N05°02 E117°45.55 Leg. E. Slade + J. Villanueva OUMNH-2005-062, coll. E. Slade, Oxford University Museum of Natural History (in OUMNH); 3♂♂ & 1♀ paratypes: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley F.C., 04°57.9'N 117°48.1'E 200 m alt. 1.xi.2005, 1° Forest, coll. Mann, Slade & Villanueva, Flight Interception Trap Lowland, mixed Dipterocarp Forest. West Trail area. OUMNH-2006-051 (in OUMNH; 2 paratypes in LL); 1♂ & 1♀ paratypes: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Malua 1 Log area, 05°05.644'N 117°40.759'E, iii.2005, FIT, 2° Forest, coll. E. Slade & J. Villanueva, Flight Interception Trap, High intensity logged dipterocarp forest Yayasan Sabah Logging Conc. Malua-Bilong boundary, OUMNH-2005-062 (in OUMNH); 1♀ paratype: MALAYSIA, Borneo, Sabah, Ulu Segama Forest Reserve Danum Valley Conservation area, ca. 21 km from Danum Valley F.C., Near Manua Biodiversity Experiment, 30.III.2005 F.I.Trap, secondary forest, ca. N05°73 E117°37.61 Malua 2 Plot 1 Leg. E. Slade + J. Villanueva, OUMNH-2005-062, Oxford University Museum of Natural History (in OUMNH); 2♀♀ paratypes: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt., xi.2005, 1° Forest, FIT, coll. Mann, Slade & Villanueva, OUMNH-2006-051; 1♂ paratype: MALAYSIA, Borneo, Sabah, Lahad Datu, Ulu Segama Forest Reserve, Danum Valley Conservation area, 8.III.2005 F.I.Trap Primary forest W from ca. N04°57.93'N E117°41.15' Plot 2, Leg. E. Slade & J. Villanueva (RCO).

A d d i t i o n a l m a t e r i a l : 3♂♂ & 2♀♀: Malaysia, Sabah, Batu Punggul Resort env. 24.VI.1996, 11c, vegetation debris and forest floor litter accumulated around large trees near river (3 exx. in MHNG; 2 exx. in NHMW); 2 exx.: Malaysia, Sabah, ca. 25 km S Sapulut, Batu Punggul limestone pinnacle env., sifting, 24.5.2001, J. F. Kočiam (sic.) lgt. (in NHMW); 4 exx.: Malaysia, Sabah, ca. 25 km S Sapulut, Batu Punggul env., primary forest, intercept (sic.) trap, 23.5.2001, J. F. Kočiam (sic.) lgt. (in NHMW); 1♀: SABAH, Quoin Cocoa Estate, Block 93 nr. Tawau, xii.1981, J. Waage (in NHML); 1♀: 1♀: fit 3/3/2 Malaysia, Sabah, Sandakan, S. Lokan (LF) Sept. 96, AYC Chung (in NHML); 2 exx.: MALAYSIA, Sabah, Sandakan Div., Maliau Basin Conservation Area, N 4°44.53' E 116°58.36', 26-27.iii.2011, 229m amsl., coll. D.J. Mann; 1 ex: MALAYSIA, Sabah, Sandakan Div., Maliau Basin Conservation Area, Nature Trail N4 44.609' E116 58.416', 23.iii.2011, 220m amsl., coll. Mann (all in OUMNH); 2 exx.: MALAYSIA, Sabah, Tawau 10-16.xi.2012, 4.70N 117.53E, 250 m alt., Coll. C.L. Gray, OUMNH-2013-450. SAFE project area, F.I.T. Riparian forest strip in oil palm (in OUMNH).

D e s c r i p t i o n : Proportions (of a male from Danum valley): length: 15 mm; length of head: 2.0; total length of head: 2.5; breadth of head: 2.8; length of eye: 0.9; length of temples: 1.1; length of antenna: 2.4; length of pronotum: 2.7; breadth of pronotum: 2.6; length of elytron: 3.1; breadth of elytra: 3.25. Habitus: fig. 3.

Eyes smaller than in *N. iacobi*, shorter than temples. Antennae as in *N. iacobi*.

Colouration of integument as in *N. iacobi*. Antennae darker than in *N. iacobi*, frankly black; legs rufo-testaceous. Head, pronotum and abdomen likewise with black pubescence, but head also with sparse, fine yellowish pubescence covering most of base, and conspicuous patches of brassy pubescence on temples; pubescence of elytra as in *N. iacobi*; abdominal tergites III-VI with dense short black pubescence, without any brassy pubescence; the two large fasciae of abdominal tergite VII of *N. iacobi* are fused in *N. germana* to occupy the entire anterior 2/3rd of the segment, the hairs radiating in all directions from two centres; the pubescence is paler, bright brassy, not golden as in *N. iacobi*.

Sculpture of head and pronotum as in *N. iacobi* but conspicuously finer and denser; mid-longitudinal band entire or almost so, showing as a long narrow shiny line; puncturation of elytra as in *N. iacobi* but the shallow umbilicate punctures much more widely spaced, the interstices even more deeply and closely wrinkled, so that the surface appears duller; puncturation of abdominal tergites much finer, not noticeably sparser on posterior part of each tergite.

Male: sternite VII modified; sternite VIII with a small, very shallow emargination, as in *N. iacobi*; aedeagus: figs 3a, 3al, the median lobe broader and much shorter than in *N. drescheri*, with more broadly rounded apex; ventral extension of basal sclerite broad, about 2 ½ times as long as wide, the apex sub-truncate, a little concave, with acute anterior angles; paramere adpressed, very broad and short but more salient and evident than in *N. drescheri*, the apical margin slightly concave.

Variability: a single ♀ from SABAH: Danum Valley, B.R.L, f.i.t., 14-16.II.2007, G. de Rougemont (in RCO) ("*germana* ab.?" in key above) attributed here to this species differs from the types in colour and in the shape of the head, as described in the key, and is somewhat larger: proportions: length: 15 mm; length of head: 2.5; total length of head: 2.8; breadth of head: 3.00; length of pronotum: 2.8; breadth of pronotum: 2.6; length of elytron: 3.2; breadth of elytra: 3.5. These differences make it appear to belong to a different species, but as a single male (of typical proportions) of *N. germana* from the same area has a slightly rufescent pronotum, it is thought more prudent to provisionally regard this female as simply an aberrant individual of *N. germana*.

This species is so far only recorded from the north (Sabah), whereas the similar *N. iacobi* nov.sp. occupies the west of the Island (Sarawak and Brunei, and probably central Kalimantan on the other side of the dividing range of mountains between Sarawak and Kalimantan. As far as is known the two species are allopatric.

***Naddia aeneipennis* CAMERON (Figs, 4, 4a, 4al, 4b, 4bl, 4c)**

Naddia aeneipennis CAMERON 1930: 166.

Naddia aeneipennis HAMMOND 1984: 206.

Naddia aeneipennis HERMAN 2001: 3353.

♂ Holotype: N. BORNEO, BETTOTAN NR. SANDAKAN, Aug. 22nd 1937. *Naddia aeneipennis* Cam. / Type / M. Cameron Bequest BM 1955-147 (in Natural History Museum, London).

A d d i t i o n a l m a t e r i a l : 1♂: SABAH, Quoin Cocoa Estate, Block 93 nr. Tawau, xii.1981, J. Waage, pitfall trap. *Naddia aeneipennis* Cam. Det. A. Smetana 1990 (in NHML); 9 exx.: INDONESIA, Borneo, Kalimantan Tengah, Busang/Rekut confl. 0°03'S 113°59'E, Flight Intercept FIT 9, Brendell/Mendel August 2001, 'Barito Ulu' BMNH(E) 2001-191 (in NHML); 1♂ & 1♀: SABAH, Danum Valley, B.R.L., f.i.t. 14-16.II.2007, G. de Rougemont (in RCO); 1♂ & 1♀: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res., Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt., xi.2005, 1° Forest, FIT, coll. Mann, Slade & Villanueva, OUMNH-2006-051 (in OUMNH, 1 ex in LL); 1♀: MALAYSIA, Sabah, Sandakan Div., Maliau Basin Conservation Area, Trail to OG2, N4°44.738' E116°58.187'N, 28-29.iii.2011, 282 m amsl., coll. Mann (in OUMNH); 1♀: MALAYSIA, Sabah, Tawau 11-17.x.2012 4.66N 117.60E, 100m Alt. Coll. C.L. Gray, SAFE project area, F.I.T, Riparian forest strip in oil palm, OUMNH-2013-056 (in OUMNH).

R e d e s c r i p t i o n : Proportions (of a male from Danum valley in RCO): length: 11 mm; length of head: 1.4; total length of head: 1.6; breadth of head: 1.7; length of eye: 0.7; length of temple: 1.1; length of antenna: 2.1; length of pronotum: 2.7; breadth of pronotum: 2.6; length of elytron: 2.4; breadth of elytra: 2.3. Habitus: fig. 4.

Head quadrate, the temples only slightly dilated. Eyes very large, their diameter in dorsal view manifestly greater than length of temples. Antennomeres 1-3 elongate, 4-5 slightly elongate, 6-10 increasingly strongly transverse, 2-3 times broader than long. Protarsi less strongly dilated than in most Bornean species apart from *N. asetosa*.

Integument of whole body black; antennae and legs black, the protarsi reddish brown. Pubescence of head sparse, black, except for a few forwardly directed paler hairs on

temples; pronotum with sparse visible white pubescence on anterior half of sides, a transverse band of such sparse pubescence a little before the middle, and a few more such hairs extending posteriorly on either side of the mid-line; elytra covered with long reddish coppery pubescence except on anterior and lateral margins, the anterior 2/3rd of sides with very pale brassy pubescence that make them look as though the integument had a brassy reflex; abdominal tergites and paratergites III-V with some sparse, scattered very short silvery white hairs; tergite VI with in addition a very narrow continuous band of such pubescence along the anterior margin; tergite VII with scarcely any white hairs; male tergite VIII: see description below. Tibiae also with white pubescence.

Sculpture of head moderately coarse, consisting as in most *Naddia* species of discrete umbilicate punctures near posterior margin and on temples and longitudinal rugae on rest of surface; sculpture of pronotum moderately coarse, leaving an entire, relatively broad mid-longitudinal band, narrowed in the middle, the umbilicate punctures discrete posteriorly and laterally, much closer, sub-rugose near suture, the interstices coalescing into some oblique rugae anteriorly; puncturation of abdominal tergites very fine and dense.

Male: sternite VII (fig. 4c) modified, the long setae arising not only from the anterior margin of depression but also in clumps in the middle, the remaining visible surface of depression densely, isodiametrically micro-sculptured; tergite VIII (figs 4b, 4bl) with a deep median, almost foveate depression, behind this with two very dense brushes of long black setae directed inwardly, borne on a salient blade arising from the surface of tergite, overlaid by very long pale setae arising in front of the blade; the posterior margin of tergite produced into an obtuse point; sternite VIII with a small, broad and very shallow median emargination; aedoeagus: figs 4a, 4al, the median lobe not very dilated anteriorly in ventral view, truncate (the terminal structure in the photograph is an extruded part of the inner sac); basal sclerite dark, glossy, apparently occupying entire ventral surface of median lobe; paramere, uniquely in the Bornean species of *Naddia*, long, sub-parallel, occupying nearly half the length of median lobe between the basal foramen and apex, in lateral view visibly detached from median lobe, freely articulated,

Variability: females, especially the ones from the Maliau basin and from BRL (length: 12 mm; breadth of head: 2.3 mm) are larger than the type and other males.

***Naddia limbifer* nov.sp. (Figs 5, 5a, 5al)**

♂ Holotype, 1♂ & 2♂♂ paratypes: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt. xi.2005, 1° Forest, FIT, coll. Mann, Slade & Villanueva, OUMNH-2006-051 (in OUMNH; 1 paratype in LL); 1♂ paratype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley F.C., 04°57.9'N 117°48.1'E, 200 m alt. 03-13.xi.2005, 1° Forest, coll. Mann, Slade & Villanueva, Flight Interception Trap, Lowland, mixed Dipterocarp Frst West trail N5, OUMNH-2005-051 (in OUMNH); 2♂♂ & 1♀ paratypes: SABAH: Danum Valley, B.R.L, f.i.t., 14-16.II.2007, G. de Rougemont (in RCO).

A d d i t i o n a l m a t e r i a l : 1♂: MALAYSIA, Sabah, Maliau Basin Conservation Area, Nature Trail, N4°44.609' E116°58.416', 23-24.iii.2011, 220m amsl, coll. Mann, Flight Interception Trap, DJM Ref: B04 FIT, Old growth forest, OUMNH 2011-043; 1♂: Malaysia, Sabah, ca. 25 km S Sapulut, Batu Punggul env. Primary forest, intercept (sic.) trap, 23.5.2001, J. F. Kočiam (sic.) lgt. (in NHMW); 1♀: MALAYSIA, Sabah, Tawau, 16-24.ii.2012, 4.76N 117.54E, 399 m Alt., Coll. C.L. Gray, SAFE project area, F.I.T Riparian forest strip in oil palm, OUMNH-2013-056; 1♂: INDONESIA, Borneo, Kalimantan Tengah, Busang/Rekut confl. 0°03'S 113°59'E, Flight Intercept FIT 9, Brendell/Mendel, August 2001, 'Barito Ulu 2001', BMNH(E) 2001-191 (in NHML)

Description: Proportions of holotype: length: 21 mm; length of head: 2.6; total length of head: 3.1; length of eye: 1.1; length of temple: 1.5; length of antenna: 4.6; length of pronotum: 3.3; breadth of pronotum: 2.9; length of elytron: 4.0; breadth of elytra: 4.2. Habitus: fig. 5.

Antennomeres 1-5 elongate, 6 and 7 about as long as broad, 8-10 transverse, asymmetrical; 11 apex of segment 11 broadly rounded, not acuminate; terminal segments with conspicuous silvery pubescence.

Integument black, except apical margin of abdominal segment VII and entire segments VIII and IX reddish brown; mouthparts, antennae and legs entirely black. Pubescence of head and pronotum dark; pubescence of elytra likewise dark except on lateral margins and postero-lateral angles which bear very short pale reddish hairs, and most noticeably an entire fringe of long yellowish hairs on the apical margins. Pubescence of abdominal tergites mostly dark, except on apical 1/3rd of tergites VI and VII and entire tergites VIII and IX, where it is longer and reddish; sides of fore-body and postero-lateral angles of tergites bearing long dark setae; legs, especially inner faces of mesotibiae, with dense reddish pubescence; tarsomeres, especially of protarsi, fringed with reddish pubescence.

Sculpture of head, fairly close and fine, as in most *Naddia* with discrete umbilicate punctures along base and on temples, the interstices elsewhere coalescing to form elongate rugae, but less regular and less parallel than in other species; sculpture of pronotum homogeneous, composed of very close and not very large umbilicate punctures without or with scarcely any trace of an impunctate mid-longitudinal band; sculpture of elytra characteristic, very dense, rugose near anterior margins, on either side of suture and near posterior margins, the disc of each elytron each with a large area of widely spaced umbilicate punctures, the interstices equal to or broader than diameter of punctures and deeply wrinkled and furnished with very short silvery pubescence directed outwardly, the whole areas appearing silvery, in sharp contrast to the surrounding sculpture; puncturation of abdominal tergite III fine and dense, sparser and coarser on segments IV and V, very sparse on segments VI and VII, the very broad interstices of these last two with dense micro-sculpture making the surface dull.

Male: sternite VII unmodified; sternite 8 with a very small shallow emargination; sternite 9 with rounded apical emargination and blunt, broadly rounded apico-lateral angles; aedoeagus: figs 5 a, 5al, the median lobe long and slender, greatly expanded into dorsally deeply excavated sub-circular apex; ventral extension of basal sclerite broad, sub-truncate; paramere very short, its anterior margin evenly rounded (the pair of whitish triangular shapes overlaying it are membranous structures, not the outline of the paramere).

Variability: the single male from Kalimantan differs from the types in its marginally greater size (ca. 22 mm : 19-21 mm), slightly broader head and pronotum, and more pronounced apparent indentation of the antero-lateral margin of the pronotum; the apparently more gradually spatulate apex of the median lobe of some specimens is attributed to deformation due to contraction of the tubular median part of the median lobe in dry mounted material of the exx. from Danum valley.

This species is easily distinguished from all other Bornean species by the fringe of pale setae on the apical margins of the elytra, but at least one other continental species (*N. westermanni* ER.) has a similar fringe.

***Naddia ignipennis* nov.sp. (Figs 6, 6a, 6al)**

1 ♂ Holotype: INDONESIA, Borneo, Kalimantan Tengah, Busang/Rekut confl. 0°03'S 113°59'E, Flight Intercept FIT 9, Brendell/Mendel, August 2001, Barito Ulu 2001, BMNH(E) 2001-191 (in NHML); 1 ♂ paratype: *ibid.*, but FIT 7 (in RCO); 1 ♀ paratype: MALAYSIA, Sabah, Tawau, 16-24.ii.2012, 4.76N 117.54E, 399 m Alt., Coll. C.L. Gray, SAFE project area, F.I.T Riparian forest strip in oil palm, OUMNH-2013-056 (in OUMNH).

D e s c r i p t i o n : Proportions of holotype: length: 19 mm; length of head: 2.85; total length of head: 3.5; breadth of head: 3.5; length of eye: 1.1; length of temple: 1.6; length of antenna: 4.5; length of pronotum: 3.45; breadth of pronotum: 3.1; length of elytron: 4.5; breadth of elytra: 4.3. Habitus: fig. 6.

Antennomeres elongate but relatively short; antennomeres 4-10 subquadrate, the general appearance of antennae therefore moniliform (= like a string of beads); all segments symmetrical.

Integument black, that of head and pronotum with a distinct bluish reflex, contrasting with colour of elytra and abdomen; antennae and legs black. Pubescence of disc of head and pronotum dark, short, inconspicuous, the sides of both with fairly dense white pubescence; Ground pubescence of elytra dark, sparse, inconspicuous; in addition the elytra each bear three patches of silvery pubescence, one broad, extending posteriad from humeral angles, one narrow behind this in posterior half of elytron, and one short patch on the declivous lateral portion of elytron; each elytron in addition with a large, very conspicuous fascia of dense coppery red pubescence; abdominal tergites 3-8 with sparse, short dark pubescence, the sides with narrow elongate patches of silvery pubescence decreasing in length posteriad, each segment with some lateral dark setae; pro- and mesotibia with pale pubescence and spines.

Sculpture of fore-body unique within the genus: head with dense umbilicate punctures in posterior half, very sparse on an umbonate median portion between the eyes, and frons practically impunctate; both these areas glossy; other glossy impunctate areas are on the emargination of occipital area and the anterior half of neck; pronotum with sparse small umbilicate punctures, the interstices as broad as or broader than the diameter of punctures, flat and glossy, the puncturation leaving a broad, entire but irregular glossy mid-longitudinal band; puncturation of elytra very fine and dense, rugose, consisting mostly of small umbilicate punctures, the surface therefore dull, in sharp contrast to head and pronotum, and even to abdomen; sculpture of abdominal tergites consisting of sparse punctures of different sizes, the integument with microsculpture, noticeably denser on anterior parts of tergites VI and VII, which therefore appear duller than posterior parts

Male: sternite VII unmodified; sternite VIII with an extremely small apical emargination; aedoeagus: figs 6a, 6al, in ventral view the median lobe gradually dilated distally, the apex evenly, broadly rounded; ventral extension of basal sclerite long, the distal part narrow, parallel-sided, the apex shallowly bifurcate; paramere very short, bilobed, with apical setae clearly visible on the tips of the lobes.

The only other known species of *Naddia* with a similar very dense patch of red pubescence on the elytra is *N. decipiens* CAM. from continental Asia, but in that species the pubescence is more extensive, and the sculpture of the head and pronotum is of the usual sub-rugose kind, albeit with an entire mid-longitudinal band on the pronotum. The type of sparse puncturation of the fore-body of *N. ignipennis* is on its own sufficient to recognise the species.

***Naddia barbarossa* nov.sp. (Figs 7, 7a, 7al)**

♂ Holotype, 3♂♂ & 2♀♀ paratypes: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res., Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt., xi.2005, 1° Forest FIT, coll. Mann, Slade & Villanueva, OUMNH-2006-051 (Holotype & 4 paratypes in OUMNH, 1 paratype in RCO; 1 paratype in LL); 1♀ paratype: MALAYSIA, Borneo, Sabah, Ulu Segama Forest Reserve, Yayasan Sabah logging concession, ca. 6 km from Danum Valley F.C., Secondary selectively logged forest, 13.IV.2004.2004 F.I.Trap Coupe 88, Plot 1 ca. N04°59.74 E117°50.17 Leg. E. Slade + J. Villanueva, OUMNH-2005-062, Oxford University Museum of Natural History (in OUMNH); 1♀ paratype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res., Danum Valley F.C., 04°57.9'N 117°48.1'E 200 m alt., 21.xi.2005, 1° Forest, coll. Mann, Slade & Villanueva, Flight Interception Trap, Lowland, mixed Dipterocarp Forest, West Trail area, OUMNH-2006-051 (in OUMNH); 1♂ paratype: MALAYSIA: Sabah, Lahad Datu, Ulu Segama For. Res., Coupe 81 logging area 04°58.660'N 117°53.410'E, iii.2005, FIT, 2° Forest, Coll. E. Slade & J. Villanueva (in OUMNH); 1♀ paratype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res., Danum Valley F.C., 04°57.9'N 117°48.1'E, 200 m alt., 03-13.xi.2005, 1° Forest, coll. Mann, Slade & Villanueva, Flight Interception Trap, Lowland, mixed Dipterocarp Frst West Trail N5, OUMNH-2005-051 (in OUMNH); 1♂ & 1♀ Paratypes: SABAH: Danum Valley, B.R.L, f.i.t., 14-16.II.2007, G. de Rougemont (in RCO).

A d d i t i o n a l m a t e r i a l : 1♂: FIT 11/1/2, Malaysia, Sabah, Sandakan, Sepilok (PF), March 97, AYC Chung (in NHML); 2 exx.: Malaysia, Sabah, ca. 25 km S Sapulut, Batu Punngul env. Primary forest, intercept (sic.) trap, 23.5.2001, J. F. Kočiam (sic.) legt. (in NHMW).

D e s c r i p t i o n : Proportions of holotype: length: 11.2 mm; length of head: 1.6; total length of head: 1.8; breadth of head: 2.0; length of eye: 0.7; length of temple: 0.9; length of antenna: 2.4; length of pronotum: 2.0; breadth of pronotum: 1.8; length of elytron: 2.3; breadth of elytra: 2.3. Habitus: fig. 7.

Eyes very prominent, a little shorter than temples. Antennomeres 1-3 elongate; 4 to 10 increasingly transverse, only 9 and 10 slightly asymmetrical.

Integument of entire body black; antennae black, legs dark brown. Pubescence of head and pronotum very short, dark, with some very sparse short whitish hairs; sides with numerous dark setae; most of elytra, apart from a narrow area along anterior margin and posterior 1/4th covered in dense coppery red pubescence; sides with dark setae if varying length; posterior margins with a sparse fringe of pale hairs; abdominal tergites IV-V with broad fasciae of bright brassy pubescence extending the entire length of tergite; sternite VI with only with only a very narrow transverse fringe of sparse, short silvery pubescence along anterior margin; tergite VII with two large conspicuous fasciae of silvery pubescence; sides of segments almost asetose; tibiae with dense brassy pubescence.

Sculpture of head and pronotum coarse, that of head consisting, as in many *Naddia*, of close umbilicate punctures posteriorly and on temples, the interstices coalescing to form longitudinal rugae in anterior 2/3rd, but these rugae short, interrupted, the individual punctures still clearly visible even on frons; sculpture of pronotum consisting of umbilicate punctures, sparse and discrete near posterior margin and temples, close and dense on either side of the suture, tending to form oblique rugae directed towards anterior angles in anterior 1/3rd; leaving traces of an impunctate mid-longitudinal band in the form of a narrow shiny callosity broadly interrupted in the middle; sculpture of elytra very confused, composed of sparse, large shallow umbilicate punctures only visible in anterior 3/4th obscured by the deeply wrinkled interstices; puncturation of abdominal tergites shallow and sparse.

Male: sternite VII modified, the surface of the depressed area with dense transverse micro-striation and only a few scattered punctures; sternite VIII with a very small median

emargination; aedoeagus: figs 7a, 7al, in ventral view broad, the median lobe expanded into a subquadrate apical part (comparable to *N. sarahae* nov.sp.), in lateral view the apex abruptly deflexed; ventral extension of basal sclerite relatively short, with narrowly rounded apex; paramere adpressed, short and broad, sub-truncate with rounded anterior angles.

Owing to the small size and coloured elytral pubescence of both species females of *N. barbarossa* can only be confused with *N. aeneipennis*.

***Naddia eleanorae* nov.sp. (Figs 8, 8a, 8al)**

♂ Holotype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley F.C., 04°57.9'N 117°48.1'E, 200 m alt., 21.xi.2005, 1° Forest, coll. Mann, Slade & Villanueva, Flight Interception Trap. Lowland, mixed Dipterocarp Forest, West trail, OUMNH-2006-051 (in OUMNH); 1♀ paratype: MALAYSIA, Sabah, Tawau, 16-24.ii.2012, 4.76N 117.54E, 399 m Alt., Coll. C.L. Gray, SAFE project area, F.I.T Riparian forest strip in oil palm, OUMNH-2013-056 (in CRO).

D e s c r i p t i o n : Proportions of holotype: length: 20.5 mm; length of head: 2.5; total length of head: 2.9; breadth of head: 3.0; length of eye: 1.1; length of temple: 1.4; length of antenna: 2.6; length of pronotum: 3.0; breadth of pronotum: 2.6; length of elytron: 3.5; breadth of elytra: 2.4. Habitus: fig. 8.

Eyes prominent, much shorter than temples. Antennomeres 1-3 elongate, 4 and 5 sub-equal, 6 to 10 increasingly transverse, only 9 and 10 slightly asymmetrical.

Integument of body black, except elytra which have a distinct dark bluish reflex, contrasting with rest of dorsal surface (not very evident in illustration, but obvious under direct examination). Head and pronotum without coloured pubescence in addition to dark ground pubescence and short, dark lateral setae; abdominal tergites III-VI with only a few sparse, inconspicuous paler hairs on sides; tergite VII with a pair of triangular antero-lateral patches of dense pale pubescence, the sides apparently asetose; apices of protibia and lateral margins of tarsomeres with reddish pubescence.

Sculpture of head moderately coarse, consisting of discrete umbilicate punctures near base and on sides, from level of inner margins of eyes to lateral margins, the vertex and frons with a duller, shield-shaped area in which the interstices form longitudinal rugae; puncturation of pronotum composed of umbilicate punctures about as large as those of posterior and lateral parts of head, sparser and discrete near posterior margin and on sides, closer and denser in the middle, the interstices forming parallel oblique rugae directed from mid-line towards anterior angles in anterior 1/3rd or 1/4; sculpture of elytra sub-rugose, consisting of dense, small umbilicate punctures with very narrow shiny interstices; abdominal tergites shiny, the puncturation sparse and shallow, sparser and shallower on anterior half, denser and finer posteriorly on tergite VII, much coarser and sparser on tergite VIII.

Male: sternite VII unmodified; sternite VIII with a small, very shallow emargination; aedoeagus: figs 8a, 8al, the median lobe in lateral view visibly hollow dorsally; ventral extension of basal sclerite short, apically truncate; paramere short and broad, its anterior margin concave.

Derivation of specific name: after our colleague Eleanor Slade, who collected the types of this species and tens of thousands of other beetles in the Danum valley in 2004 and 2005.

***Naddia aureomontis* nov.sp. (Fig. 9)**

♀ Holotype: E-MALAYSIA, Sabah, Crocker Range, Gg. Emas 1650-1800 m, 30.IV-25.V.1996, leg. Strba & Hergovits (in NHMW).

D e s c r i p t i o n : Proportions of holotype: length: 22 mm; length of head: 3.0; total length of head: 3.5; breadth of head: 3.8; length of eye: 1.0; length of temple: 1.8; length of antenna: 4.3; length of pronotum: 3.5; breadth of pronotum: 3.25; length of elytron: 3.5; breadth of elytra: 3.8. Habitus: fig. 9.

Antennae short, the first three segments slightly elongate, the following two globose, the rest increasingly transverse, segments 8 to 10 asymmetrical. Hind wings not examined, but in view of the small size and depressed form of the elytra probably micropterous and non-functional, although the tergite VII bears a very narrow palisade fringe (it may be significant that this is the only *Naddia* species found at high altitude in Borneo; however at least one micropterous species has been found at lower altitudes in China).

Integument entirely black; antennae and legs black. Fore-body with some very sparse, inconspicuous paler pubescence and short dark setae on the sides, most numerous on pronotum; apical margins of elytra with a sparse fringe of paler hairs and longer dark setae; abdominal with an increasing extensive middle area of dense black pubescence; tergite VII without such pubescence but with long recumbent black setae, the punctures and setae sparser posteriorly; tergite VIII with coarse irregular puncturation bearing short pale hairs and some black setae; all tergites with lateral patches of brassy pubescence, these patches reduced to very narrow antero-lateral fringes on tergite VI.

Sculpture of head forming very coarse irregular longitudinal rugae; sculpture of pronotum likewise coarse, composed laterally and posteriorly of individual large, close umbilicate punctures, these merging on disc to form irregular vermiculate rugae and leaving a narrow impunctate mid-longitudinal band interrupted in the middle; puncturation of elytra sub-rugose, consisting of close umbilicate punctures; sculpture of sparsely pubescent abdominal tergite III with some coarse transverse rugae.

Male: unknown.

***Naddia borneensis* CAMERON (Figs 10, 10a, 10al, 10b, 10c)**

Naddia borneensis CAMERON 1930: 165.

Naddia borneensis HAMMOND 1984: 206.

Naddia borneensis HERMAN 2001: 3353.

♂ Holotype: (bearing an NHML holotype label: small round white label with a red border): N. BORNEO, BETTOTAN NR. SANDAKAN, Aug. 22nd 1937; *Naddia borneensis* CAM. (in NHML).

A d d i t i o n a l m a t e r i a l : 1♂ & 1 ex. (abdominal segments 8-10 missing): MALAYSIA, Borneo, Sabah, Ulu Segama Forest Reserve, Danum Valley Conservation Area ca. 10 km from Danum Valley F.C., Borneo Rainforest Lodge area, Plot 3, 12.III.2004, F.I.Trap, ca. N05°02' E117°45'55" Leg. E. Slade & J. Villanueva, OUMNH-2005-062 coll. E. Slade, Oxford University Museum of Natural History (in OUMNH); 1♀: Malaysia, Borneo, Sabah, Ulu Segama Forest Reserve, Yayasan Sabah Logging Concession ca. 10 km from Danum Valley F.C., Secondary selectively logged forest, 17.IV.2004 F.I.Trap, Coupe 81, Plot 3 ca. N 04°58.66' E 117°53.41' Leg. E. Slade & J. Villanueva, OUMNH-2005-062, coll. E. Slade, Oxford University Museum of Natural History (in OUMNH); 1♂ & 1♀: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley F.C., 04°57.9'N 117°48.1'E, 200 m alt., 21.xi.2005, 1° Forest, coll. Mann, Slade & Villanueva, Flight Interception Trap, Lowland, Mixed Dipterocarp Forest, West Trail area,

OUMNH-2006-051 (in OUMNH, 1 ex. in RCO); 1♂: SABAH, Danum Valley, B.R.L, f.i.t., 14-16.II.2007, G. de Rougemont (in RCO); 1♀: SABAH, Poring Hot Springs, 500 m, 8.V.1987, Burkhardt-Löbl (in MHNG); 7 exx: MALAYSIA, Sabah, Tawau, 8-14.xi.2012, 4.70N 117.52E, 200 m Alt., Coll. C.L. Gray, SAFE project area, F.I.T Riparian forest strip in oil palm, OUMNH-2013-056 (in OUMNH); 1♀: MALAYSIA, Sabah, Tawau, 18-24.x.2012, 4.76N 117.54E, 399 m Alt., Coll. C.L. Gray, SAFE project area, F.I.T. Riparian forest strip in oil palm, OUMNH-2013-056 (in OUMNH); 1♂: MALAYSIA, Sabah, Tawau, 11-17.x.2012, 4.66N 117.6E, 399 m Alt., Coll. C.L. Gray, SAFE project area, F.I.T Riparian forest strip in oil palm, OUMNH-2013-056 (in LL).

Redescription: Proportions (of a male from Danum valley): length: 14 mm; length of head: 2.0; total length of head: 2.5; breadth of head: 2.5; length of eye: 0.9; length of temple: 1.1; length of antenna: 3.0; length of pronotum: 2.6; breadth of pronotum: 2.45; length of elytron: 3.0; breadth of elytra: 3.1. Habitus: fig. 10.

Eyes not very prominent because slightly displaced towards dorsal surface of head. Antennomeres 1-3 short, only a little elongate, 4 and 5 sub-globose, 6 to 10 increasingly transverse, the penultimate segment as broad as long; segment 11 with conspicuous very dense short white pubescence.

Integument entirely black. Antennae fuscous, legs brownish black. Head and pronotum without coloured pubescence in addition to dark pubescence; lateral setae short; Elytra rather sparsely and irregularly covered in paler hairs mixed with dark pubescence, making them appear brownish; abdominal tergites III-V with elongate lateral fasciae of pale pubescence; tergite VII with two broader but shorter antero-lateral fasciae of silvery pubescence, the fasciae becoming brassy posteriad; tibiae with yellowish pubescence and spines; lateral margins of tarsal segments with reddish pubescence.

Sculpture of head coarser than that of *N. brendelli* and *N. oxoniensis*, the interstices forming short irregular longitudinal rugae on disc and frons, the umbilicate punctures still clearly except close to anterior margin; umbilicate punctures of pronotum about the same size as those of head, close, the surface sub-rugose, the interstices tending to form oblique rugae in anterior ¼, the sculpture leaving a very narrow, almost entire vestige of an impunctate mid-longitudinal band; sculpture of elytra confused, consisting of dense umbilicate punctures about as large as those of head and pronotum; puncturation of abdominal tergites dense and fine on middle of tergites III to VI, coarser and sparser on the sides, very sparse on whole of tergite VII, the integuments with dense micro-punctures on anterior half and very faint but discernible transverse micro-striation on posterior half.

Male: sternite VII: (fig. 10c) modified with very long fine pale setae arising from surface in front of sub-circular depression; surface of sternite with fairly dense micro-sculpture, the posterior margin slightly concave; tergite VIII : fig. 10d, the apical margin slightly, very broadly and shallowly emarginate; sternite VIII: fig. 10b, with a small broad emargination, the surface of sternite shiny, with scarcely any microsculpture in anterior half and distinct transverse micro-striation in posterior half; aedeagus: figs 10a, 10al, the median lobe long in lateral view, curved ventrally, the apex apparently cupuliform; ventral extension of basal sclerite sub-truncate; paramere adpressed, extremely short, the anterior margin with a median notch, in the illustration the paramere is concealed by the large ventrally protruberant basal bulb, but is visible in lateral view.

The type is in poor condition: head and pronotum, and abdomen detached from mesothorax; left protibia and tarsus, right hind leg and segments 5-11 of both antennae missing.

The specimen has been remounted from a pin onto a card and the genital segments and aedeagus (both in good condition) dissected and glued to the same card.

***Naddia brendelli* nov.sp. (Figs 11, 11a, 11al.)**

♂ Holotype and 5♂♂ Paratypes: INDONESIA, Borneo, Kalimantan Tengah, Busang/Rekut confl. 0°03'S 113°59'E, Flight Intercept FIT 9, Brendell/Mendel, August 2001, Barito Ulu 2001, BMNH(E) 2001-191 (in NHML); 1♂ & 1♀ Paratypes: *ibid.*, but "FIT 7"; 1♀ Paratype: *ibid.*, but "FIT 4". (holotype and 7 paratypes in NHML; 1 paratype in RCO).

D e s c r i p t i o n : Proportions of holotype: Length: ca. 16 mm; length of head: 2.4; total length of head: 3.0; length of eye: 1.0; length of temple: 1.6; length of antenna: 4.0; length of pronotum: 3.2; breadth of pronotum: 2.8; length of elytron: 3.5; breadth of elytra: 3.5. Habitus: fig. 11.

Occipital area of head deeply excavate; eyes prominent, much shorter than temples. Antennomeres 1-7 short, decreasingly elongate; 8-10 increasingly transverse, only 9 and 10 slightly asymmetrical.

Integument black except very narrowly brownish along posterior margins of elytra; posterior ¼ of abdominal segment VII and whole of segment VIII reddish brown; antennae and legs dark brown; sparse ground sculpture of head pale, very fine and erect on disc; anterior margin with a conspicuous fringe of paler, almost brassy setae directed anteriorly; posterior 1/3rd and sides of head up to hind margin of eyes with long, fairly dense forwardly directed pale brassy setae (the body may have to be tilted slightly forward under the light to see these); pubescence of pronotum very sparse, almost invisible on disc, composed of very fine erect pale hairs, like those of head; sides with numerous long and shorter black setae; pubescence of greater part of elytra like that of pronotum, the sides and posterior margins with long and shorter black setae; each elytron with a broad crescentic area of short, outwardly directed brassy setae under which the umbilicate punctures are larger and more widely spaced than on the rest of surface; abdominal tergite III with very fine outwardly directed pale brassy hairs in the middle of tergite, and short brassy hairs on the sides and on paratergites; tergites IV-VI with long recumbent black hairs in the middle and antero-lateral patches of brassy hairs like those of tergite III of decreasing extent; paratergites with a few (many often broken off) long black setae on paratergites; posterior margins of tergites with a fringe of long fine setae; tergite VII with sparse but conspicuous outwardly directed silvery pubescence in anterior 1/3rd; posterior 2/3rd with sparse, erect long black setae on centre and fine brassy setae on sides; tergite VIII with only long erect pale setae.

Sculpture of fore-body as in most *Naddia* spp., but punctures relatively finer and denser than in the similar *N. oxoniensis*, homogenous on pronotum which shows scarcely any trace of a mid-longitudinal line (with a short narrow shiny callus near anterior and posterior margins in *N. oxoniensis*); sculpture of abdominal tergites similar to *N. oxoniensis*, but also finer and denser.

Male: sternite VII modified; sternite VIII not emarginate; sternite IX deeply emarginate; aedeagus: figs 11a, 11al, in ventral view the median lobe evenly dilated distally, the apex evenly rounded; in lateral view the median lobe is slightly curved dorsad; ventral extension of basal sclerite indistinct (the deeply bifurcate structure visible in the illustration does not seem to be the outline of the sclerite); paramere very short, indiscernible in ventral view, visible in lateral view.

For other comparisons with the similar species *N. oxoniensis* see description of the latter, below.

Derivation of specific name: after Martin Brendell, former curator of Coleoptera at the Natural History museum in London.

***Naddia oxoniensis* nov.sp. (Figs 12, 12a, 12al, 12c)**

♂ Holotype & 1 paratype: Malaysia, Sabah, ca. 25 km S Sapulut, Batu Punggul env. Primary forest, intercept (sic.) trap, 23.5.2001, J.F. Kočiam (sic.) lgt. (in NHMW); 1 ♂ paratype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley F.C., 04°57.9'N 117°48.1'E, 200 m alt., 21.xi.2005, 1° Forest, coll. Mann, Slade & Villanueva, Flight Interception Trap, Lowland, mixed Dipterocarp Forest, West Trail area, OUMNH-2006-051 (in OUMNH); 1 ♂: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt., xi.2005, 1° Forest, FIT, coll. Mann, Slade & Villanueva, OUMNH-2006-051 (in OUMNH); 1 ♂: SABAH: Danum Valley, B.R.L. f.i.t., 14-16.II.2007, G. de Rougemont (in RCO).

D e s c r i p t i o n : Length: 15-15.5 mm. Proportions of paratype from Danum valley: length of head: 2.4; total length of head: 29; breadth of head: 29; diameter of eye: 9; length of antenna: 35; length of pronotum: 28; breadth of pronotum: 2.4; length of elytron: 3.3; breadth of elytra: 3.3. Habitus: fig. 12.

Very similar to *N. brendelli* nov.sp., only differing in the following respects: puncturation of head conspicuously coarser; posterior part of head almost devoid of long brassy setae; pronotum longer (2.9 mm : 2.7 mm) and narrower, the sides more strongly retracted towards posterior angles, its puncturation coarser; puncturation of lateral parts of elytra coarser, the individual umbilicate punctures larger and more evident; the patches of brassy pubescence on anterior 2/3rd of disc more extensive; abdominal tergite VII shiny, much more sparsely and coarsely punctured.

Male: sternite 7 (fig. 12c) modified, the surface of depression with very fine transverse micro-striation (all but a few of the long setae on the anterior margin of the depression have been torn off in the specimen illustrated); sternite 8 with a fairly small semi-circular emargination; sternite IX broad, with a small deep emargination; aedoeagus: figs 12a, 12 al; the distal half of the median lobe is missing in all available males, only the shrivelled inner sac visible; ventral blade broad, ventral extension of basal sclerite gradually narrowed anteriorly and sub-truncate; paramere broad, about 3 times as wide as long, its anterior margin slightly concave.

***Naddia calcicola* nov.sp. (Figs 13, 13ad, 13al)**

♂ Holotype, 1 ♂ & 2 ♀ ♀ Paratypes: SARAWAK, 4th Division, Gn. Mulu N.P., limestone pitfall (in NHML); 1 ♀ Paratype: SARAWAK, 4th Division, Gn. Mulu NP, MDF 200 m, pitfall 5.78, N.M. Collins, P.M. Hammond, J.E. Marshall, v-viii.1978, BM 1978-49. *Naddia* cf. *kedirianus* CAM. P.M. Hammond det. 1978 (holotype and 4 paratypes in NHML; 1 paratype in CRL).

D e s c r i p t i o n : Proportions of holotype: length: 16.5 mm; length of head: 2.6; total length of head: 3.0; breadth of head: 3.2; length of eye: 1.0; length of temple: 1.6; length of antenna: 3.3; length of pronotum: 3.1; breadth of pronotum: 2.9; length of elytron: 3.5; breadth of elytra: 3.7. Habitus: fig. 13.

Integument entirely black except for apical margin of tergite VII and tergites VIII and IX reddish brown. Antennae and legs black. Head with some very sparse pale pubescence,

the hairs long and very fine on frons and vertex, short, stouter and whitish on temples. Pronotum glabrous except for a few small scattered hairs and some larger, but still small short dark setae on lateral margins. Elytra glabrous near suture, in lateral halves with a longitudinal patch of rather sparse coloured hairs, brassy-coppery in inner part, whitish laterally. Abdominal tergites III-V with a patch of with a patch of long, recumbent black hairs in the middle near the anterior margin, the antero-lateral angles with sparse, short brassy yellowish hairs pointing in different directions; these patches larger and denser on tergite VII. Tibiae, especially protibiae, with conspicuous dense, long pale yellowish setae and a dense row of pale spines on inner faces.

Sculpture of head relatively fine, composed as in many other species of isodiametrical umbilicate punctures in occipital and lateral areas, the interstices tending to coalesce into longitudinal rugae on vertex and frons; sculpture of pronotum equally fine or finer, the parallel rugae on anterior 1/4th very obliquely directed from mid-line towards lateral margins of scutellum; Mid-longitudinal band of pronotum only represented by a shiny irregular line near anterior and posterior margins; sculpture of abdominal tergites composed of very sparse fine punctures on a fairly shiny sericeous background of micro-punctures and microsculpture; punctures of tergite VII coarser and less sparse.

Male: sternite VII modified; sternite VIII with a very small emargination; aedoeagus: figs 13ad, 13al, the apex of the median lobe deeply excavate dorsally, the ventral side of spatulate apex with a pair of small teeth (both excavation and teeth visible in fig. 13al); basal sclerite and paramere unclear; ventral extension of the former apparently relatively short, sub-truncate; paramere apparently short, broad, the apical margin slightly concave, the anterior angles broadly rounded.

This species is very similar to *N. argentifer* nov.sp., below, differing in the sculpture of anterior part of pronotum, in the pale brassy pubescence on parts of elytra and tergites (entirely silvery in *N. argentifer*), and most conspicuously by the sparse puncturation and alutaceous microsculpture of the abdominal tergites.

***Naddia argentifer* nov.sp. (Figs 14, 14a, 14al)**

♂ Holotype & 1 ♀ Paratype: INDONESIA, Borneo, Kalimantan Tengah, Busang/Rekut confl. 0°03'S 113°59'E, Flight Intercept FIT 6, Brendell/Mendel, August 2001, Barito Ulu 2001, BMNH(E) 2001-191 (holotype in NHML; paratype in RCO).

D e s c r i p t i o n : Proportions of holotype: length: 17.5 mm; length of head: 2.3; total length of head: 3.0; breadth of head: 3.1; length of eye: 0.9; length of temple: 1.5; length of antenna: 3.7; length of pronotum: 2.8; breadth of pronotum: 2.9; length of elytron: 3.6; breadth of elytra: 3.6. Habitus: fig. 14.

Eyes small, slightly smaller than those of *N. calcicola*. Antennae similar to those of the latter: antennomeres 1-3 slightly elongate, 4 subquadrate, 5 globose, 6-10 increasingly transverse, only 9 and 10 very slightly asymmetrical.

Integument entirely black, including apices of tergites VII and VIII. Antennae and legs black.

Disc of head and frons with only a very few long, very fine pale hairs; post-ocular area with short stouter silvery hairs in addition to a few black setae; pronotum similarly pubescent, with only a few silvery hairs on sides and with numerous long dark setae on lateral margins. Elytra without lateral patch of coloured pubescence, but only sparse,

scattered shor silvery hairs, especially near sides and some long black setae on lateral margins. Pubescence of abdominal tergites similar to that of the two preceding species, but the antero-lateral patches of coloured pubescence is silvery, not brassy.

Puncturation of fore-body coarser than in *N. brendelli* and *N. oxoniensis*, that of elytra homogeneous, without a lateral area (corresponding to the patches of brassy pubescence in *N. brendelli* and *N. oxoniensis*) of larger and sparser umbilicate punctures. Puncturation of abdominal tergites sparser, composed of punctures of unequal sizes, the surface therefore more shiny than in those species.

Male: sternite VII unmodified; sternite VIII with a very small shallow emargination; aedoeagus: figs 14a, 14al, the apex if median lobe deeply excavate dorsally; ventral extension of basal sclerite broad, much wider than long, the anterior margin irregularly excavate; paramere of greater than average length but still very transverse, about 3 times broader than long, the anterior margin broadly and shallowly concave.

For comparisons with *N. calcicola* see descriptions above. The most conspicuous difference is that all coloured pubescence in *N. argentifer* is silvery, with no brassy hairs or setae.

***Naddia sarahae* nov.sp. Figs 15, 15a, 15al)**

♂ Holotype: SABAH, Danum Valley, B.R.L, f.i.t., 14-16.II.2007, G. de Rougemont (in RCO); 1 ♀ paratype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt., 21.xi.2005, 1° Forest, FIT, coll. Mann, Slade & Villanueva, Flight Interception Trap, Lowland, mixed Dipterocarp Forest, West Trail area, OUMNH-2006-051 (in OUMNH); 1 ♀ paratype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt., xi.2005, 1° Forest, FIT, coll. Mann, Slade & Villanueva, OUMNH-2006-051 (in OUMNH); 1 ♀ paratype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res. Danum Valley Forest Centre, 04°58'N 117°42'E, 450 m alt, viii.1998, 1° Forest, coll. D. Bebbler, Flight Interception Trap, Lowland, mixed Dipterocarp Frst., OUMNH-2006-050 (in OUMNH); 1 ♂ paratype: MALAYSIA, Borneo, Sabah, Ulu Segama Forest Reserve Danum Valley Conservation Area, ca. 10 km from Danum Valley F.C., Borneo Rainforest Lodge area, Plot 4, 12.III.2004, F.I.Trap, ca N05°02 E117°45/55 Leg. E. Slade + J. Villanueva (in OUMNH).

A d d i t i o n a l m a t e r i a l : 1 ♀: Malaysia, Sabah, ca. 25 km S Sapulut, Batu Punggul env. Primary forest, intercept (sic.) trap, 23.5.2001, J.F. Kočiam (sic.) lgt. (in NHMW); 1 ♀ MALAYSIA, Sabah, Tawau, 8-14.ix.2012, 4.76N 117.52E, 399 m Alt., Coll. C.L. Gray, SAFE project area, F.I.T Riparian forest strip in oil palm, OUMNH-2013-456 (in CRL); 1 ♂: THAILAND, Doi Inthanon, 15.III.1982, G. de Rougemont (in CRL).

D e s c r i p t i o n : Proportions of holotype: length: 19.5 mm; length of head: 2.9; total length of head: 3.6; breadth of head: 3.6; length of eye: 1.1; length of temple: 2.0; length of antenna: 3.8; length of pronotum: 3.5; breadth of pronotum: 3.2; length of elytron: 3.7; breadth of elytra: 4.1. Habitus: fig. 15.

Eyes of average size, not very protruberant laterally because slightly displaced towards dorsal surface of head. Antennomeres 1-3 slightly elongate, the third clavate., 4-5 subquadrate, 6-10 transverse, only 9 and 10 very slightly asymmetrical.

Integument black, except apical margin of abdominal tergite VII and segments VIII and IX rufescent; antennae and legs black. Disc of head and frons glabrous, apart from a fringe of small pale setae along anterior margin and a very few long black setae, one on antero-lateral margin, one near inner margin of eye, and 2-4 others on temples; temples in addition with dense, forwardly directed short setae. Pronotum with sparse, very fine pale hairs on disc, the sides with numerous stout black setae of unequal sizes; pubescence

of elytra characteristic: surface of inner 1/3rd of disc of each elytron with dense recumbent coarse black pubescence obscuring the fine sculpture, mixed with sparse, scattered erect fine pale and dark setae; middle of each elytron with a long arcuate line of short stout brassy hairs (comparable to *N. brendelli*), but the line narrower and fringed on the inside with coppery red hairs; both brassy and coppery hairs directed outwardly; lateral and posterior areas of disc with numerous short black setae mixed with a few much longer setae; centres of abdominal tergites III-VI with recumbent black hairs, the antero-lateral angles of tergite III-V with decreasingly extensive patches of brassy hairs, the postero-lateral margins of tergites IV-VI with a few silvery hairs; tergite VII with a very few, very short silvery hairs anteriorly, the centre glabrous, the posterior margins and especially postero-lateral angles with very dense recumbent coppery-red pubescence; tergite VIII also with coppery-red pubescence, especially on sides.

Sculpture of head composed of the usual pattern of round umbilicate punctures on sides and near posterior margin and long rugae on disc and frons; sculpture of pronotum fairly coarse, the interstices between umbilicate punctures forming longitudinal rugae in posterior half and oblique rugae anteriorly; sculpture of elytra like that of *N. brendelli* and *N. limbifer*, dull and fine on either side of suture, shiny and very coarse, composed of large umbilicate punctures and short transverse rugae on the lateral sides of the arcuate line of coloured pubescence; abdominal tergites shiny, with micro-sculpture and fairly dense simple puncturation; middle of tergite VII very dull, with extremely fine and dense micro-sculpture and much sparser punctures.

Male: sternite VII modified; sternite VIII with a broad, very shallow emargination; aedoeagus: figs 15a, 15al, the median lobe not very long, broad, the apex abruptly widened into a transverse subquadrate end comparable to that of *N. barbarossa*, hollow on the dorsal side; ventral extension of basal sclerite dark and glossy, apically bifurcate; paramere broad, about 3 times wider than its length, sub-truncate with rounded anterior angles, nearly divided into two lobes by a deep narrow median notch.

Although such a distribution seems unlikely, I must, at least provisionally, attribute the specimen from northern Thailand to this species because can find no differences between it and those from Borneo.

Derivation of specific epithet: named after Sarah de Rougemont, in memory of happy days in Borneo in March 1990.

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Zusammenfassung

Die folgenden 13 neuen *Naddia*-Arten (Coleoptera: Staphylinidae: Staphylininae) aus Borneo werden beschrieben: *Naddia argentifer* nov.sp., *N. asetosa* nov.sp., *N. aureomontis*, *N. barbarossa* nov.sp., *N. brendelli* nov.sp., *N. calcicola* nov.sp., *N. eleanorae* nov.sp., *N. germana* nov.sp., *N. iacobi* nov.sp., *N. ignipennis* nov.sp., *N. limbifer* nov.sp., *N. oxoniensis* nov.sp. und *N. sarahae*. Ein illustrierter Bestimmungsschlüssel für die 15 aus Borneo beschriebenen Arten wird beigefügt.

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Captions for illustrations:

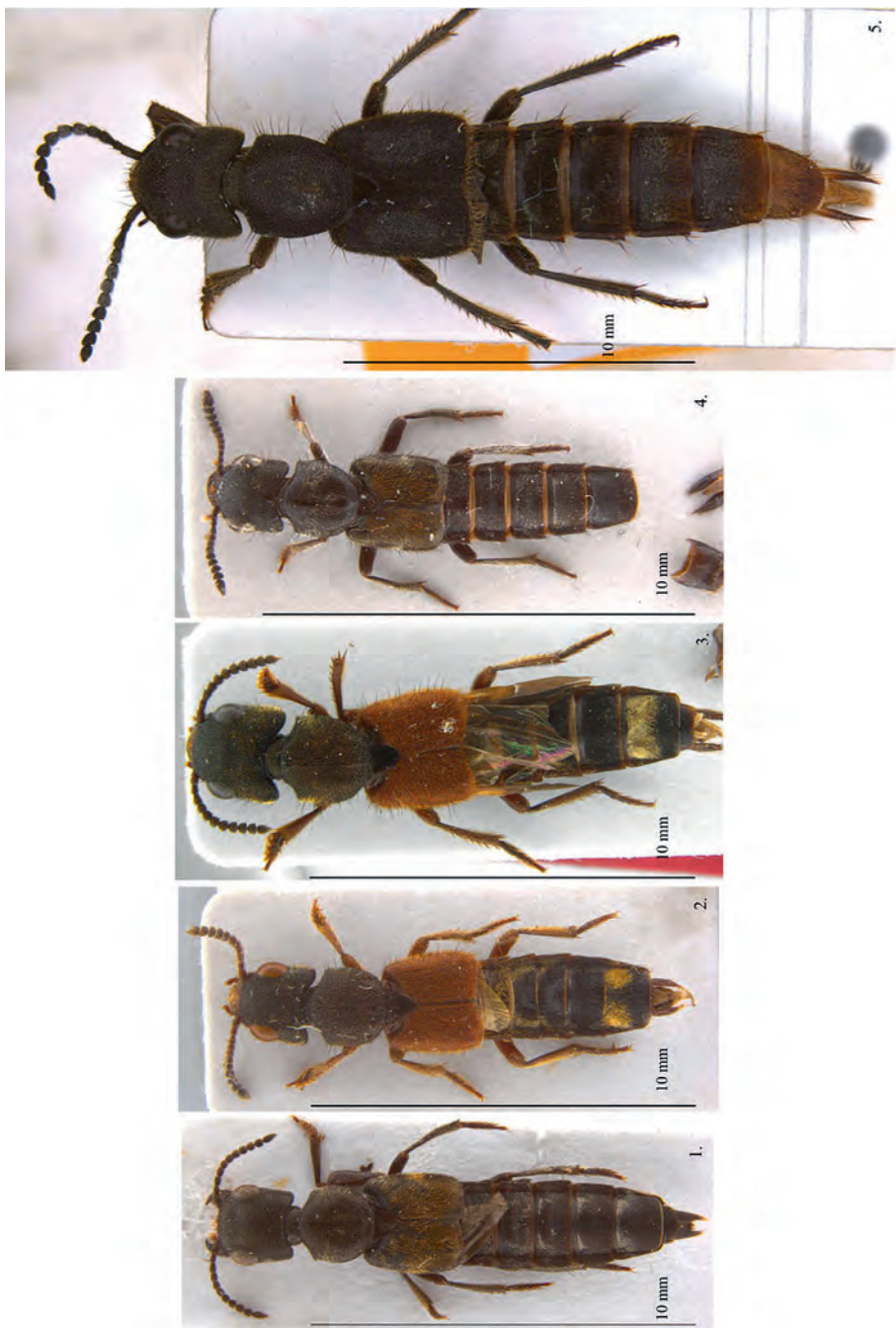
Contents of plates 1, 2, 3

Habitus: (1) *N. asetosa* nov.sp. holotype; (2) *N. iacobi* nov.sp. holotype; (3) *N. germana* nov.sp. paratype; (4) *N. aeneipennis* (Cam.) male from Danum Valley; (5) *N. limbifer* nov.sp. paratype from Danum Valley; (6) *N. ignipennis* nov.sp. holotype; (7) *N. barbarossa* nov.sp. holotype; (8) *N. eleonorae* nov.sp. holotype; (9) *N. aureomontis* nov.sp. holotype. (10) *N. borneensis* (Cam.) ex. from Danum Valley; (11) *N. brendelli* nov.sp. holotype; (12) *N. oxoniensis* nov.sp.; (13) *N. calcicola* nov.sp. holotype; (14) *N. argentifer* nov.sp.; (15) *N. sarahae* nov.sp. holotype.

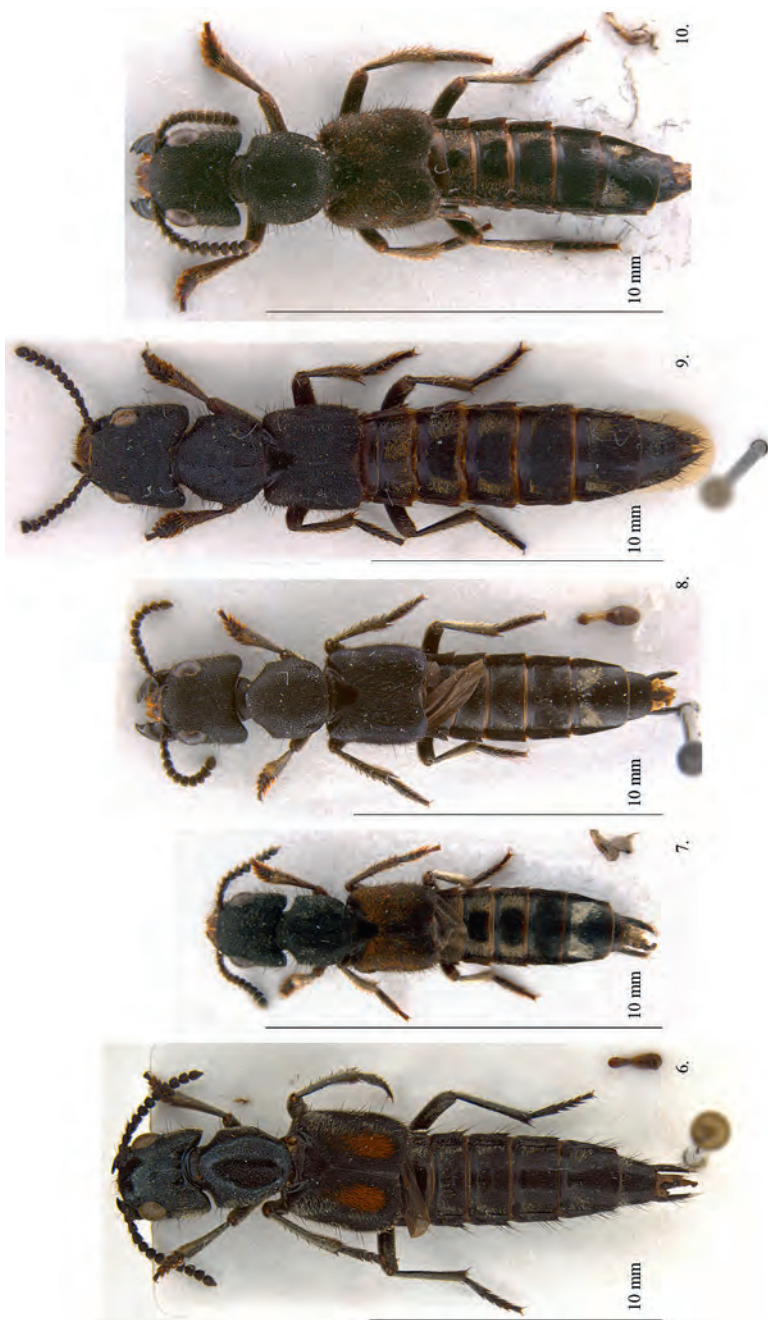
Contents of plates 4 and 5

Aedoeagus in ventral (a), dorsal (ad) and lateral (al) views: (2a, 2al) *N. drescheri iacobi*; (3a, 3al) *N. germana*; (4a, 4al) *N. aeneipennis*; (5a, 5al) *N. limbifer*; (6a, 6al) *N. ignipennis*; (7a, 7al) *N. barbarossa*; (8a, 8al) *N. eleonorae*; (10a, 10al) *N. borneensis*; (11a, 11al) *N. brendelli*; (12a, 12al) *N. oxoniensis*; (13ad, 13al) *N. calcicola*; (14a, 14al) *N. argentifer*; (15a, 15al) *N. sarahae*. Male sternite VII: (4c) *N. aeneipennis*; (10c) *N. borneensis*; (12c) *N. oxoniensis*. Male tergite VIII in ventral (b) and lateral (bl) views: (4b, 4bl) *N. aeneipennis*.

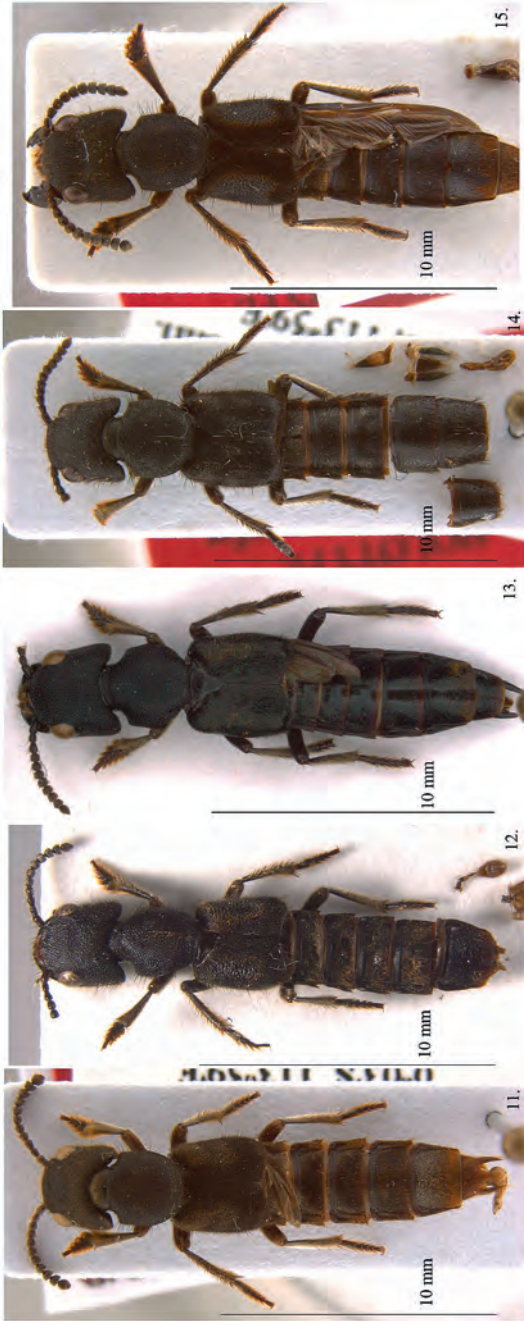
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