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A TAXONOMIC REVISION IN THE GENUS *ROSENBERGIA*
Part. 2

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HT ♀ *Rosenbergia weiskei* Heller, 1902.

**DESCRIPTION OF THE GENITALIA CHARACTERISTICS OF SPECIES
WITHIN THE *ROSENBERGIA WEISKEI* HELLER 1902 COMPLEX¹
AND RELATED SPECIES, INCLUDING THE DESCRIPTION
OF A NEW SPECIES OF *ROSENBERGIA*.**

**A TAXONOMIC REVISION.
Part 2.
(Coleoptera Cerambycidae)**

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¹ We prefer, in this context, to use the word "complex" to refer to a group of similar species with no current status as part of a more thoroughly defined taxonomic group.

Abstract

We compare the male and female genitalia characteristics of a large number specimens of *R. weiskei* Heller, 1902 from different populations on the main island of New Guinea (from NW Papua to SE Papua New Guinea), including the adjacent Aru Islands. The male genitalia characteristics include the sclerotized parts of aedeagus (i.e. the paramers, penis and proctiger; the 10th hidden abdominal segment). The female genitalia characteristics include the sclerotised part of the spermatheca (receptaculum seminis). From this material, a new species of *Rosenbergia* from the highlands of Papua New Guinea, *Rosenbergia drumonti* nov. sp., is described, figured and compared with HT *R. weiskei* and PT *R. diannae* ssp. *valentinae* Rigout, 2004. The male and female genitalia characteristics of *R. diannae* ssp. *valentinae* are also described. The closely related *R. humeralis* Gilmour, 1966 is considered to be a bona species by comparing the type description of the female HT with two recently collected females from the Arfak Mountains (Papua, south of Manokwari on the Bird's Head Peninsula). The female genitalia characteristics of *R. humeralis* are described. The male and female genitalia characteristics are also described of the following genuine species : *R. straussi* (Gestro, 1876), *R. gilmouri* Rigout, 1982, *R. lepesmei* Gilmour, 1960 and *R. megaloccephala* van de Poll, 1886. The subspecies *R. megaloccephala* ssp. *orangeineata* Schwartzter, 1929 is considered to be synonymuous, nov.syn., of *R. megaloccephala*.

Key words: Taxonomy, synonyms, *Rosenbergia* Ritsema, 1881, Coleoptera, Cerambycidae, Lamiinae, Batocerini, *Rosenbergia drumonti* nov.sp., genitalia, Australasian region, Papua, Irian Jaya, Papua New Guinea.

Introduction

Rosenbergia weiskei Heller, 1902 belongs to a complex, or group of species, with red or ferruginous-red to reddish-brown pubescence, and with the elytra supplied with (obsolete to complete) narrow longitudinal grey bands, and glabrous tubercles varying in size and distribution on the elytra. They all occur on the island of New Guinea. The species and subspecies that we consider as part of this complex are *R. weiskei*, *R. diannae* Allard, 1990, *R. diannae* ssp. *valentinae* Rigout, 2004, *R. rubra* Gilmour, 1966 and *R. humeralis* Gilmour 1966. *R. humeralis* is considered to be a junior synonym of *R. rufolineata* Breuning, 1948 (formerly *R. straussi* (Gestro, 1876) cf. CASADIO, 2006) by RIGOUT (1982b).

R. weiskei has frequently been collected on the island of New Guinea, including a record from the adjacent Aru Islands (Fig. 1). Many old records are from costal areas,

but specimens have more recently also been collected on the highlands of Papua New Guinea (south of the Bismarck Range). However, no data exist on the genitalia characteristics of *R. weiskei* or any other species within this complex. Previous examination of the the genitalia of *Rosenbergia* species within the "xenium-complex" (WALLIN & NYLANDER, 2006) showed that such attributes are useful in species determination, and we therefore extend our taxonomic revision by including species of the *R. weiskei*-complex in this study.

We compare the male and female genitalia characteristics of a large number specimens of *R. weiskei* from different populations on the main island of New Guinea (from NW Papua to SE Papua New Guinea), including the adjacent Aru Islands. We also compare two recently collected females of what we consider to be *R. humeralis* Gilmour, 1966 from the Arfak Mountain, NW Papua (formerly Irian Jaya) with the type description by Gilmour (1966) of female *R. humeralis*. In addition, the male and female genitalia characteristics of *R. straussi* (Gestro, 1876), *R. gilmouri* Rigout, 1982, *R. lepesmei* Gilmour, 1960 and *R. megalcephala* van de Poll, 1886 are examined, of which *R. megalcephala* is also compared with the subspecies *R. megalcephala* ssp. *orangelineata* Schwartzter, 1929.

We used a combination of characters (including size, shape, pubescence and microreticulation) on the male genitalia (i.e. the sclerotized parts of aedeagus including the paramers, penis and proctiger; the 10th hidden abdominal segment) to compare specimens from the above listed species. We also include the examination of the sclerotised part of the spermatheca (receptaculum seminis) of females. The method is outlined in detail in a previous publication (WALLIN & NYLANDER, 2006).

Materials examined

Rosenbergia weiskei Heller, 1902 ; 1 ♀ (HT), labelled *Rosenbergia weiskei*, Typus, Br. N. Guinea, Papua Golf, leg. E. Weiske, body length 51mm, in coll. Staatliches Museum für Tierkunde, Dresden, 1 ♂ labelled Neu Guinea, Gehr. W. Müller Vermächt 1909, body length 47mm, in coll. Staatliches Museum für Tierkunde, Dresden, 1 ♂ labelled Neu Guinea, Gehr. W. Müller Vermächt 1909, body length 45mm, in coll. Staatliches Museum für Tierkunde, Dresden, 1 ♂ labelled Papua New Guinea (PNG), Morobe Province (MP), Aseki, 1994-12, body length 49 mm, in coll. HW, 1 ♂ labelled PNG, MP, Bulolo, 1990-10, body length 41 mm, in coll. HW, 1 ♂ labelled PNG, MP, Aseki, No. 68, body length 46mm, in coll. UN, 1 ♂ labelled Sorong, No. 3, body length 48mm, in coll. UN, 1 ♂ labelled PNG, MP, Wau, 1991-01, body length 41mm, in coll. UN, 1 ♂ labelled PNG, MP, Aseki, Aya, 1992-06, body length 36mm, in coll. UN, 1 ♂ labelled PNG, MP, Wau Distr., Kapiro Village, body length 45mm, in coll. HW, 1 ♂ labelled PNG, MP, Wau Distr., Kapiro Village, body length 45mm, in coll. HW, 1 ♂ labelled PNG, MP, Wau 1200m, 2005-02, body length 44mm, in coll. HW, 1 ♀ labelled PNG, MP, Wau 1200m, 2005-02, body length 45mm, in coll. HW, 1 ♀ labelled Irian Jaya, FakFak, Indonesia, 2004-01, body length 53mm, in coll. HW, 1 ♀ labelled PNG, MP, Aseki, Aya, 1998-02, body length 50mm, in coll. UN, 1 ♂ labelled PNG, Eastern Highland Province (EHP), Okapa, 2003-02-15, body length 53mm, in coll. HW, 1 ♂ labelled PNG, EHP, Okapa, 2003-02-15, body length 49mm, in coll. HW, 1 ♂ labelled PNG, Madang Prov., Baiteta Forest, Light trap AR 34, 1996-07-15, leg. Olivier Missa, Canopy mission, body length 46mm, in coll. Institute Royal des Sciences Naturelles Belgique (I.R.Sc.N.B.), 1 ♂ labelled PNG, Madang Prov., Baiteta Forest, Light trap AR 50, 1996-06-18, leg. Olivier Missa, Canopy mission, body length 46mm, in coll. I.R.Sc.N.B., 1 ♂ labelled PNG, Madang Prov., Baiteta Forest, Light trap AR 34, 1996-07-10, leg. Olivier Missa, Canopy mission, body length 48mm, in coll. I.R.Sc.N.B., 1 ♂ labelled Irian Jaya (Papua), Arfak Mts., 2006-05, body length 48mm, in coll. UN, 1 ♂ labelled PNG, Madang Prov., Baiteta Forest, Light trap AR 48, 1996-11-18, leg. Olivier Missa, Canopy mission, body length 45mm, in coll. I.R.Sc.N.B., 1 ♂ labelled PNG, Madang Prov., Baiteta Forest, Light trap M8, 1995-04-18, leg. Olivier Missa, Canopy mission, body length 44mm, in coll. I.R.Sc.N.B., 1 ♂ labelled PNG, Wau Valley, Kapiro Village, 2004-11-22, body length 43mm, in coll. HW, 1 ♀ labelled PNG, Wau Valley, Kapiro Village, 2004-12-11, body length 46mm, in coll. HW, 1 ♀ labelled PNG, MP, Wau District, Kapiro Village, 2003-10-18, body length 54mm, in coll. HW, 1 ♀ labelled Nlle GUINEE, Goroka, (Bena), 5300 ft., 1971-09/10, ex. coll. Marcel Galant, body length 49mm, in coll. I.R.Sc.N.B., 1 ♂ (not dissected) labelled D. Neu-Guinea, Wahner. Franklin Muller, *Rosenbergia weiskei* det. Rigout 1982, body

length 52mm, in coll. I.R.Sc.N.B., 1 ♀ labelled Ureining, Auru Is., C. Ribbe 1884, Frank R. Mason Collection, Homotype *R. weiskei*, det. E.F. Gilmour, body length 53mm, in coll. NRM, Stockholm, 1 ♂ labelled PNG, MP, Wau 1200m, 2005-02, body length 3,7 cm, in coll. HW, 1 ♀ labelled PNG, MP, Wau 1200m, 2005-02, body length 5,1 cm, in coll. HW, 1 ♀ labelled PNG, MP, Wau 1200m, 2005-02, body length 4,6 cm, in coll. HW, 1 ♀ labelled D.N. Guinea, Sattelberg, body length 55,5mm (not dissected), in coll. DEI, Deutsches Entomologisches Institut, Müncheberg, syntypus (*R. bennigseni* Aurivillius, 1908; junior syn. of *R. weiskei*).

Rosenbergia drumonti nov.sp.; 1 ♂ labelled PNG, Simbu (Chimbu) Prov., Kerowagi, 1990-01, leg. Clark, body length 56mm, in coll. UN, 1 ♀ labelled PNG, Simbu (Chimbu) Prov., Kerowagi, 1990-01, Leg. Clark, body length 59mm, in coll. UN, 1 ♀ labelled PNG, Kapiro, Wau Valley, 2004-12-11, body length 56mm, in coll. HW, 1 ♀ labelled Papua New Guinea, ex. coll. Marcel Galant, IG: 28.399, PNG, Bulolo, 1980-12, ex. C.C. Chua, body length 53mm, in coll. I.R.Sc.N.B., 1 ♀ (not dissected) labelled ex. coll. Marcel Galant, PNG, South H. Province, Mendi, 1980-09, ex. C.C. Chua, body length 58mm, in coll. I.R.Sc.N.B., 1 ♀ labelled Nlle GUINEE, Goroka, (Bena), 5300 ft., 1971-09/10, ex. coll. Marcel Galant, body length 55mm, in coll. I.R.Sc.N.B., 1 ♀ labelled PNG, Eastern Highlands, Kainanto, 1990-01, Leg. Clark, body length 57mm, in coll. UN, 1 ♂ labelled PNG, Simbu (Chimbu) Prov., Kerowagi, 1984-01, body length 46,5mm, in coll. UN, 1 ♂ labelled PNG, MP, Aseki, 1999-12, body length 57mm, in coll. UN.

Rosenbergia diannae ssp. *valentinae* Rigout, 2004; 1 ♂ (PT) labelled PNG, MP, Aseki, Aya, 1992-02, body length 54mm, in coll. Carlo Arrigo Casadio, 1 ♂ labelled PNG, MP, Aseki, 1992-02, body length 54mm, in coll. UN, 1 ♂ labelled PNG, MP, Aseki Subdistr., Yamaia Village, 2002-04-05, body length 57mm, in coll. HW, 1 ♂ labelled PNG, MP, Aseki, Hokanaiwa Village, 2005-05-13, body length 55mm, in coll. UN, 1 ♂ labelled PNG, MP, Aseki, Hokanaiwa Village, 2005-05-13, body length 57mm, in coll. UN, 1 ♂ labelled PNG, MP, Aseki, Wingia Village, 2005-06-01, body length 54mm, in coll. UN, 1 ♀ labelled PNG, MP, Aseki, Hokanaiwa Village, 2005-07-27, body length 59mm, in coll. UN, 1 ♀ labelled PNG, MP, Aseki Subdistr., Yamaia Village, 2002-04-05, body length 61mm, in coll. HW.

Rosenbergia humeralis Gilmour, 1966; 1 ♀ labelled Irian Jaya (Papua), Indonesia, Arfak Mts., 2005-11, body length 62mm, in coll. UN, 1 ♀ labelled Irian Jaya (Papua), Indonesia, Arfak Mts., 2006-05, body length 58mm, in coll. UN.

Rosenbergia straussi (Gestro, 1876); 1 ♂ labelled Irian Jaya (Papua), Indonesia, Arfak Mts., 2005-02, body length 56mm, in coll. HW, 1 ♀ labelled Irian Jaya (Papua), Indonesia, Arfak Mts., 2005-11, body length 53mm, in coll. UN.

Rosenbergia gilmouri Rigout, 1982; 1 ♂ labelled PNG, MP, Bulolo Village, 1999-03-19, body length 49mm, in coll. HW, 1 ♂ labelled PNG, MP, Bulolo Village, 1999-03-19, body length 48mm, in coll. HW, 1 ♀ labelled PNG, MP, Wau Valley 1200m, 2005-02-23, body length 57mm, in coll. HW, 1 ♂ (not dissected) labelled PNG, MP, Bulolo, body length 42 mm, in coll. UN, 1 ♀ (not dissected) labelled PNG, MP, Bulolo, New Camp, 1997-01, body length 55 mm, in coll. UN, 1 ♀ (not dissected) labelled PNG, MP, Bulolo, 1999-11-29, body length 56 mm, in coll. UN, 1 ♀ (not dissected) labelled PNG, MP, Bulolo Village, 1999-11-29, body length 53 mm, in coll. UN, 1 ♂ (not dissected) labelled PNG, MP, Manko Range, Bulolo, 1999-01-27, body length 49 mm, in coll. UN, 1 ♂ (not dissected) labelled PNG, Manko Range, Bulolo Prov. 1999-11-16, body length 48 mm, in coll. UN, 1 ♂ (not dissected) labelled PNG, MP, Wau Valley, 1200m, 2005-02-23, in coll. UN.

Rosenbergia lepesmei Gilmour, 1960; 1 ♂ labelled *R. lepesmei* det. J. Rigout 1982, Australia, N. Queensland, Coactocoa, Olive, 1893, body length 50mm, in coll. R.I.Sc.N.B., 1 ♀ labelled *R. lepesmei* det. J. Rigout 1982, Australia, Queensland, Endeavour River, H. Rolle, 1910-02-18, body length 55mm, in coll. R.I.Sc.N.B., 1 ♀ labelled Queensland, Australia, PT *R. terraereginae*, det. E.F. Gilmour, (not dissected) body length 55mm, in coll. NRM, Stockholm, 1 ♂ (not dissected) labelled *R. lepesmei* v. *terraereginae*, ex.coll. Nonfried, Australia, Queensland, body length 52mm, in coll. UN.

Rosenbergia megalcephala van de Poll, 1886; 1 ♂ labelled Australia, Queensland, *R. megalcephala* det. E.F. Gilmour, body length 40mm, in coll. NRM, Stockholm, 1 ♀ labelled Australia, B. Mörner, *R. megalcephala* det. E.F. Gilmour, (not dissected) body length 44mm, in coll. NRM, Stockholm.

Rosenbergia megalcephala ssp. *orangelineata* Schwartzter, 1929; 1 ♂ labelled Australia, Queensland, Hartleys Creek, Cairns, 1981-01, leg. C. Pratt, body length 43mm, in coll. HW, 1 ♂ labelled Australia, Queensland, Hartleys Creek, Cairns, 1989-01, leg. C. Pratt, body length 45mm, in coll. HW, 1 ♂ (not dissected) labelled Australia, Kuranda, 1988-02-20, body length 42mm, in coll. UN, 1 ♀ (not dissected) labelled Australia, French coll., body length 49mm, in coll. UN, 1 ♂ (not dissected) labelled Australia, coll. de Moffarts, Queensland, Porullon, 1907-03-24, body length 46,5mm, in coll. R.I.Sc.N.B., 1 ♂ (not dissected) labelled coll. Nonfried, Australia, Queensland, det. Breuning, 1952 and J. Rigout, 1982, body length 47,5mm, in coll. R.I.Sc.N.B.

A total of 35 males and 21 females were dissected (of which 28 males and 18 females constitute specimens of the *weiskei*-complex). Species determination following type descriptions by Van De Poll (1886), Heller (1902), Aurivillius (1908), Schwartzter (1929), Breuning (1948), Gilmour (1966), Allard (1990), Rigout (2004) and Taxonomic Reviews By Gilmour (1959, 1960, 1966), Rigout (1982b), Breuning (1962), Nylander (2004) and Casadio (2006). Abbreviations HW and UN refer to the authors of this paper, I.R.Sc.N.B refers to Institute Royal des Sciences Naturelles Belgique, Brussels and NRM refers to The Swedish Museum of Natural History (Naturhistoriska Riksmuseet), Stockholm.

Results

By comparing the male and female genitalia characteristics of a large number specimens of *R. weiskei* Heller, 1902 from different populations on the main island of New Guinea (from NW Papua to SE Papua New Guinea), including the adjacent Aru Islands, we find some variation but also common characteristics that confirm that *R. weiskei* is a variable but genuine species. From this material, a new species of *Rosenbergia* from the highlands of Papua New Guinea, *Rosenbergia drumonti* nov. sp., is described, figured and compared with HT *R. weiskei* and PT *R. diannae* ssp. *valentinae* Rigout, 2004. The male and female genitalia characteristics of *R. diannae* ssp. *valentinae* are also described. The closely related *R. humeralis* Gilmour, 1966 is considered to be a bona species by comparing the type description by Gilmour (1966) with the characters of two recently collected females from the Arfak Mountains, Papua (formerly Irian Jaya).

The male and female genitalia characteristics are also described of the following genuine species *R. straussi* (Gestro, 1876), *R. gilmouri* Rigout, 1982, *R. lepesmei* Gilmour, 1960 and *R. megalcephala* van de Poll, 1886. We found no significant differences in male genitalia characteristics between *R. megalcephala* and *R. megalcephala* ssp. *orangelineata* Schwartzter, 1929 to support a subspecies. The subspecies *R. megalcephala* ssp. *orangelineata* is, therefore, considered to be synonymous, nov.syn., with *R. megalcephala*.

The localities, including the type localities, of the examined specimens of *R. weiskei* are shown in Fig. 1. The variation in colour patterns amongst the examined specimens of *R. weiskei* is shown in Fig. 2 and 3. Elytral characteristics of *R. drumonti* nov. sp. and *R. weiskei* are shown in Fig. 4. Male and female *R. drumonti* nov. sp., and *R. diannae* ssp. *valentinae* are shown in Fig. 5. The male genitalia characteristics of the examined species are shown in Figs. 6-8 (including some observed variations in *R. weiskei* shown in Fig. 7B-D), and the spermatheca of the examined species are shown in Fig. 9. Examined specimens of *R. lepesmei*, *R. megalcephala*, *R. megalcephala* ssp. *orangelineata* and *R. humeralis* are shown in Fig. 10.

Genitalia characteristics

R. weiskei (Fig. 6A, 7A-D, 9A-E)

Penis: average 4,3mm long (range 3,4-5,3mm, n=14)/average 1,35mm wide (range 1,2-1,5mm), relatively short (rarely slightly extended), slender, narrowed and curved

towards apex, ventral ridge protruding and forming a distinct, rounded apex ventrally. Dorsal ridge with a short, weak to relatively distinct longitudinal furrow medially, only visible at apex.

Paramers: average 1,7mm long (range 1,5-2,0mm)/average 1,16mm wide (range 1,1-1,4mm), short (rarely slightly extended), slightly separated and concave (projecting inwards) at apex (either entire posterior margin or tip of apex projecting inwards), with fringes of relatively short, yellow-brownish hairs well concentrated at the edge of apex, only scattered single hairs medially towards apex. The posterior margin only visible dorsally due to the much higher concentration of fringes of hairs along the posterior margin ventrally. The surface medially along the inner margin and predominantly towards the posterior margin covered with weak irregular micro-reticulation. The shape of the paramers, and the extent of punctuation/number of hairs (ventrally) with some (rare) variation, but the posterior margin is always clearly visible dorsally.

Proctiger: relatively small, average 3,6mm wide (range 3,1-4,0mm) and covered with dense very fine yellow hairs (rarely with a mixture of yellow and single brown hairs) distally towards the posterior margin where the hairs are concentrated. Posterior margin forming a straight line, or at the most, with a weak indentation in the middle (only observed in one specimen). Surface shining medially with weak punctures and square-formed micro-reticulation towards the posterior margin. The colour is yellow to brown (rarely with an obsolete, lighter spot medially).

Spermatheca: width 2,0mm, relatively thin, curved inwards towards apex and sometimes forming a straight line towards apex. Apex with an extended to elongated head. The colour is yellow to brown. Three different forms of the spermatheca could be distinguished in the examined material; the form represented by the HT (and found in most of the examined females), a more extensively curved form (with the head pointing upwards) only found in two females from PNG, MP, Wau, and the form with an extended head represented by the female from Papua, Aru Islands.

R. drumonti nov. sp. (Fig. 6B, 9G and H)

Penis: (HT) 6,0mm long/1,6mm wide, long and stout, weakly curved at base and almost straight ventrally from the middle section towards apex, ventral ridge protruding and forming a distinct, narrowed and rounded apex ventrally. Dorsal ridge with a distinct, deep longitudinal furrow running along the surface medially towards apex (covering approximately 3/4 of the length of the penis). Dorsal surface towards apex supplied with distinct transversal wrinkles along each margin up to 1/3 of the aedeagus length from apex.

Paramers: (HT) 2,0mm long/1,5mm wide, relatively long, slightly separated towards apex along a straight line (i.e. not projecting inwards), with fringes of very fine long, white-yellowish hairs concentrated at apex. The posterior margin of the paramers not visible dorsally due to the much higher concentration of hairs at apex on the dorsal side, the surface ventrally with scattered and fine, shorter hairs to 1/3 of the paramer length (the posterior margin clearly visible ventrally). The surface dorso-medially, shining brown to black with no micro-reticulation.

Proctiger: (HT) 4,5mm wide and covered with dense white-yellowish hairs distally towards the posterior margin covering the entire width of proctiger. Surface with weak punctures medially and with distinct square-formed micro-reticulation towards apex. Posterior margin straight, with no concavity or indentation in the middle. The colour is dark brown to black.

Spermatheca: (AT) width 2,8mm, thick, robust and relatively long, acutely curved (downwards) towards apex. Apex with a thick, short and round head. The colour is yellowish-brown.

Egg: 10mm long.

R. diannae ssp. *valentinae* (Fig. 6C, 9F)

Penis: average 5,8mm long (range: 5,3-6,1mm, n=6)/average 1,75mm wide (range: 1,5-1,8mm), long and stout, strongly curved at base and almost straight ventrally

from the middle section towards apex, ventral ridge protruding and forming a distinct, wide and rounded apex ventrally. Dorsal ridge with an obsolete longitudinal furrow only distinct (and clearly visible) at apex. Dorsal surface smooth with no transversal wrinkles.

Paramers: average 2,3mm long (range: 2,3-2,8mm)/average 1,45mm wide (range: 1,4-1,5mm), relatively long to long, slightly separated and concave (projecting inwards) at apex, with fringes of thick short and long, yellowish-brown hairs concentrated at apex. The edge of apex not visible dorsally or ventrally due to the concentration of hairs along the posterior margin on both sides, the surface ventrally with hairs to 1/3 of the paramer length along the margins, the margins towards apex ventrally with distinct transversal wrinkles. The surface dorso-medially with irregular micro-reticulation.

Proctiger: 4,7mm wide (range: 4,5-4,9mm) and covered with a mixture of brown and yellowish hairs distally towards the posterior margin with a distinct and naked yellowish-brown spot medially. Surface medially with weak punctures and with distinct square-formed micro-reticulation towards apex. Posterior margin almost straight, with no concavity or indentation in the middle. The colour is dark brown to black (except the medial lighter spot).

Spermatheca: width 2,8mm, thin and relatively long, strongly curved inwards towards apex (less "U"-shaped than in *R. humeralis*). Apex with a relatively small and round head (more evenly rounded than in *R. humeralis*). The colour is black.

R. humeralis (Fig. 9I)

Spermatheca: width 1,9mm, thin and relatively long, acutely curved inwards towards apex (distinctly "U"-shaped). Apex with a small and round head. The colour is brown.

R. straussi (Fig. 8A, 9J)

Penis: 4,8mm long/1,7mm wide, relatively stout and wide medially, narrowed towards apex, curved dorsally but with the ventral ridge forming a straight line. Dorsal ridge with an obsolete furrow, only slightly visible at apex.

Paramers: 2,5mm long/1,2mm wide, relatively long, black, slightly projecting inwards at apex, with fringes of very dense yellowish hairs dorsally at the edge of apex but not covering the posterior margin (which is visible dorsally), ventrally with fringes of very dense yellowish hairs entirely covering the posterior margin and medially to 3/4 of the paramer length. The ventral surface with deep and dense punctures. Dorsally with obsolete irregular micro-reticulation towards apex.

Proctiger: 5,5mm wide and covered with dense white to yellow hairs distally towards the posterior margin. Surface medially with weak micro-reticulation forming meshes. Posterior margin with a slight concavity in the middle.

Spermatheca: width 2,4mm, relatively narrow and extensively curved sideways towards apex. Apex with a relatively distinct and oval head. The colour is black.

R. gilmouri (Fig. 8B, 9K)

Penis: 5,5mm long/1,5mm wide, long, stout, and evenly curved towards apex. Dorsal ridge also curved from 2/3 towards apex, with no trace of a longitudinal furrow medially or at apex. Ventral ridge slightly protruding and visible dorsally.

Paramers: 2,0mm long/1,3mm wide, relatively short, wide and clearly separated towards apex, with very dense fringes of brownish hairs concentrated medially and towards the posterior margin both dorsally and ventrally (i.e. the posterior margin not visible). The surface medially and predominantly towards apex covered with very weak (square formed) micro-reticulation.

Proctiger: 4,0mm wide and covered with relatively dense white to yellow hairs distally towards the posterior margin. Surface medially with very weak micro-reticulation, forming meshes. Posterior margin forming an almost straight line, i.e. with no indentation in the middle.

Spermatheca: width 3,8mm, thick, robust, long, and evenly curved towards apex.

Apex with a large round head. The colour is brown.

R. megalcephala (Fig. 8C and D)

Penis: 4,5mm long/2,8mm wide, stout, relatively flat and dorsally from mid-section curved towards the rounded apex, ventral ridge also curved but not protruding and is thus not clearly visible in dorsal view. Dorsal ridge with a weak, obsolete longitudinal furrow medially, only visible at apex.

Paramers: 1,8mm long/1,3 mm wide, relatively long, slightly separated and concave (projecting inwards) at the rounded apex, deeply flattened and oblique at apex, with fringes of erected brownish hairs concentrated towards the posterior margin, but also laterally and medially (both dorsally and ventrally and the posterior margin is thus not visible). The surface medially with weak (square formed) micro-reticulation. The paramers of the examined specimens of *R. megalcephala* ssp. *orangelineata* are supplied with less abundant fringes of hairs dorso-medially (Fig. 8D).

Proctiger: 4,3mm wide and covered with dense white to yellow hairs distally towards the posterior margin. Surface medially with weak micro-reticulation, forming meshes. Posterior margin with a small, narrow ("U-shaped") indentation in the middle.

R. lepesmei (Fig. 8E, 9L)

Penis: 5,5mm long/1,5mm wide, long, stout, and evenly curved towards apex. Dorsal ridge also curved from 2/3 towards apex, and with a weak, longitudinal furrow medially only distinct at apex. Ventral ridge protruding and clearly visible dorsally.

Paramers: 2,2mm long/1,3mm wide, long and clearly separated towards apex, with fringes of brownish hairs concentrated medially and towards the posterior margin both dorsally and ventrally (the posterior margin not visible). The surface medially and predominantly towards the posterior margin with very weak pigmentation (almost transparent). The surface medially also covered with weak (irregular) micro-reticulation. Each paramer is supplied with a dorsal ridge medially that runs from the base towards apex. The colour is brown.

Proctiger: 4,8mm wide and covered with dense white to yellow hairs distally towards the posterior margin. Surface medially with weak micro-reticulation, forming meshes. Posterior margin with a distinct indentation in the middle.

Spermatheca: width 3,8mm, thick, robust, long, and curved sideways towards apex. Apex with a large round head. The colour is brown.

Conclusions

The genitalia characteristics appear to be species-specific, with little or no variation within most of the examined species. The observed variation in genitalia characteristics seen in *R. weiskei* is somewhat expected in such a widely distributed species. By considering both the genitalia characteristics, and the habitus of the adult beetles, we have not been able distinguish more than one new species of *Rosenbergia* in the *weiskei*-complex. Further investigations are needed to clarify if the female from the Aru islands (a geographically isolated area) represents a separate subspecies.

The original description of *R. weiskei* was based on a female, and K.M. HELLER (1902) only makes general comparison with *R. rufolineata* Breuning, 1948 (formerly *R. straussi* (Gestro, 1876)), *R. mandibularis* Ritsema, 1881, *R. vetusta* Ritsema, 1881, *R. exigua* Gahan, 1888 and *R. megalcephala* van de Poll, 1886, the male being previously unknown. Our study of the HT of *R. weiskei* confirmed that this is a female. Based on the genitalia characteristics presented here, together with the apparent variation in colour patterns, we give an updated description of *R. weiskei* including a description of the male, basically following terms used by GILMOUR (1966) and WALLIN & NYLANDER (2006).

***Rosenbergia weiskei* Heller, 1902**

Type locality: Papua New Guinea, Papua Gulf, Emil Weiske legit. The type description by K.M. HELLER (1902) also contains a presentation of the travels conducted by Emil Weiske in August and October 1898 where localities along the coast such as Pelepa, Kerema, Upau, Pisi and Karama were visited, i.e. the SE part of the Gulf of Papua and NW of Port Moresby, all labelled "Papua Gulf", and it is therefore reasonable to assume that the type specimen was collected as shown in Fig. 1 (approximate location) and during August-October, 1898.

HT, a single female (Fig. 2A) labelled "Typus", body length 51mm, width 18mm, length/width ratio of elytra: 2.8 (as measured from anterior border to apex and width at widest point at the shoulders), in coll. Staatliches Museum für Tierkunde, Dresden.

Synonyms: *Rosenbergia bennigseni* Aurivillius, 1908, *Rosenbergia rufovittata* Breuning, 1948, *Rosenbergia griseolineata* Gilmour, 1966, *Rosenbergia bolanica* Gilmour, 1966.

Note: RIGOUT (1982b) includes *Rosenbergia griseovittata* Gilmour, 1966 as a synonym of *R. weiskei* (with the remark, description missing), but the usage by Gilmour (1966) of this name must be a printing error (presumably confusing the two species names "*griseolineata* and *rufovittata*") in this publication, since there is no such type description available. We therefore exclude *R. griseovittata* from the present list of synonyms.

The two males incorporated by Staatliches Museum für Tierkunde, Dresden 1909 (Fig. 2B and C) are included in the examination of males in the present study. HELLER (1902) refers to a male as being the type, although GILMOUR (1966) states that the type is a female, and the present examination of the specimen labelled "typus" confirms that this is a female. In any case, the two males shown in Fig. 2 could be the first males captured of this species. GILMOUR (1966) includes a description of the male. The following is an updated description of male and female *R. weiskei*:

R. weiskei is a highly variable species of moderate-size, but with a pronounced variation in body length, ranging from 36mm (a male) to 53mm (both sexes) in the examined specimens. The fine, short and flattened pubescence covers the entire body and varies dorsally from orange to ferruginous-red. Underside and legs covered with grey pubescence. Mesothorax laterally/abdominal segments posteriorly, with orange to ferruginous-red pubescence forming longitudinal/transversal narrow bands.

R. weiskei is also characterised by having numerous small and black granules on the posterior part of the elytra both medially and laterally towards the shoulders or humeri (where the granules are more numerous). The smaller granules medially near the shoulders are often raised and thus distinct, whereas they appear to be more flattened and in some specimens forming slightly larger and glabrous tubercles laterally towards humeri. However, most of the examined specimens lack the larger tubercles laterally, and each elytron is then supplied with smaller black granulation, very dense to sparse on the anterior half, sparse to absent in the distal half. The number of granules on each elytron varies from approx. 30 to 50 (or slightly more).

The narrow greyish elytral bands (or vittae) varies from obsolete to distinct, but always visible to some extent either basally, apically or laterally. When distinct (as in the HT), the longitudinal grey bands are present on each elytron as follows; two narrow grey bands marginally; one along the entire sutural margin and one (even narrower) along the entire lateral elytral margin reaching the apical spine (Fig. 4), and three median grey bands of which the middle band is slightly wider than the two lateral bands on the median part of each elytron (Fig. 4). The inner median band grey band is slightly

shorter than median band 2 and 3 (towards the elytral margin) that almost reaches the apical margin. Heller (1902) states that type of *R. weiskei* has three grey longitudinal bands on the elytra, but makes no further description of the sutural and marginal bands. The narrow lateral band and median band 3 are rarely joined to a single, and slightly wider lateral band that runs along the lateral elytral margin, but with evident gaps separating the grey band 3 and the grey marginal band (towards humeri and/or apices). The hairs of the greyish pubescence of all five longitudinal bands uniform and similar in shape and density as the corresponding reddish elytral pubescence. Each elytron with extreme vague traces of two to three longitudinal carinae placed on the centre of the two median and the marginal grey bands. The scutellum flat and with orange to red pubescence covering most of the area apart from a narrow (sometimes more extended) band with greyish pubescence along the anterior margin. The HT appears to have an indentation in the middle of the posterior margin of the scutellum (in fact caused by the presence of a single and raised granula).

Each elytron with a short humeral spine, and two apical spines (as clearly stated by HELLER, 1902), the sutural spine sometimes more distinct and slightly longer than the marginal (lateral) spine (Fig. 4). The elytral margin between the two sutural spines is more or less straight (as in the type) and rarely convex. The marginal spine is quite oblique in two examined specimens, but then the elytral margin is convex between the two sutural spines.

Female: Elongate, robust, subcylindrically cuneiform. Body length 48-63mm. Length/width ratio of elytra; 2.0. The antennae moderately slender, exceeding the elytral apex by about two to three apical segments. Apical edge of last visible ventral abdominal segment extended with a sharp, glabrous edge forming an almost straight (or slightly wave-like) line. Female spermatheca unique as described above. Some variability in the shape of the spermatheca was noted, and particularly the female from Aru Islands differ from the type. Further study is required to investigate if this could be a separate subspecies. The two females from PNG, MP, Wau with a more extensively curved spermatheca (cf. Fig. 9D) are considered as varieties of *R. weiskei*, since the similarly coloured males captured at the same locality agree with the genitalia characteristics of those shown in Fig. 6A and 7A (i.e. the most common form).

Male: Slightly more elongate, robust, subcylindrically cuneiform. Body length 36-53mm, width 12,5-17,5mm, length/width ratio of elytra; 2.9-3.0. The antennae rather slender, exceeding the elytral apex by about three to four apical segments. Apical edge of last visible, ventral abdominal segment strongly concave and supported with fine pubescence. Aedeagus (penis, paramers) and proctiger unique for this species, and easily distinguished from all similar species of *Rosenbergia* as described above. Some variation was noted in male genitalia of specimens from different populations, although by examining both dorsal and ventral surface of the paramers the overall characters are relatively uniform (e.g. the posterior margin of the paramers are always clearly visible dorsally).

The observed variation in colour patterns of adult beetles shown in Fig. 3 represent individuals from different populations in New Guinea. Specimens collected at the same locality often exhibit an overall similarity, with little or no variation in colour patterns of the adult beetles and genitalia characteristics. For example, the five males collected near Madang (Baiteta Forest) using light traps (with single captures throughout the year from April 1995 to July 1996) are all similar to the male shown in Fig. 3C, the male in Fig. 3D from Wau, Kapiro exhibit similar colour patterns as the female in Fig. 3I (the labels indicate that they were collected at the same site and at the same time), and the two males (with a slightly elongated elytra) from Okapa are both similar to the male shown in Fig. 3E.

Synonyms

Rosenbergia bennigseni Aurivillius, 1908. AURIVILLIUS (1908) compares this junior synonym of *R. weiskei* (a female) with *R. mandibularis* and *R. vetusta*. Body length 55,5mm. Type locality: Neu Guinea, Sattelberg, in coll. Deutsches Entomologisches Institut, Müncheberg. The red colour and the existence of three longitudinal grey bands indicates, in the diagnosis by Aurivillius, that it is *R. weiskei*. The examination showed that this large female also has the characteristic and distinct sutural spine on the elytra in combination with a distinct marginal (lateral) spine. The black granulation (small tubercles) basally on each elytron is also characteristic for *R. weiskei*. The conclusion, therefore, is that this must be a junior synonym of *R. weiskei*.

Rosenbergia rufovittata Breuning, 1948. Body length 57mm, type locality: PNG, Finchhafen, in coll. Itzinger. Breuning (1948) only compares this junior synonym of *R. weiskei* (a male) with *R. mandibularis*. The very brief diagnosis at least includes the existence of three longitudinal bands, and the colour photo in Rigout (1982b) indicates that this is one of many colour varieties of *R. weiskei* (with a convex elytral margin between the sutural and marginal spine). There is no information in the diagnosis about the existence/shape of e.g. elytral granulation elytral apices. However, we have not examined this junior synonym of *R. weiskei* further (the photo in RIGOUT, 1982b shows the HT with almost no elytral pubescence intact), and an examination of the genitalia might be necessary to fully confirm that this is a true synonym of *R. weiskei*.

Rosenbergia griseolineata Gilmour, 1966. Body length 45,5mm, type locality: West Irian (Papua), Hollandia (Jayapura), in coll. U. Danckers. The diagnosis states that the junior synonym of *R. weiskei* (a male) has three and not four grey longitudinal (probably assumed by Gilmour to be a stable character of *R. weiskei*) grey bands on the elytra, and a recently taken colour photo we have examined of the junior synonym of *R. weiskei* shows that the marginal grey band is obsolete, overlapping the variable characters of *R. weiskei*. In addition, GILMOUR (1966) includes the existence of both sutural and marginal angles bearing a strong pointed spine (which is characteristic of *R. weiskei*). However, we have not examined this junior synonym of *R. weiskei* further, and an examination of the genitalia might be necessary to fully confirm that this is a true synonym of *R. weiskei*.

Rosenbergia bolanica Gilmour, 1966. Body length 52mm, type locality: New Guinea, Bolan Gbg. The diagnosis states that the junior synonym of *R. weiskei* (a male) is close to "*R. griseovittata*" (assuming this could be either *R. griseolineata* or *R. rufovittata*), but differing by the elytral apices not being strongly two-spined, the marginal angle being almost obsolete (with a strongly convex elytral margin between the sutural and marginal spine as shown by the colour photo presented by RIGOUT, 1982b). Moreover, the elytra with a number of very sparse moderately large glabrous tubercles extending sublinear discally, mostly on the narrow grey longitudinal vittae. The elytra with ferruginous-red pubescence. The overall characteristics appear to clearly overlap those of *R. weiskei*. However, we have not examined this junior synonym of *R. weiskei* further, and an examination of the genitalia might be necessary to fully confirm that this is a true synonym of *R. weiskei*.

R. rubra Gilmour, 1966

Body length 45mm, type locality: N.E. West Irian (Papua), Humbolt Bay District (J. Kleinberg), in coll. U. Danckers. We assume this is a genuine species based on the detailed diagnosis of the HT (a male) by GILMOUR (1966) and by examining a recently taken colour photo of the HT and the photos in RIGOUT (1982b, 2004). The elytral tubercles (or in fact small, raised granules) are more extensive suturally (rather than laterally as in *R. weiskei*) extending to about the apical quarter, but only to about middle marginally. No trace of marginal grey band, or other coloured band on the elytra. Elytra with deep reddish-brown pubescence. Each elytron with a sutural and a

marginal spine. GILMOUR (1966) only makes a comparison with *R. mandibularis*. The described subspecies *R. rubra ssp. fakfakensis* Rigout, 2004 has a more pronounced brownish pubescence (RIGOUT, 2004). The type locality for *R. rubra fakfakensis* is Fak Fak, Papua. The intense and rather evenly distributed sutural granulation covering most of anterior half, combined with the absence longitudinal grey bands, appears to separate *R. rubra* from *R. weiskei*. Further investigations are, however, needed to clarify if *R. rubra ssp. fakfakensis* could be considered as a true subspecies of *R. rubra*, and to fully confirm the differences between *R. rubra* and *R. weiskei*.

***Rosenbergia drumonti* nov. sp.**

Description:

HT ♂ body length 57mm, width 19mm, length/width ratio of elytra: 3.0 (as measured from anterior border to apex and width at widest point at the shoulders), in coll. Ulf Nylander.

AT ♀ body length 59mm, width 21,5mm, length/width ratio of elytra: 2.7, in coll. Ulf Nylander.

Colour dorsally: The entire body is covered with rather coarse, somewhat erected and relatively long orange to red pubescence (most pronounced on the elytra). Each elytron supplied with five grey, very distinct and longitudinal bands; one narrow grey bands that runs along the entire lateral margin, from the humeri to the sutural spine, one grey band along the sutural margin (relatively wide to very wide in females medially near the scutellum), and three median grey bands of which the lateral band medially is narrow and the two remaining grey bands medially (band 1 and 2) are very wide (Fig. 4). The inner median band grey band (band 1) is slightly shorter than median band 2 and 3 that almost reaches the apical margin. The lateral grey band (band 4) is clearly separated from the elytral marginal grey band along its entire length. The longitudinal grey bands 1 and 2 are equal i width basally and medially, and band 1 narrowing towards apices. The hairs of the greyish pubescence of all five longitudinal bands uniform and similar in shape and density as the overall corresponding reddish elytral pubescence. Each elytron with extremely vague traces of three longitudinal carinae placed on the centre of the three median grey bands. The larger PT male from Aseki has a more pronounced orange pubescence covering the entire body dorsally than the HT and with oblique median grey bands, with only the lateral and sutural grey bands distinct (but with the remaining characters identical to the HT, including the genitalia characteristics).

Elytra with sparse black scattered granulation medially on the anterior half, but denser laterally towards humeri where the granules form large, flattened and shining tubercles. The granules medially basically follow the grey longitudinal bands. The granules medially towards the shoulders are distinctly raised. There are approximately ten black and larger tubercles laterally towards humeri varying a little in size. The granules and tubercles occur mainly on the anterior half of the elytra with only single granules towards apices (Fig. 4). The scutellum flat and with orange to red pubescence covering most of the area apart from a narrow band with greyish pubescence along the anterior margin.

Colour ventrally: Underside and legs covered with grey pubescence. Mesothorax laterally/abdominal segments posteriorly, with orange to ferruginous-red pubescence forming longitudinal/transversal narrow bands (as in *R. weiskei* and *R. diannae ssp. valentinae*).

Antennae: 11 segmented, reaching (in HT ♂) 4 segments beyond elytral apex, and in AT ♀ reaching 3 segments beyond elytral apex. Last (11th) antennal segment in HT ♂ almost 1.8 times longer than the previous (10th) antennal segment. In AT ♀

the ratio is 1.6. Antennae and legs black, and covered with fine greyish pubescence. Eyes slightly emarginated with fine greyish pubescence and small granules along the margin.

Prothorax: 1,35 times broader than long in HT ♂ and 1,37 times broader than long in AT ♀ supplied with a wide and raised transversal ridge. The anterior margin and the median transversal ridge supplied with wide transversal grey bands. A fringe of fine yellowish hairs cover the anterior margin. The transversal ridge also supplied with a series of small black granules. Prothorax is armed with a sharp, long spine on each side.

Genitalia in HT ♂ and AT ♀ unique as described above. No overlap observed with *R. weiskei* even when considering the variability seen in the examined specimens of *R. weiskei*. Particularly aedeagus (penis, paramers) and proctiger easily distinguished from all similar species of *Rosenbergia* as described above.

Body very robust, subcylindrical with almost parallel elytral margins up to 2/3 of elytral length. The body slightly flattened dorso-ventrally. Elytral apex with a very weak sutural spine. Marginal spine on elytral apex absent, but each elytron may be supplied with a very small marginal convexity (only clearly visible ventrally), absent in the HT and AT but found in the two PT males and in one PT female. Elytral apex evenly rounded from the sutural spine towards the lateral margin (Fig. 4). The body of the male differs from the female by the slightly more elongate elytra and also by the longer antennae and legs (Fig. 5).

Type locality (for both HT and AT): Papua New Guinea, Simbu (Chimbu) Province, Kerowagi. The HT and AT were collected in January 1990 by P. B. Clark.

Designated Paratypes (PT): 1 ♀ labelled PNG, Kapiro, Wau Valley, 2004-12-11, body length 56mm, in coll. HW, 1 ♀ labelled Papua New Guinea, ex. coll. Marcel Galant, IG: 28.399, PNG, Bulolo, 1980-12, ex. C.C. Chua, body length 53mm, in coll. I.R.Sc.N.B., 1 ♀ labelled ex. coll. Marcel Galant, PNG, South H. Province, Mendi, 1980-09, ex. C.C. Chua, body length 58mm, in coll. I.R.Sc.N.B., 1 ♀ labelled Nlle Guinée, Goroka, (Bena), 5300 ft., 1971-09/10, ex. coll. Marcel Galant, body length 55mm, in coll. I.R.Sc.N.B., 1 ♀ labelled PNG, Eastern Highlands, Kainanto, 1990-01, Leg. Clark, body length 57mm, in coll. UN, 1 ♂ labelled PNG, Simbu (Chimbu) Prov., Kerowagi, 1984-01, body length 46,5mm, in coll. NRM (given to the Museum by UN), 1 ♂ labelled PNG, MP, Aseki, 1999-12, body length 57mm, in coll. UN. Abbreviations HW and UN refer to the authors of this paper, I.R.Sc.N.B is the abbreviation for Institut Royal des Sciences Naturelles Belgique, and NRM stands for The Swedish Museum of Natural History (Naturhistoriska Riksmuseet), Stockholm.

Etymology: This species is named to honour our friend and colleague Alain DRUMONT.

R. drumonti nov.sp. is easily separated from *R. weiskei* by the, in general, much larger body and wider elytra which is almost parallel (not cuneiform), robust legs, the wide to very wide longitudinal grey bands on the elytra, the dense pubescence and the evenly rounded elytral apex with weak sutural spines and the absence of marginal spines. Prothorax is also more robust (with longer lateral spines) in *R. drumonti nov.sp.* than in *R. weiskei*. The male genitalia distinctly different from *R. weiskei* and *R. diannae ssp. valentinae* even when considering the variability seen in *R. weiskei*. The spermatheca in female *R. drumonti nov.sp.* is very robust and unique as described above. No pronounced variation in genitalia characteristics could be observed in the examined specimens (the genitalia characteristics of the three dissected males are almost identical, and the minor variation in the shape of the spermatheca does not exceed the minor variation seen in e.g. *R. xenium*; cf. WALLIN & NYLANDER, 2006).

***R. diannae* Allard, 1990**

Nomen dubium: *R. diannae* Allard, 1990. Despite considerable effort to arrange for a loan, we have not been able to study this HT (a female) and the type description by Allard (1990) is so brief that it overlaps the type description of *R. weiskei* completely (basically comprising the existence of two orange-yellow median and longitudinal bands, a narrow grey sutural band, and two apical spines on the elytra). The colour photo in RIGOUT (2004) shows the HT with extensive median tubercles partly along the two grey marginal and longitudinal bands towards more than 3/4 of the elytral length. The colour appears to be orange-yellow. Further study is required to confirm if this HT is a synonym of *R. weiskei* or, in fact, a genuine species. RIGOUT (2004) only presents a brief description of the subspecies *R. diannae ssp. valentinae* (basically only referring to less extensive granulation, overall colour of pubescence; "brick red instead of orange", and the absence of grey longitudinal bands medially on the elytra, apart from the grey sutural and marginal band, compared with HT *R. diannae*). Below is a detail diagnosis of the described subspecies including a description of the male.

***Rosenbergia diannae ssp. valentinae* Rigout, 2004**

HT ♀ body length 58mm, in coll. C.A. Casadio, not further examined (apart from a recently taken colour photo).

PT ♂ body length 54mm, labelled PNG, MP, Aseki, Aya, 1992-02, body length 54mm, in coll. Carlo Arrigo Casadio and fully examined (i.e. dissected).

Description:

Colour dorsally: The entire body is covered with fine, orange-red to deep red pubescence (most pronounced on the elytra). Each elytron supplied with two greyish, distinct and longitudinal bands; one narrower grey band along the sutural margin, and one very wide lateral greyish-black band along the entire lateral margin from humeri to the sutural, apical spine. The pubescence of the greyish sutural and lateral bands differ distinctly; the sutural band consists of long and fine, uniform and dense grey hairs (including scattered single yellow hairs), whereas the wide marginal band consists of shorter, erected thin greyish-white hairs (including scattered single yellow hairs) with the black shining elytral surface partly visible giving the entire grey marginal band a shining distinct greyish-black appearance. Each elytron with extreme to vague traces of two longitudinal median carinae, sometimes forming two very thin grey vittae medially (Fig. 5). Elytra with sparse black granulation medially on the anterior half, but denser laterally towards humeri where the granules form large, flattened and shining tubercles. The granules medially basically follow the grey longitudinal bands. The granules medially towards the shoulders are distinctly raised. There are approx. ten larger tubercles laterally towards humeri varying a little in size. The granules and tubercles occur only on the anterior half of the elytra. The scutellum is erected from the elytral surface, relatively parallel-sided and with a weak indentation on the middle of the posterior margin (and medially) similar in shape as the scutellum of *R. xenium* Gilmour, 1960 (cf. WALLIN & NYLANDER, 2006). The scutellum is supplied with grey pubescence in the anterior part, and with orange to red pubescence covering 1/3 towards the posterior margin.

Colour ventrally: Underside and legs covered with greyish-black pubescence. Mesothorax laterally/abdominal segments posteriorally, with orange to ferruginous-red pubescence forming longitudinal/transversal narrow bands (as in *R. weiskei* and *R. drumonti nov.sp.*).

Antennae: 11 segmented, reaching (in ♂) 4 segments beyond elytral apex, and in ♀ reaching 3 segments beyond elytral apex. Last (11th) antennal segment in ♂ and ♀ approximately 1.6 times longer than the previous (10th) antennal segment. Antennae and legs black, and covered with fine greyish pubescence. Eyes slightly emarginated with fine greyish pubescence and a series of small granules along the posterior margin.

Prothorax: 1,35 times broader than long in ♂ and 1,37 times broader than long in ♀ and supplied with a wide and raised transversal ridge in both sexes. The anterior margin and the median transversal ridge supplied with wide transversal grey bands. A fringe of fine yellowish hairs cover the anterior margin. The transversal ridge also supplied with a series of small black granules. Prothorax is armed with a sharp, long spine on each side.

Genitalia in ♂ (including PT♂) and ♀ unique as described above. No overlap observed with *R. weiskei*. Particularly aedeagus (penis, paramers) and proctiger easily distinguished from all similar species of *Rosenbergia* as described above.

Body very robust, subcylindrical and cuneiform. Each elytron with a short to oblique humeral spine. Elytral apex with a strong pointing sutural spine and a slightly shorter marginal spine. Elytral margin straight to slightly convex between the sutural and marginal spine. The body of the male differs from the female by the slightly more elongate elytra and also by the longer antennae and legs (Fig. 5).

R. diannae ssp. valentinae is easily separated from *R. weiskei* by the much larger body and robust legs, the very characteristic, wide longitudinal grey band with sparse pubescence along the entire lateral margin. Prothorax is also more robust (with longer lateral spines) in *R. diannae ssp. valentinae* than in *R. weiskei*. The male genitalia distinctly different from *R. weiskei* and *R. drumonti nov.sp.* even when considering the variability seen in *R. weiskei*. The spermatheca in *R. diannae ssp. valentinae* unique as described above. *R. diannae ssp. valentinae* is easily separated from *R. drumonti nov.sp.* by the lack of wide and distinct grey median longitudinal bands on the elytra, the presence of two very distinct apical spines on each elytra in *R. diannae ssp. valentinae*, and particularly in the genitalia differences.

***R. humeralis* Gilmour, 1966 (Fig. 10)**

RIGOUT (1982b) regard this species as a synonym of *R. rufolineata* Breuning (formerly *R. straussi*). However, the spermatheca characteristics of the two examined females are distinctly different from the spermatheca of both *R. rufolineata* (Wallin & Nylander, 2006) and *R. straussi*. The only reasonable conclusion is that this is a genuine species. The detailed description of *R. humeralis* (HT female) by Gilmour (1966) corresponds fully with the two females collected at Arfak Mountains on the Bird's Head (Vogelkop) Peninsula in West Papua. The male is unknown. GILMOUR (1966) states that the HT of *R. humeralis* is in the Lepesme collection, and this collection is in the Muséum - Centre de Conservation et d'Etude des Collections, Lyon. However, despite considerable effort, and with the aid of the museum, we have not been able to locate the HT female of *R. humeralis*. We can, therefore, only rely on the type description by Gilmour (1966), that only includes a comparison with *R. weiskei*. We consider the species more closely related to *R. xenium* Gilmour. However, *R. humeralis* has (as clearly stated by GILMOUR, 1966) more distinct humeri on each elytron. The prothorax is also narrower (compared with the width of the elytra) than in *R. xenium*. *R. humeralis* is characterised by the overall greyish pubescence and four longitudinal red bands on each elytron running from the basal declivity to the apex where they are united. The lateral red longitudinal band in the two examined specimens is short and only running shortly from the below the humerus, but we consider this to be a variation within this species, since all other character are identical to the description of the HT. The tuberculation is extensive both medially on the elytra and laterally. Our conclusion is that *R. humeralis* is a genuine species.

***R. straussi* (Gestro, 1876)**

The differences between *R. straussi* and *R. rufolineata* have been thoroughly outlined by CASADIO (2006), apart from the genitalia characteristics. We include the description

of the genitalia characteristics of *R. straussi* in the present study, and compare these with the genitalia characteristics of *R. rufolineata* described in a previous publication (WALLIN & NYLANDER, 2006). The spermatheca is slightly different; slender, shorter and more intensively curved sideways in *R. straussi* than in *R. rufolineata*. The male genitalia show some major differences (apart from differences in penis and proctiger); the posterior fringes of hairs on the paramers are concentrated ventrally in *R. straussi* (yellow colour of the hairs and posterior margin visible), whereas they are concentrated both dorsally and ventrally in *R. rufolineata* (mixed yellow and black hairs, and posterior margin not visible).

***R. gilmouri* Rigout, 1982**

Both male and female genitalia unique as described above, and overall differing from all other examined species of *Rosenbergia*. Type description by Rigout (1982a), where some general comparison was made with *R. megalcephala ssp. orangelineata* Schwartz (although *R. gilmouri* is only found in New Guinea). Some similarities may be noted, such as the male genitalia (at least the paramers) that somewhat resemble *R. rufolineata* (but are shorter and lack the fringes of hairs medially), and the spermatheca that resemble *R. lepesmei* (but is not curved sideways).

***R. megalcephala* van de Poll, 1886 (Fig. 10)**

Both male and female genitalia unique as described above, and differing from all other examined species of *Rosenbergia*. The subspecies *R. megalcephala ssp. orangelineata* Schwartz, 1929 is separated from *R. megalcephala* by the existence of distinct orange-yellow longitudinal bands laterally on each elytron (SCHWARTZ, 1929). However, when examining the male and female of *R. megalcephala* in the collection of NRM (also examined by E.F. Gilmour) both specimens actually have vague traces of yellow longitudinal bands on each elytron. The only difference we found regarding the male genitalia is that the fringes of yellow hairs on the paramers are more densely distributed in *R. megalcephala*, the remaining male genitalia characters being almost identical. Our conclusion is that *R. megalcephala ssp. orangelineata* is synonymous, nov.syn. with *R. megalcephala*.

***R. lepesmei* Gilmour, 1960 (Fig. 10)**

We agree with RIGOUT (1982b) that the described type locality of the HT must be incorrect (New Guinea) as stated by GILMOUR (1960). The proper labelling must be Australia. We have also examined a female PT of the junior synonyme *R. terrareginae* Gilmour, 1960 from The Swedish Museum of Natural History, and when considering the potential of variation in elytral granulation, there are no other distinct differences. The type description also overlaps the description of *R. lepesmei*. Gilmour (1960) motivates the description of *R. terrareginae* with its geographically isolated occurrence in Australia, and only makes a comparison with *R. neopommerania* Kriesche, 1920 (junior synonym of *R. bismarckiana* Kriesche, 1920) in his description of *R. terrareginae*. Despite the apparent incorrect labelling of HT *R. lepesmei*, the confirmation of this species as genuine, and *R. terrareginae* as a junior synonyme, is in accordance with the principle of priority in the Code of Zoological Nomenclature, since *R. lepesmei* was described first in the paper by GILMOUR (1960). Both male and female genitalia unique as described above, and differing from all other examined species of *Rosenbergia*.

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Figure legends

Cover page: HT ♀ *Rosenbergia weiskei* Heller, 1902.

Fig. 1. The localities (red filled circles), on the island of New Guinea, of all examined specimens of *Rosenbergia* Ritsema, 1881 belonging to the *R. weiskei*-complex. 1= type locality for *R. weiskei* Heller, 2= type locality for *R. drumonti nov.sp.* and 3= locality for recently captured specimens of *R. humeralis* Gilmour.

Fig. 2. HT ♀ of *R. weiskei* (A) and two ♂♂ of *R. weiskei* (B and C) collected in New Guinea before 1909. All three specimens in coll. Staatliches Museum für Tierkunde, Dresden.

Fig. 3. The variation in colour patterns and size of specimens of *R. weiskei* (top row ♂♂ and bottom row ♀♀) from Papua New Guinea (PNG), Morobe Province (MP) Aya, Aseki, body length 36mm (A), PNG, MP, Aseki, body length 46mm (B), PNG, Madang, body length 46mm (C), PNG, Wau, Kapiro, body length 43mm (D), PNG Eastern Highlands Province (EHP), Okapa, body length 53mm (E), PNG, MP, Aseki, body length 45mm (F), PNG, Wau, Kapiro, body length 54mm (G), Papua, Fak Fak, body length 53mm (H), PNG, MP, Wau, Kapiro, body length 46mm (I) and Papua, Aru Islands, body length 53mm (J).

Fig. 4. Posterior part of elytra and elytral margin with the weak sutural spine present on ♀ PT *R. drumonti nov.sp.* (left) and the distinct sutural and marginal spines present on ♀ HT *R. weiskei* (right).

Fig. 5. HT ♂ of *R. drumonti nov.sp.* (A), PT ♀ of *R. drumonti nov.sp.* from Papua New Guinea (PNG), Kapiro, Wau Valley (B), ♂ *R. diannae ssp. valentinae* from PNG, Morobe Province (MP), Aseki subdistrict, Yamaia Village (C) and ♀ *R. diannae ssp. valentinae* from PNG, MP, Aseki (D).

Fig. 6. Dorsal view of proctiger (bottom row), penis (middle row) and paramers (top row) of the most common form of male genitalia characteristics of *R. weiskei* from Papua New Guinea (PNG), Aseki, Morobe Province (A) HT ♂ *R. drumonti nov.sp.* from PNG, Simbu Province, Kerowagi (B) and PT ♂ *R. diannae ssp. valentinae* from PNG, MP, Aseki, Aya (C). Top row show the paramers both dorsally (left) and ventrally (right).

Fig. 7. Dorsal view of proctiger (bottom row), penis (middle row) and paramers (top row) of *R. weiskei* collected before 1909 also representing the most common form of male genitalia characteristics in the species (A) in coll. Staatliches Museum für Tierkunde, Dresden (belonging to the male in Fig. 2C; where the two males have almost identical genitalia characteristics), *R. weiskei* from Papua New Guinea (PNG), Madang with a small (but visible) character on the posterior margin of proctiger, only found in this individual (B), *R. weiskei* from Papua, Sorong with numerous fringes of hairs dorso-medially below the posterior margin on the paramers (C), and *R. weiskei* from PNG, Okapa with extensive fringes of hairs ventrally on the paramers; left dorsal view, and right ventral view of the paramers (D).

Fig. 8. Dorsal view of proctiger (bottom row), penis (middle row) and paramers (top row; dorsally left and ventrally right) of *R. straussi* from Papua, Arfak Mountains (A), *R. gilmouri* from Papua New Guinea (PNG), Morobe Province (MP), Bulolo Village (B), *R. megaloccephala* from Australia, Queensland (C), *R. megaloccephala ssp. orangelineata* from Australia, Queensland, Hartleys Creek, Cairns (D), and *R. lepesmei* from Australia, N. Queensland, Coaktoocoo, Olive (E).

Fig. 9. Spermatheca of ♀ HT *R. weiskei* (A) and ♀♀ of *R. weiskei* collected at Papua New Guinea (PNG), Morobe Province (MP), Wau (B), PNG, Eastern Highlands Province, Goroka (C), PNG, MP, Aya (D), Papua, Fak Fak (E), *R. diannae ssp. valentinae* from PNG, MP, Aseki, Hokanaia Village (F), AT *R. drumonti nov.sp.* (G), PT *R. drumonti nov.sp.* from PNG, Eastern Highlands Province (EHP), Goroka (H), *R. humeralis* from Papua, Arfak Mountains (I), *S. straussi* from Papua, Arfak Mountains (J), *R. gilmouri* from PNG, MP, Wau Valley (K) and *R. lepesmei* from Australia, Queensland, Endeavour River (L).

Fig. 10. Dissected and examined specimens of ♀ *R. lepesmei* (A) ♂ *R. megaloccephala orangelineata* (B), ♂ *R. megaloccephala* (C), and ♀ *R. humeralis* (D).

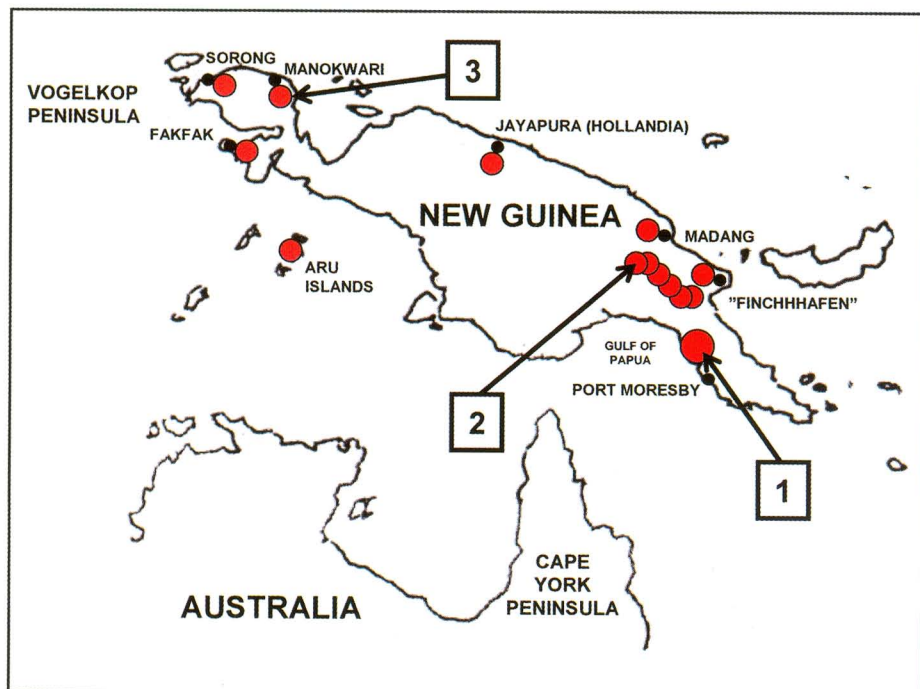


Fig. 1



Fig. 2

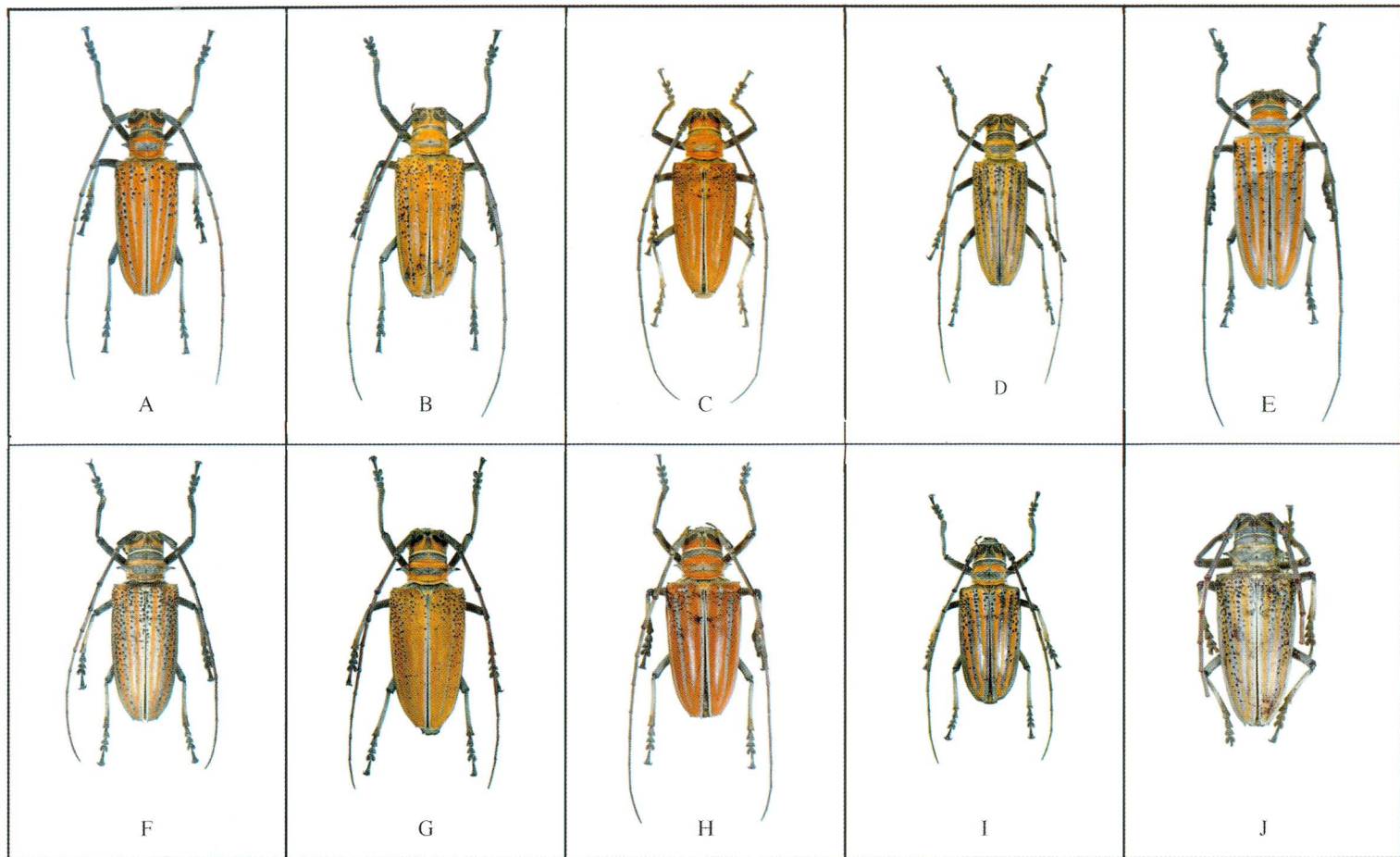


Fig. 3

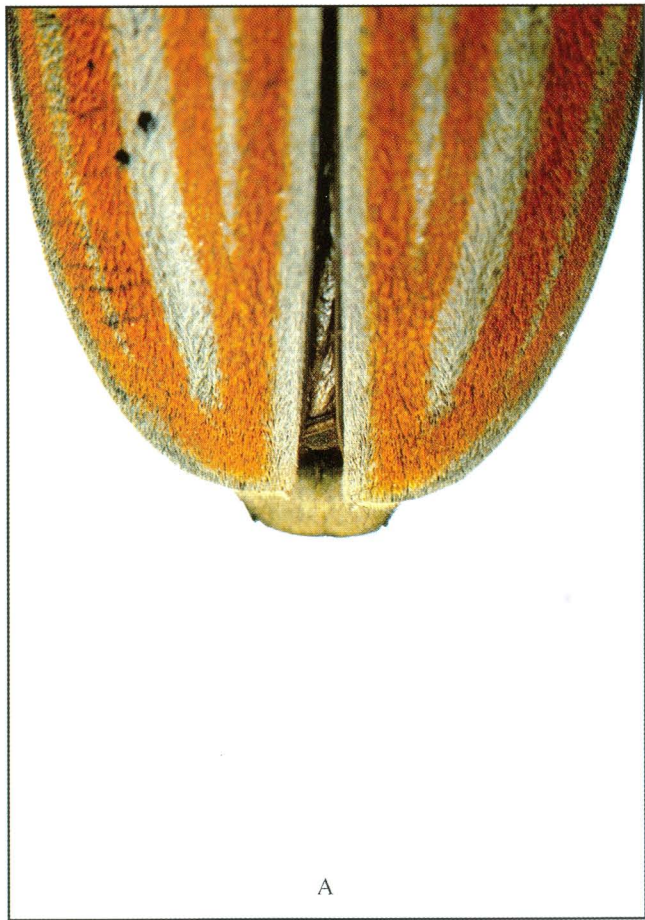


Fig. 4

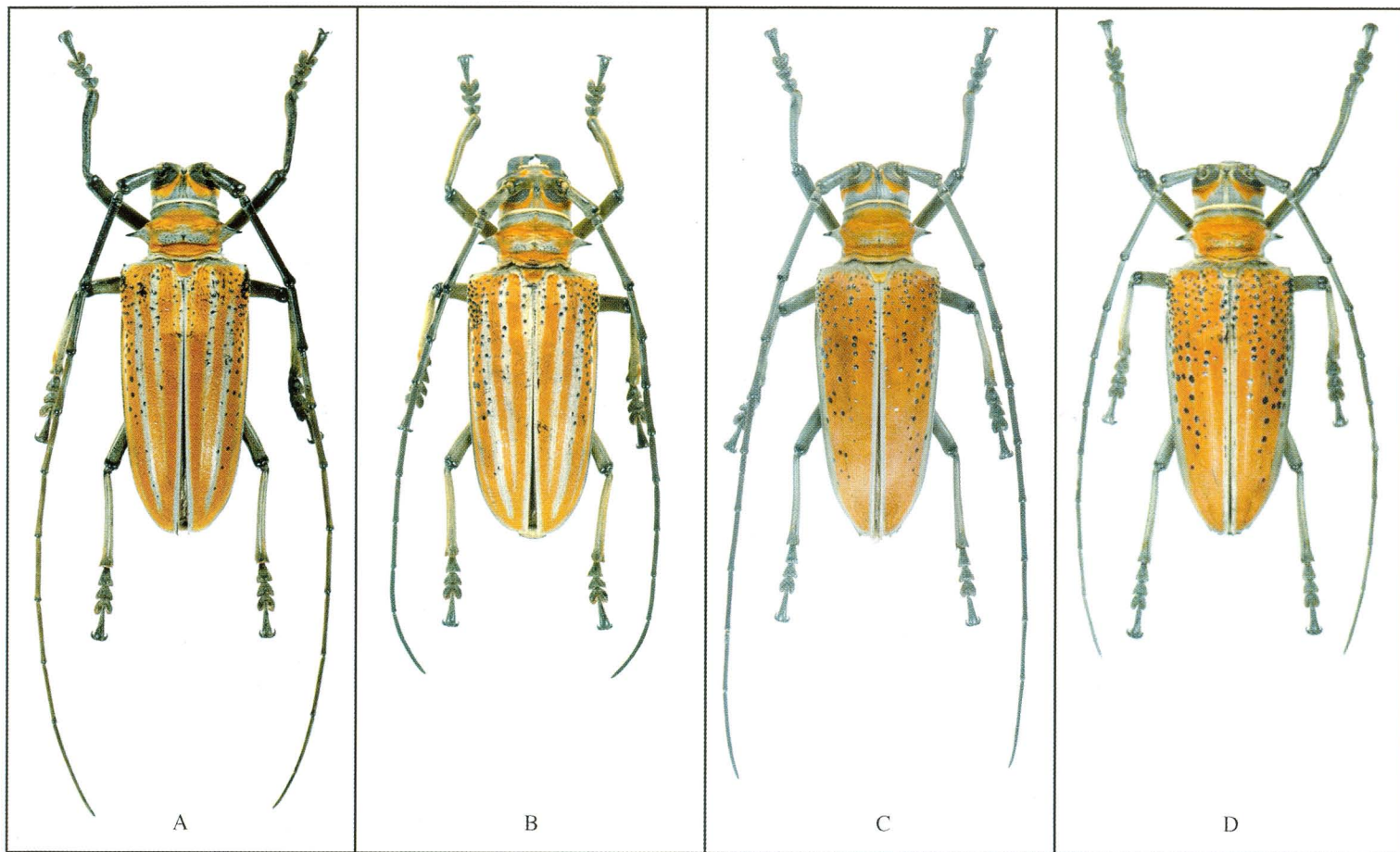


Fig.5

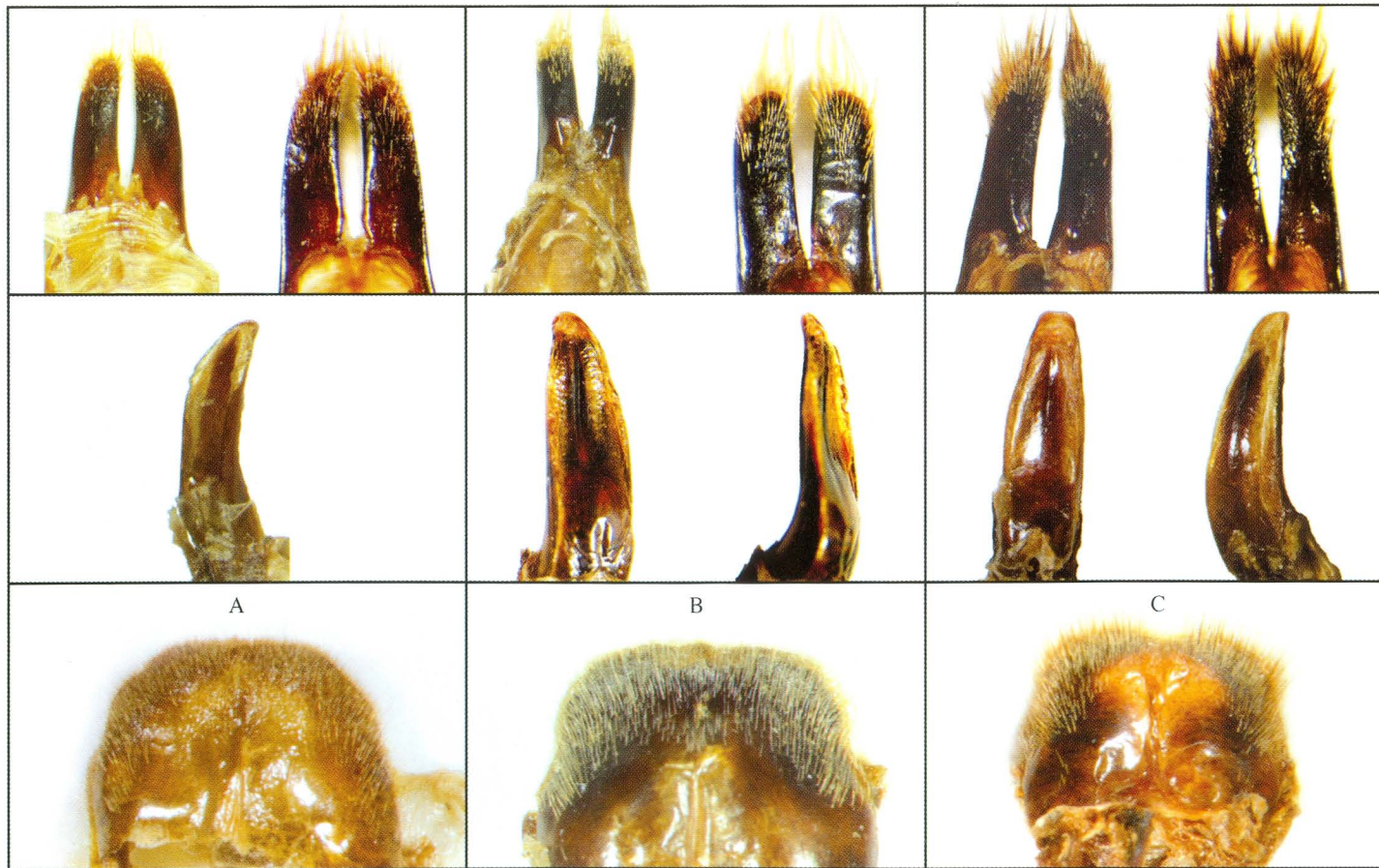


Fig. 6



Fig. 7



Fig. 8



Fig. 9

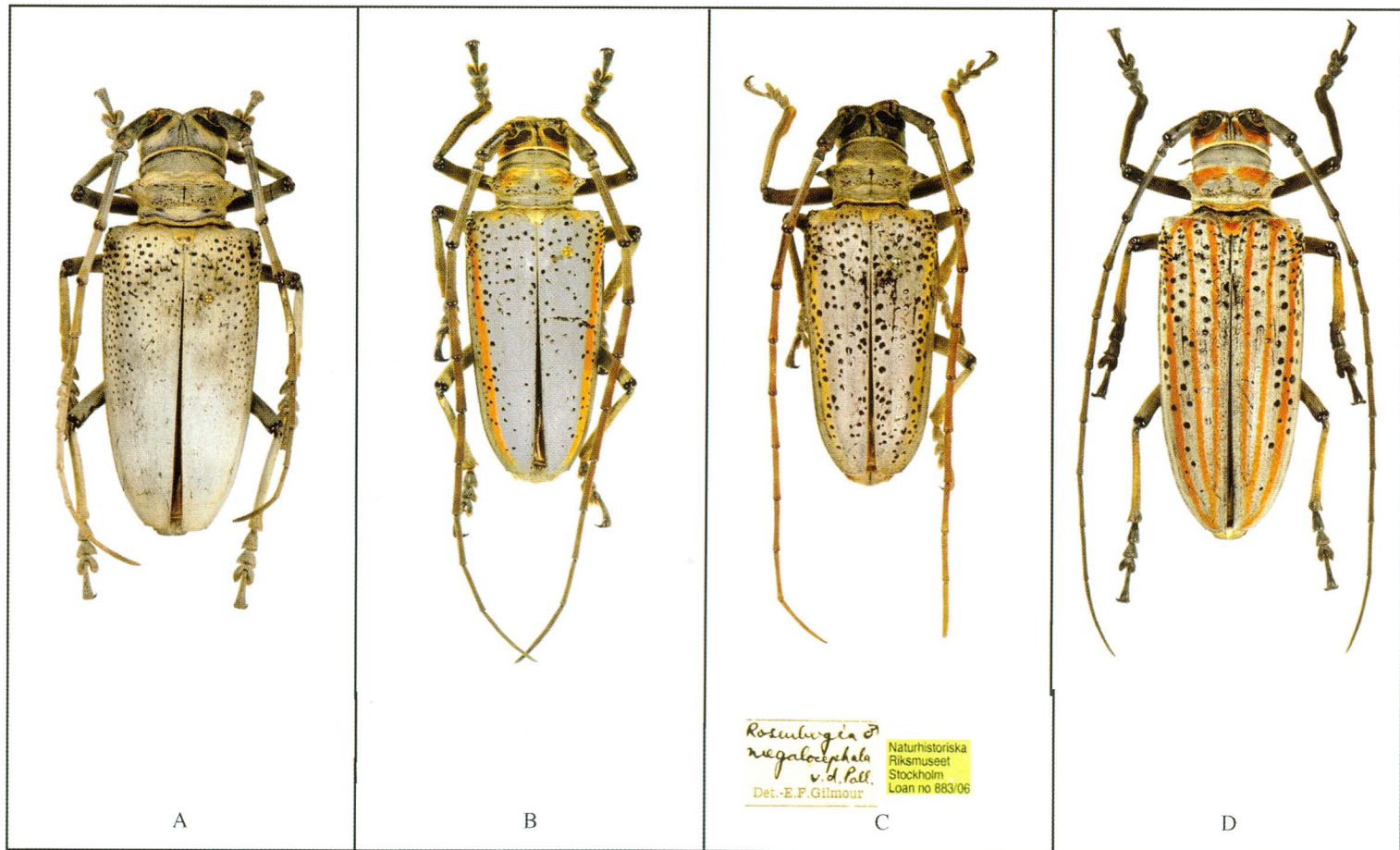


Fig. 10

