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Taxonomic notes on the genus *Rosenbergia* Ritsema, 1881 with description of a new species and subspecies (Coleoptera: Cerambycidae: Lamiinae)

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Abstract.

The *R. dianneae* species group of the genus *Rosenbergia* is described and enlarged with the additional descriptions of *R. cheesmanae* **sp. nov.** and *R. valentinae eki* **ssp. nov.** Adult genitalia are depicted. The *R. weiskei* species group is analysed and *Rosenbergia valentinae* Rigout, 2004 **stat. nov.** is raised to species level and no longer considered a subspecies of *R. dianneae* Allard, 1990. The rediscovery of the holotype of *Rosenbergia humeralis* Gilmour, 1966 allows for the description of the male of this species. After extensive research, the holotype of *R. dianneae* is considered lost and a neotype has been designated.

KEY WORDS: TAXONOMY, NEW GUINEA, BATOCERINI, ROSENBERGIA, NEW TAXA

Introduction

In the recent years, there have been few studies on the genus *Rosenbergia* (Coleoptera: Cerambycidae: Lamiinae). After searching for holotypes, we have come to notice that name-bearing specimens are often not stored in publicly accessible collections. Furthermore, several species have been described based on single specimens for which there exist no clear identification keys or pictures. This is complicated by the fact that species in this genus are often extremely variable.

In this article, we review the species of the *Rosenbergia weiskei* Heller, 1902 group, which are characterised by reddish pubescence, elytra marked with narrow longitudinal gray bands and glabrous tubercles (Wallin & Nylander, 2007). We define the *R. dianneae* species group by the much more robust body, longer antennae and much weaker

(or absent) humeral/sutural spines on elytra than those of the *R. weiskei* species group. We analyse *Rosenbergia humeralis* Gilmour, 1966, whose holotype was considered lost (Wallin & Nylander, 2007), *R. dianneae* Allard, 1990, considered nomen dubium (Wallin & Nylander, 2007), and its subspecies *R. d. valentinae* Rigout, 2004. Finally, we provide a description of a new species and a new subspecies belonging to this group.

Figure 1

Holotype male of *Rosenbergia cheesmanae* **sp. nov.** dorsal view.



Abbreviations**BMH** - Bishop Museum, Honolulu, Hawaii, USA**EHP** - Eastern Highlands Province**FMNH** - Field Museum of Natural History, Chicago, Illinois, United States of America**FVC** - Francesco Vitali Collection, Luxembourg**GCC** - Grasso-Casadio Collection, Imola (BO), Italy**MHL** - Musée des Confluences, Centre de conservation et d'étude des collections, Lyon, France**NBC** - New Guinea Binatang Research Centre, Madang, Papua New Guinea**JHC** - Jean-Roch Houllier Collection, Paris, France**PMC** - Paolo Missori Collection, Roma, Italy**Material and Methods**

Body measurements were taken with digital callipers and a Zeiss stemi 305 stereomicroscope and are rounded up for habitus. Body length is measured from the elytral apex to the antennal torulus. Habitus illustrations were made with a medium format camera: Hasselblad CFV 50C digital back mounted on Hasselblad 500 C/M body equipped with a 50 mm macro tube and 150 mm lens mounted with camera on a carbon-fibre tripod. Illumination was with a three-light scheme. Zeiss stereomicroscope integrated camera was used for genitalia illustrations. Images were enhanced with Photoshop CC 2019. All specimens from the authors' collection were assigned a unique identification code consisting of letters and numbers not sequentially generated. For genitalia, the letter G was added. All the related data are stored in a Database Management System.

TaxonomyGenus *Rosenbergia* Ritsema, 1881: 11-14.Type species: *Rosenbergia mandibularis* Ritsema, 1881: 11-14.

Synonyms:

Mimorosenbergia Breuning, 1980: 132.Type species: *Mimorosenbergia meeki* Breuning, 1980: 132-133.

Examined specimens.

This study is based on the following examined specimens belonging to the *R. weiskei* species group as defined by Wallin & Nylander (2007) and the *R. dianneae* species group, described as below.

***Rosenbergia cheesmanae* sp. nov.:** 1 male (dissected) labelled Papua New Guinea (PNG), Morobe Province (MP), 02-1998, body length 45 mm, in GCC (GCR-E2865; GCR-E2865G); 1 female labelled PNG, MP, Aseki subdistrict, Hiemsini village, 14-07-1998, body length 56 mm, in GCC (GCR-E4T2K); 1 male labelled *Rosenbergia weiskei*, PNG, body length 44 mm, in GCC (GCR-T2GPA); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, MP, Memyamy, body length 50 mm, in GCC (GCR-37DWH); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C.A., PNG, MP Aseki, Aya, 02-1992, body length 52 mm, in GCC (GCR-MQ57P).

Rosenbergia dianneae Allard, 1990: 1 male, designated as neotype (dissected), labelled PNG, Eastern Highland, Okapa, 08-2000, body length 51 mm, in GCC (GCR-5C32C; GCR-5C32CG); 1 female labelled PNG, Eastern Highlands Province (EHP), Okapa, 04-1958, body length 57 mm, in GCC (GCR-C9Q5T).

Rosenbergia humeralis Gilmour, 1966: 1 female (HT), labelled *Rosenbergia weiskei* Heller det. E. F. Gilmour, Neu Guinea, body length 55 mm, in Musée des Confluences, Centre de conservation et d'étude des collections, Lyon (47016164); 1 male labelled West Papua, Arfak Mts., kab. Manokwari, Marzo 2006, body length 49 mm, in GCC (GCR-CE35A); 1 male (dissected) labelled West Papua, Arfak Mt., body length 52.3 mm, in GCC (GCR-96295; GCR-96295G); 1 female labelled West Papua, Arfak Mt., 11-2016, body length 53.2 mm, in GCC (GCR-5HKFL); 1 male labelled Indonesia, West Papua, Arfak Mt., 2009, body length 52 mm, in GCC (GCR-1IMG0); 1 male labelled Indonesia, Irian Jaya, Arfak, body length 52.6 mm, in GCC (GCR-I0KH2); 1 female labelled West Papua, Mapia Mt., body length 56.9 mm in GCC (GCR-R19XR); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., Irian Jaya, Arfak Mt., 08-2004, body length 62mm, in GCC (GCR-6RE4Z); 1 female labelled Irian Jaya, Arfak, April 2012, body length 47 mm, in GCC (GCR-FM8CQ); 1 male labelled Arfak, 09-2019, body length 42 mm, in GCC (GCR-VORIP); 1 male labelled Arfak, 09-2019, body length 43.2 mm, in GCC (GCR-KF4YA); 1 male labelled Arfak, Ink district, 03-2020, leg. Pansing, body length 50 mm, in GCC (GCR-OPAHU); 1 male labelled Jayapura, body length 45 mm, in JHC; 1 female labelled Arfak Mts., body length 62 mm, in JHC.

Rosenbergia rubra Gilmour, 1966: 1 male (HT), labelled Holotype male *Rosenbergia rubra miki* (miihi) Gilmour, PNG, N.E. West Irian, Humbolt Bay District, leg. J. Kleinberg, body length 45 mm, in FMNH; 1 male labelled Indonesia, West Papua, Dist. Mamberamo, 28 km from Marikai, Van Rees Mountains, 135 Hm. S.02.17.708°/E.137.05.401°, 19/26-06-2014, leg. Bretschneider, body length 42 mm, in GCC (GCR-05SYI).

Rosenbergia valentinae valentinae Rigout, 2004 **stat. nov.:** 1 female (HT), labelled *Rosenbergia dianneae valentinae* Coll. Casadio C. A., PNG, MP, Pesea-Aseki, 01-01-1992, Holotype det. J. Rigout 2004, body length 58 mm, in GCC (GCR-6W090); 1 male (PT, dissected), labelled *Rosenbergia dianneae valentinae* Coll. Casadio C. A., PNG, MP, Aya-Aseki, 02-1992, Paratype det. J. Rigout 2004, body length 52 mm, in GCC (GCR-FXZYJ; GCR-FXZYJG/RWI006); 1 male labelled PNG, MP, Bulolo, Ekopa, 25-07-07, body length 53 mm, in GCC (GCR-E81XE); 1 male (dissected) labelled *Rosenbergia weiskei* f. *rubra*, PNG, MP, Aseki, 09-2005, body length 54 mm, in GCC (GCR-XL4W6; GCR-XL4W6G); 1 female labelled PNG, MP, Bulolo, Ekopa, 25-07-07, body length 59 mm, in GCC (GCR-4WA34); 1 female labelled PNG, MP, Bulolo, 04-2000, body length 57 mm, in GCC (GCR-GZ6AP); 1 specimen (sex not examined, photograph), labelled PNG, EHP, Okapa, 05-2005, body length 48 mm, in PMC; 1 specimen (sex not examined, photograph), labelled PNG, MP, Aseki, Aya, 02-1998, body length 47 mm, in PMC; 1 specimen (sex not examined, photograph), labelled PNG, MP, Aseki, 12-1997, leg. Missori-Ercoli, body length 61 mm, in PMC; 1 specimen (sex not examined, photograph), labelled PNG, MP, Aseki, 02-1994, leg. Missori-Ercoli, body length 49 mm, in PMC.

***Rosenbergia valentinae eki* ssp. nov.:** 1 male (dissected) labelled Fak Fak, 03-2003, body length 50mm, in GCC (GCR-CM0NE; GCR-CM0NEG); 1 male labelled Timika, body length 52 mm, in GCC (GCR-Y370U).

Rosenbergia weiskei Heller, 1902: 1 male (dissected) labelled PNG, MP, Wau, 03-1999, body length 44 mm, in GCC (GCR-A2E3G; GCR-A2E3GG); 1 female labelled West Papua, Nabire, 08-2008, body length 52 mm, in GCC (GCR-P0KIJ); 1 male labelled Indonésie, Ouest Irian, 09-2009, body length 43 mm, in GCC (GCR-KBWCE); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, MP, Wau, 1951, body length 44 mm, in GCC (GCR-RMBB2); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, MP, Wau, 02-1992, body length 58 mm, in GCC (GCR-MOX7Q); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, MP, Bulolo, 29-11-1988, body length 47 mm, in GCC (GCR-MEPPFM); 1 female labelled *Rosenbergia*

weiskei Coll. Casadio C. A., Timika, 12-2004, body length 51 mm, in GCC (GCR-550KI); 1 female labelled Irian Jaya, Timika, 11-2006, body length 50 mm in GCC (GCR-8CIKJ); 1 male labelled PNG, MP, Wau District, Kapiro village, 11-01-2000, body length 40 mm, in GCC (GCR-XP3IO); 1 female labelled PNG, Wau district, Mount Amungwina, 200 m, 15-04-2005; body length 50 mm, in GCC (GCR-V86LH); 1 female labelled Sorong, 1-04-2005, body length 53 mm, in GCC (GCR-8TT0N); 1 female labelled PNG, MP, Wafuf, Bulolo, Gumi village, 07-07-2006, body length 61 mm, in GCC (GCR-LD916); 1 female labelled Goroka, 03-1992, body length 55 mm, in GCC (GCR-Z8WQT); 1 female labelled PNG, MP, Aseki subdistrict, 04-1999, body length 53 mm, in GCC (GCR-IJVIM); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, EHP, Okapa, 02-1991, body length 48 mm, in GCC (GCR-LDFH0); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, MP, Aseki, 02-1992, body length 53 mm, in GCC (GCR-6LOA8); 1 male labelled *Rosenbergia weiskei* L. Falletti Det., PNG, MP, Bulolo 02-1986, body length 46 mm, in GCC (GCR-KO7NP); 1 male (dissected) labelled *Rosenbergia weiskei* Coll. Casadio C. A., West Papua, Arfak Mt., 07-2003, body length 48 mm, in GCC (GCR-7766F; GCR-7766FG); 1 male labelled Irian Jaya, Timika, 11-2006, body length 46 mm, in GCC (GCR-FA399); 1 male labelled PNG, MP, Wau district, Sandy Creek, 25-02-2005, body length 50 mm, in GCC (GCR-1TUDP); 1 female labelled *Rosenbergia weiskei*, PNG, MP, Wau district, Isapiro village, 04-1996, body length 48 mm, in GCC (GCR-8AD9A); 1 female labelled EHP, Okapa, 04-05-2007, body length 58 mm, in GCC (GCR-PBEQG), 1 female labelled Papua, Center Salawati district, Kampung Kalobo, 01-2020, body length 51 mm, in GCC (GCR-CC443).

Rosenbergia drumonti Wallin & Nylander, 2007: 1 male (dissected) labelled West Papua, Arfak Mt., body length 49 mm, in GCC (GCR-EBCD4; GCR-EBCD4G), 1 male (dissected) labelled Irian Jaya, Arfak Mt., Maret (March) 03-2002, body length 47 mm, in GCC (GCR-795F9; GCR-795F9G); 1 female labelled PNG, Simbu (Chimbu) Prov., Kundiawa village, 08-2019, body length 55 mm, in GCC (GCR-38CA8); 1 female labelled Arfak, body length 53 mm, in GCC (GCR-46AE8); 1 male labelled West Papua, Arfak, body length 53 mm, in GCC (GCR-8UUWE); 1 male labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, Simbu (Chimbu) Province, Kerowagi, 11-1990, body length 46 mm, in GCC (GCR-PG7H0); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, Simbu (Chimbu) Province, Kerowagi, 01-1990, body length 57 mm, in GCC (GCR-TWYC7); 1 male labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, Simbu (Chimbu) Province, Kerowagi, 01-1991, body length 50 mm, in GCC (GCR-442Z8); 1 male labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, EHP, Okapa, 02-1991, body length 56 mm, in GCC (GCR-JK5X2); 1 male labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, Simbu (Chimbu) Province, Kerowagi, 01-1990, body length 55 mm, in GCC (GCR-EFP1J); 1 male labelled PNG, Chimbu, Kerowagi, 02-1992, body length 54 mm, in FVC; 1 female labelled PNG, Chimbu, Kerowagi, 02-1992, body length 52 mm, in FVC; 1 male labelled PNG, Gulf Province, Karoro Kerema, 03-2000, body length 54 mm, in GCC (GCR-N6GQX); 1 female labelled *Rosenbergia weiskei* Coll. Casadio C. A., PNG, Simbu (Chimbu) Province, Kerowagi, 01-1990, body length 57 mm, in GCC (GCR-DQAFB); 1 female labelled PNG, Mendi, 08-1980, body length 45 mm, in GCC (GCR-LB3PN); 1 male labelled PNG, MP, Wau, Kapiro village, 05-03-2005, body length 49 mm, in GCC (GCR-IYYFT).

Additional material examined not belonging to *R. weiskei*-complex.

Rosenbergia mandibularis Ritsema, 1881: 1 female labelled Sorong, 01-2003, body length 51 mm, in GCC (GCR-M6143); 1 male labelled *Rosenbergia mandibularis* Coll. Casadio C. A., Irian Jaya, Arfak Mt., Manokwri kab., 07-2003, body length 48 mm, in GCC (GCR-VBGDI); 1 female labelled West Papua, Arfak Mt., body length 53 mm, in GCC (GCR-BF336); 1 female labelled West Papua, Arfak Mt., 07-2004, body length 46 mm, in GCC (GCR-T5WVQ); 1 male labelled West Papua, Timika, 02-2006, body length 41 mm, in GCC (GCR-ET0FB); 1 male (dissected) labelled Indonesia, Irian Jaya, Fak Fak, 03-2006, body length 52 mm, in GCC (GCR-RQ9UR; GCR-RQ9URG); 1 female labelled *Rosenbergia mandibularis* Coll. Casadio C. A., Fak Fak, Maret (March) 03-2003, body length 49 mm, in GCC (GCR-PYJNN); 1 female labelled Papua, Jayapura South Gresi, Klaisu, 04/07-11-2019, body length 45 mm, in GCC (GCR-SPNPV); 1 male labelled West Papua, Waigeo Isl., Waisai, 01-10-2018, body length 51 mm,

in GCC (GCR-ZAU9M); 1 male (dissected) labelled Irian Jaya, Fak Fak, 01-2003, body length 53 mm, in GCC (GCR-CDS6P; GCR-CDS6PG); 1 female labelled West Papua, Fak Fak, 03-2006, body length 51 mm, in GCC (GCR-PRP6T); 1 female labelled West Papua, Cyclops Mt., Jayapura, 02-10-2008, body length 49 mm, in GCC (GCR-UPH1G); 1 female labelled Jayapura, 2020, body length 46 mm, in GCC (GCR-UD1AD); 1 male labelled PNG, Morobe, body length 47 mm, in FVC; 1 male labelled PNG, MP, Bulolo, 12-1985, leg. P. B. Clark, body length 47 mm, in GCC (GCR-OLBV4); 1 female labelled PNG, MP, Bulolo, 12-1985, leg. P. B. Clark, body length 44 mm, in GCC (GCR-PGMET); 1 female labelled PNG, MP, Bulolo, 02-1986, body length 44 mm, in GCC (GCR-CA8K6); 1 male labelled PNG, MP, Bulolo, 12-12-1988, body length 49 mm, in GCC (GCR-ZU0CQ); 1 female labelled *Rosenbergia mandibularis*, PNG, MP, Bulolo, 12-1986, body length 52 mm, in GCC (GCR-BFT8X); 1 female labelled PNG, MP, Bulolo, 21-12-1988, body length 46 mm, in GCC (GCR-NVBVV); 1 male labelled PNG, MP, Bulolo, 24-12-1988, body length 45 mm, in FVC; 1 male labelled PNG, MP, Bulolo, 02-1986, body length 45 mm, in GCC (GCR-KVDNM); 1 male labelled PNG, MP, Wau, 03-1991, body length 48 mm, in GCC (GCR-GUW75); 1 female labelled PNG, MP, Wau, 03-1991, body length 54 mm, in GCC (GCR-F3REZ); 1 male labelled *Rosenbergia mandibularis* Coll. Casadio C. A., PNG, MP, Wau, Wantumiya, 01-1992, body length 48 mm, in GCC (GCR-JYXY5); 1 female labelled PNG, MP, Wau, 02-1992, body length 43 mm, in GCC (GCR-OB3G8); 1 male labelled PNG, MP, Wau district, Kapiro village, 12-07-1995; body length 36 mm, in GCC (GCR-SYC5Y); 1 female labelled PNG, MP, Wau, 02-1952, body length 50 mm, in GCC (GCR-60DIP); 1 male labelled PNG, MP, Wau, Wantumiya, 01-1992, body length 48 mm, in GCC (GCR-QVUGM); 1 male labelled *Rosenbergia mandibularis* Coll. Casadio C. A., PNG, MP, Wau, Wantumiya, 01-1992, body length 45 mm, in GCC (GCR-1C7SM); 1 male (dissected) labelled PNG, MP, Wau district, Kapiro village, 14-12-1999, body length 39 mm, in GCC (GCR-VWLW5; GCR-VWLW5G); 1 male labelled *Rosenbergia mandibularis* Coll. Casadio C. A., PNG, MP, Wau, Wantumiya, 02-1992, body length 51 mm, in GCC (GCR-6X5QV); 1 male labelled PNG, MP, Wau district, Kapiro village, 02-02-1999, body length 40 mm, in GCC (GCR-PPDWC).



Figure 2
Holotype male of *Rosenbergia cheesmanae*
sp. nov. ventral view.

Rosenbergia rufolineata Breuning, 1948: 1 female labelled PNG, MP, Aseki, 02-1992, body length 61 mm, in GCC (GCR-IRDU8); 1 female labelled PNG, EHP, Okapa, 02-1992, body length 60mm, in GCC (GCR-Z1BI4); 1 female labelled PNG, MP, Aseki Subdistrict, body length 52 mm, in GCC (GCR-MDVGS); 1 female labelled PNG, Chimbu province, Kerowagi, 05-04-2000, body length 53 mm, in GCC (GCR- 0YKWA); 1 male labelled PNG, EHP, Okapa, 02-1992, body length 51 mm, in GCC (GCR-EOVOX); 1 male labelled Rosenbergia straussi NeuGuinea, PNG, MP, Okapa, 03-1980, body length 55 mm, in GCC (GCR-P6JG1); 1 male labelled R. straussi, PNG, EHP, Okapa, 04-1991, body length 48 mm, in GCC (GCR-GFWOW); 1 male labelled West Papua, Arfak Mt., 2009, body length 53 mm, in GCC (GCR-AQGJ5); 1 female labelled PNG, EHP, Okapa, 06-1992, body length 62 mm, in GCC (GCR-J3KE9); 1 male labelled PNG, EHP, Okapa, 02-1992, body length 54 mm, in GCC (GCR-EHEXH); 1 female labelled PNG, EHP, Okapa, 01-1990, body length 59mm, in GCC (GCR-JRF9E); 1 female labelled PNG, EHP, Okapa, 04-1991, body length 58 mm, in GCC (GCR-RQFJE); 1 female labelled PNG, EHP, Okapa, 02-1992, body length 65 mm, in GCC (GCR-HSTLM); 1 female labelled PNG, EHP, Okapa, 03-1991, body length 54 mm, in GCC (GCR-NG8R0); 1 male labelled PNG, EHP, Okapa, 01-1990, body length 48 mm, in GCC (GCR-OP6MM); 1 male labelled PNG, EHP, Okapa, 05-2004, body length 58 mm, in GCC (GCR-7R8NC); 1 female labelled PNG, EHP, Okapa, 01-1991, body length 52 mm, in GCC (GCR-Y4MT7); 1 male labelled PNG, EHP, Okapa, 18-07-2007, body length 44 mm, in GCC (GCR-6O2A9); 1 female labelled PNG, East Highlands, Okapa, 02-1991, body length 65 mm, in FVC; 1 female labelled West Papua, Arfak Mt., 2008, body length 59 mm, in GCC (GCR-M4UAL); 1 female labelled PNG, EHP, Okapa, 18-07-2007, body length 61 mm, in GCC (GCR-L25DX); 1 male labelled PNG, EHP, Okapa, 20-07-2007, body length 43 mm, in GCC (GCR-CKRSU); 1 female labelled PNG, EHP, Okapa, 04-1991, body length 58 mm, in GCC (GCR-2IHUS); 1 female labelled PNG, EHP, Okapa, 03-1991, body length 60 mm, in GCC (GCR-W1MIW); 1 female labelled West Papua, Arfak Mt., 2008, body length 62 mm, in GCC (GCR-XE1GC); 1 female labelled PNG, EHP, Okapa, 02-1992, body length 63 mm, in GCC (GCR-MC5G1); 1 female labelled PNG, EHP, Okapa, 10-1985, body length 64 mm, in GCC (GCR-JBP55); 1 male labelled PNG, EHP, Okapa, 31-08-2007, body length 43 mm, in GCC (GCR-PAKU4); 1 male labelled (*R.*) *rufolineata*, PNG, EHP, Okapa, 04-1991, body length 41 mm, in GCC (GCR-P4TU9); 1 male labelled PNG, EHP, Okapa, 18-07-2007, body length 52 mm, in GCC (GCR-AFO3G); 1 male labelled Arfak Mt., body length 54 mm, in GCC (GCR-B3DR8).

Rosenbergia samuelsoni Rigout, 1982: 1 male (HT; examined by photograph), labelled New Guinea,

NE Torricelli Mountains, Mobitei, 750m, 16/31-3-1959, Leg. W. W. Brandt, body length 51 mm, in BMH; 1 male labelled Papua, Jayapura, South Gresi, 05-2019, body length 48 mm, in GCC (GCR-795F9); 1 female labelled Papua, Jayapura, South Gresi, 03-2021, body length 49 mm, in GCC (GCR-30FZO); 1 female labelled Papua, Jayapura, South Gresi, 03-2021, body length 49 mm, in GCC (GCR-I3E5R).

Rosenbergia xenium Gilmour, 1959: 1 female labelled PNG, MP, Aseki, Paiwini village, 02-10-2004, body length 58 mm, in GCC (GCR-RCNPZ); 1 male labelled *Rosenbergia xenium* forme, PNG, MP, Aseki, Paiwini village, 03-11-2000, body length 48 mm, in GCC (GCR-ABO51); 1 male labelled PNG, MP, Aseki, 09-1997, body length 44 mm, in GCC (GCR-R2V9U); 1 female labelled *Rosenbergia xenium* Coll. Casadio C. A., PNG, MP, Aseki, Paiwini (?), 10-2003, body length 56 mm, in GCC (GCR-5JBQE); 1 female labelled PNG, MP, Aseki subdistrict, Paiwini village, 06-11-1996, body length 50 mm, in GCC (GCR-FNT2E); 1 male labelled PNG, MP, Aseki, Paiwini, 10-2003, body length 54 mm, in GCC (GCR-T0TLC); 1 female labelled *Rosenbergia mandibularis* Coll. Casadio, C. A., PNG, MP, Aseki, 07-2003, body length 57 mm, in GCC (GCR-HOD07); 1 female labelled PNG, MP, Aseki, Paisea, 12-1991, body length 55 mm, in GCC (GCR-ITAMF); 1 female labelled PNG, MP, Aseki subdistrict, Paiwini village, 12-12-2005, body length 55 mm, in GCC (GCR-B382); 1 female labelled PNG, MP, Aseki subdistrict, Paiwini village, 06-11-1996, body length 57 mm, in GCC (GCR-USBGP); 1 female labelled *Rosenbergia xenium* Coll. Casadio C. A., PNG, MP, Aseki, 01-2004, body length 57 mm, in GCC (GCR-7MCA6); 1 male labelled PNG, MP, Aseki, Paiwini village, 2-10-2007, body length 56 mm, in GCC (GCR-PFJ75); 1 female labelled PNG, MP, Aseki, 3-1991, body length 53 mm, in GCC (GCR-H5VPS); 1 female labelled PNG, MP, Aseki, 06-1998, body length 58 mm, in GCC (GCR-67Q3T); 1 female labelled PNG, MP, Aseki, Paiwini, 11-1991, body length 59 mm, in GCC (GCR-QHRD9); 1 female labelled PNG, MP, Aseki, 24-06-1998, body length 55 mm, in GCC (GCR-VXWMV); 1 female labelled PNG, MP, Aseki subdistrict, Paiwini village, 20-11-1996, body length 60 mm, in GCC (GCR-IP9QL); 1 female labelled PNG, MP, Okanaiwa, 01-1992, body length 55 mm, in GCC (GCR-TGI9I); 1 female labelled PNG, MP, Aseki subdistrict, Paiwini village, body length 49 mm, in GCC (GCR-ZJJEY8); 1 female labelled PNG, MP, Aseki, Paiwini village, 18-02-2007, body length 55 mm, in GCC (GCR-BUSAI); 1 female labelled PNG, MP, Aseki, Paiwini village, 02-10-2007, body length 56 mm, in GCC (GCR-8TMH1).

Figure 3
Holotype male of *Rosenbergia cheesmanae*
sp. nov. lateral view.

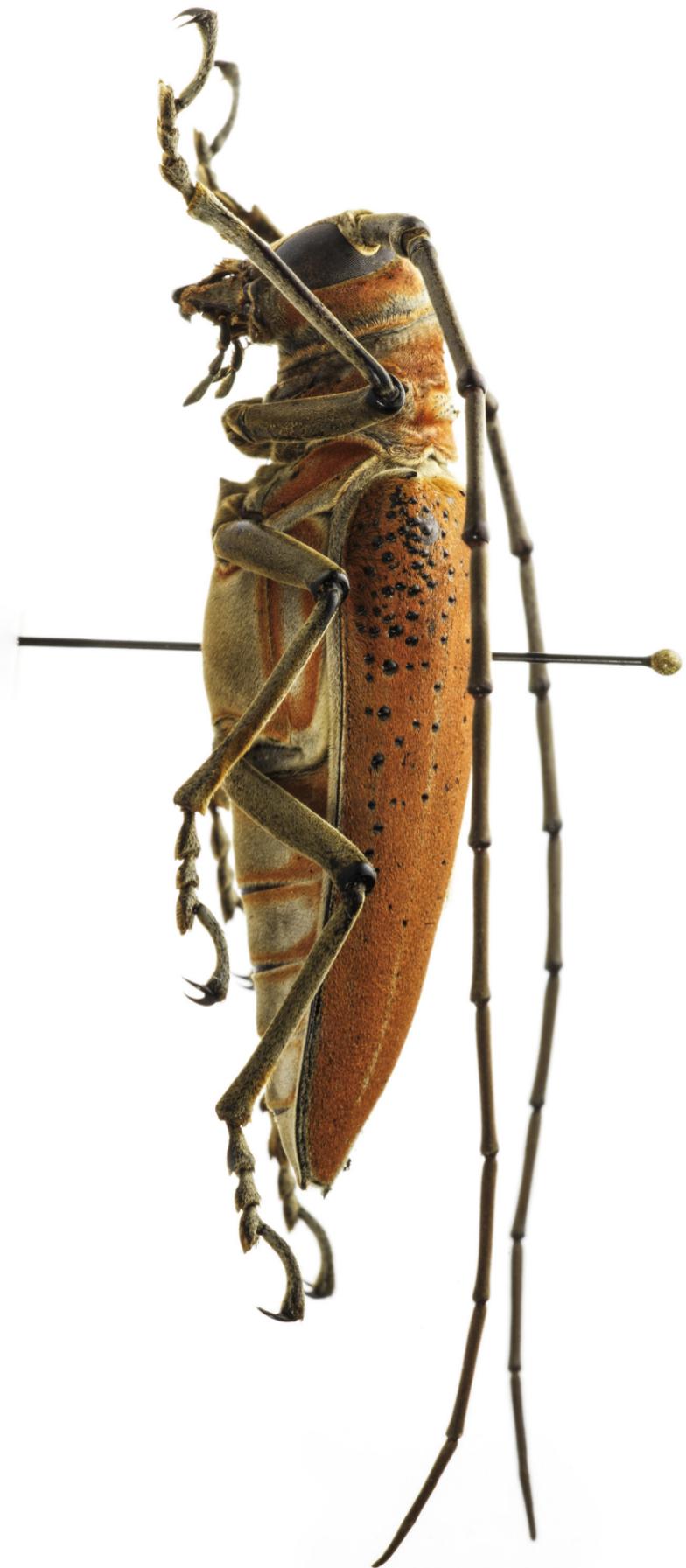




Figure 4
Allotype female of *Rosenbergia*
cheesmanae **sp. nov.** dorsal view.



Figure 5
Holotype male of *Rosenbergia*
cheesmanae
male tergite VIII, dorsal view.
Scale bar = 1 mm.



Figure 6
Holotype male of *R. cheesmanae*
parameres, dorsal view. Scale bar = 1 mm.



Results

After comparing 68 specimens of the *R. weiskei* complex stored in the authors' and museum collections and following extensive research, we provide a description of the habitus and genital characters of the recognised species, confirmed by dissections of male specimens. The authors consider male tergite VIII (proctiger) as part of the genital plate (Holmen, 1987; Gardner, 1989). The aedeagus is generally considered to be of great importance, but if the sclerotised tissue does not completely fill the interior, the general indentation and curved shape are not useful for the identification of *Rosenbergia* species, as previously suggested by Wallin & Nylander (2007). The same authors cited the microreticulated tissue as useful for specific diagnosis, such as the one on the proctiger, and we use this to separate *R. weiskei* from other species belonging to the same species group. In the case of *R. dianneae*, a neotype is designated and described, as the holotype is lost. The male of *R. humeralis* is described, along with new species *Rosenbergia cheesmanae* **sp. nov.** and *R. valentinae eki* **ssp. nov.** Illustrations of the habitus and genitalia are provided at the end of the paper.

Rosenbergia dianneae (Allard, 1990) species group

The distinguishing characters are a robust body, long antennae (longer in comparison to *R. weiskei* species group) and weak (or absent) humeral/sutural spines on elytra. The following species are considered part of this group: *Rosenbergia dianneae* Allard, 1990, *R. drumonti* Wallin & Nylander, 2007, *R. valentinae valentinae*, Rigout 2004, *R. valentinae eki* **ssp. nov.** and *R. cheesmanae* **sp. nov.**

Rosenbergia cheesmanae **sp. nov.**

Holotype: male (dissected by ventrites removing which are stored in glycerol; genitalia on cardboard attached to pin) from Papua New Guinea, Morobe Province, 02-1998, in GCC (GCR-E2865; GCR-E2865G). Red label handwritten by the first author.

Paratypes: 3 females from Hiemsini, Memyama and Aya village [GCR-E4T2K (marked Allotype), GCR-37DWH, GCR-MQ57P], 1 male from PNG (GCR-T2GPA).

Diagnosis: A *Rosenbergia* species with a grey vitta running from the scutellum to the elytral apex, characterized by ferruginous orange-red pubescence almost covering the whole elytral surface.

Description. Holotype, male, total length 45 mm; pronotum + elytra 42 mm.

Head with lower eyes lobes as wide as high. Distance between mid eyes (measured in upper lobes) 5 mm.

Antenna total length 75 mm, reddish brown with moderate sturdy scape. Apex of antennomeres glabrous. Third antennomere 4 mm longer than fourth; antennomeres covered at base with grey setae, which become finer and shorter after article 3.

Pronotum base 9 mm, 7 mm height; long axis crossed by carinae, posteriorly interspersed with small, glabrous and shiny dark brown tubercles, same at base of somewhat flattened lateral thorns. Lateral thorns parallel to humeri, cylindrical and sharp. Distance between their apices 14 mm. Scutellum U-shaped, posteriorly covered with orange-red setae with weak indentation on the middle posterior margin, quite erect from elytral surface at the anterior margin; posterior margin flatter.

Elytra elongated, reddish brown, covered with orange-red pilosity except for one band at elytral suture and one thin median band on each elytron, which are covered with grey setae. Interspersed glabrous tubercles mainly placed at elytral base towards suture and humeri. Two longitudinal carinae on each elytron. Distance between humeri 14 mm with short and small lateral spines. Apex with two sharp spines at each elytron, sutural one a little more elongated.

Prosternum covered with light ochre-orange setae; prosternum, mesosternum and metasternum from epimer apex to sternite VI covered with orange to ferruginous red setae forming longitudinal/transversal narrow bands interspersed by white to lighter ochre areas of coloured setae. Legs darker than antennae, covered with ochre setae, more elongated on tibiae and tarsi.

Male genitalia. Tergite VIII 4 mm wide, covered

with sparse long yellow (rarely brown) setae, mainly located on the posterior margin. Base straight; apex with weak indentation in the middle, almost straight. Surface not so much sclerotised, with strong punctures at the base such as at apex and with well developed rhomboidal microreticulation. General appearance of two fairly well developed lobes forming the proctiger with weak sclerotised tissue in the middle forming, towards the posterior margin, a weak sclerotised and lighter fan-shaped area. Parameres 2 mm long, 1 mm wide, relatively long with depression, clearly visible towards the posterior margin. Aedeagus 4 mm long, 1.3 mm wide at base, quite flat, rounded at apex.

Remarks. *R. cheesmanae* **sp. nov.** belongs to the *R. dianneae* species group. The new species is related to *R. dianneae* by the general appearance of the genitalia and microreticulation, from which it differs in a less trapezoidal proctiger and external habitus. A few dispersed tubercles and the lack of the pre-marginal band on each elytron eliminates *R. valentinae valentinae* and related subspecies. It differs from almost all the variations examined of *R. weiskei* and *R. mandibularis* in the absence of the grey bands. In addition, compared to *R. weiskei*, *R. cheesmanae* shows a wider proctiger, longer parameres with clearly visible depression in dorsal view, towards the posterior margin, and extensive microreticulation, which is smaller and squared plus a less marked punctuated in *R. weiskei*. *Rosenbergia rubra* shows greater and finer distribution of tubercles than does *R. cheesmanae*, as well as a more chocolate-brown elytral colouration.

Distribution: Papua New Guinea, Morobe and Aseki area.

Etymology. The new species is named in honour of Mrs. Lucy Evelyn Cheesman (1881–1969), the first woman to thoroughly explore the biogeography of the Southwest Pacific Islands, including New Guinea, and who promoted a collaborative and non-violent approach to native culture.

Figures 7-8

Neotype male of *Rosenbergia dianneae*
lateral and dorsal view.





Figure 9
Neotype male of *Rosenbergia dianneae*
ventral view.



Figure 10
Neotype of *R. dianneae*
male tergite VIII, dorsal view.
Scale bar = 1 mm.



Figure 11
Neotype male of *R. dianneae*
parameres, dorsal view. Scale bar = 1 mm.

Rosenbergia dianneae Allard, 1990: 20.

Neotype: adult male (dissected, genitalia stored on cardboard attached to pin) from Papua New Guinea, Eastern Highland, Okapa, 08-2000, local collector, currently in GCC (GCR-5C32C; GCR-5C32CG), it will be deposited at New Guinea Binatang Research Centre, Madang, Papua New Guinea. Red label handwritten by the first author.

Diagnosis: a *Rosenbergia* species related to *R. weiskei* with medium-large and flat tubercles on elytra. Distinguished from *R. weiskei* mainly by structure of the genitalia.

Redescription. Neotype, male, total length 51 mm; pronotum + elytra 47 mm.

Head black, covered with grey and orange setae mainly located around the eyes. Lower eyes-lobes slightly higher than they are wide. Distance between them 6 mm.

Antenna total length 93 mm, reddish brown with moderate short scape. Apex of antennomeres glabrous. Third article 3 mm longer than fourth article; antennomeres covered at base with very fine and short grey setae interspersed by single long black hairs.

Pronotum base 10 mm, 8 mm height; long axis crossed by carinae and one single swollen point, posteriorly interspersed with small glabrous and shiny black tubercles, same at base of lateral thorns. Lateral thorns black, parallel to humeri, cylindrical and quite sharp. Distance between their apexes 14 mm.

Scutellum elongated U-shaped, posteriorly covered with orange setae, with weak indentation in the middle posterior margin, quite erect from elytral surface at the anterior and posterior margin.

Elytra elongated, quite light reddish-brown, covered with orange and grey pilosity that form five grey bands, included one very small band at lateral margin and one at the suture of each elytra. Swollen glabrous tubercles on elytral base of medium size, bigger and flattened on the elytral margin, mainly located from base to the mid-elytra. Distance between humeri 17 mm almost without lateral spines. Apex with one short sutural spine at each elytron, a second one on the side is barely visible.

Prosternum covered with brown setae as for mesosternum and metasternum. Epimer, mesepimer, metepisternum and mesepisternum covered with silver-grey setae. Posterior margin of each ventrite covered with narrow stripes of orange setae as for the marginal side of prosternum, mesosternum and metasternum, forming longitudinal or transversal narrow bands. Legs darker than antennae, covered with brown setae and single long black hairs on tibiae and tarsi.

Genitalia. Male tergite VIII 4 mm wide thickly covered with long yellow setae, mainly located from middle the posterior margin. Base straight, apex almost straight. Surface well sclerotised, absent punctuation at base such as just hinted at apex. Rounded microreticulation few developed. General look of trapezoidal shape with well sclerotised longitudinal line in the middle. Parameres 2 mm long, 1.2 mm wide, relatively short feeling, with paramere sides convergent at external apex. Penis 4 mm long, 1.4 mm wide at base, quite flat and elongated towards apex, which is rounded.

Remarks. *R. dianneae* belongs to the *R. dianneae* species group. The species is related to *R. weiskei* in general habitus and genitalia. Proctiger microreticulation differs with a strongly trapezoidal proctiger in *R. dianneae* and more elongated body. Though we have few data, collecting are quite far from *R. drumonti* type location and very different genitalia, such as parameres more rounded at apex and a different shape of tergite VIII in *R. drumonti*, as below illustrated. *R. valentinae* differs from *R. dianneae* for an indentation on tergite VIII posterior margin which is squared plus more sharp and elongated parameres. *R. dianneae* looks different from *R. samuelsoni* too since the grey pilosity and quite big tubercles (as in pictures of holotype) are never shown in *R. samuelsoni* and *R. dianneae* has a very different proctiger, parameres and penis.

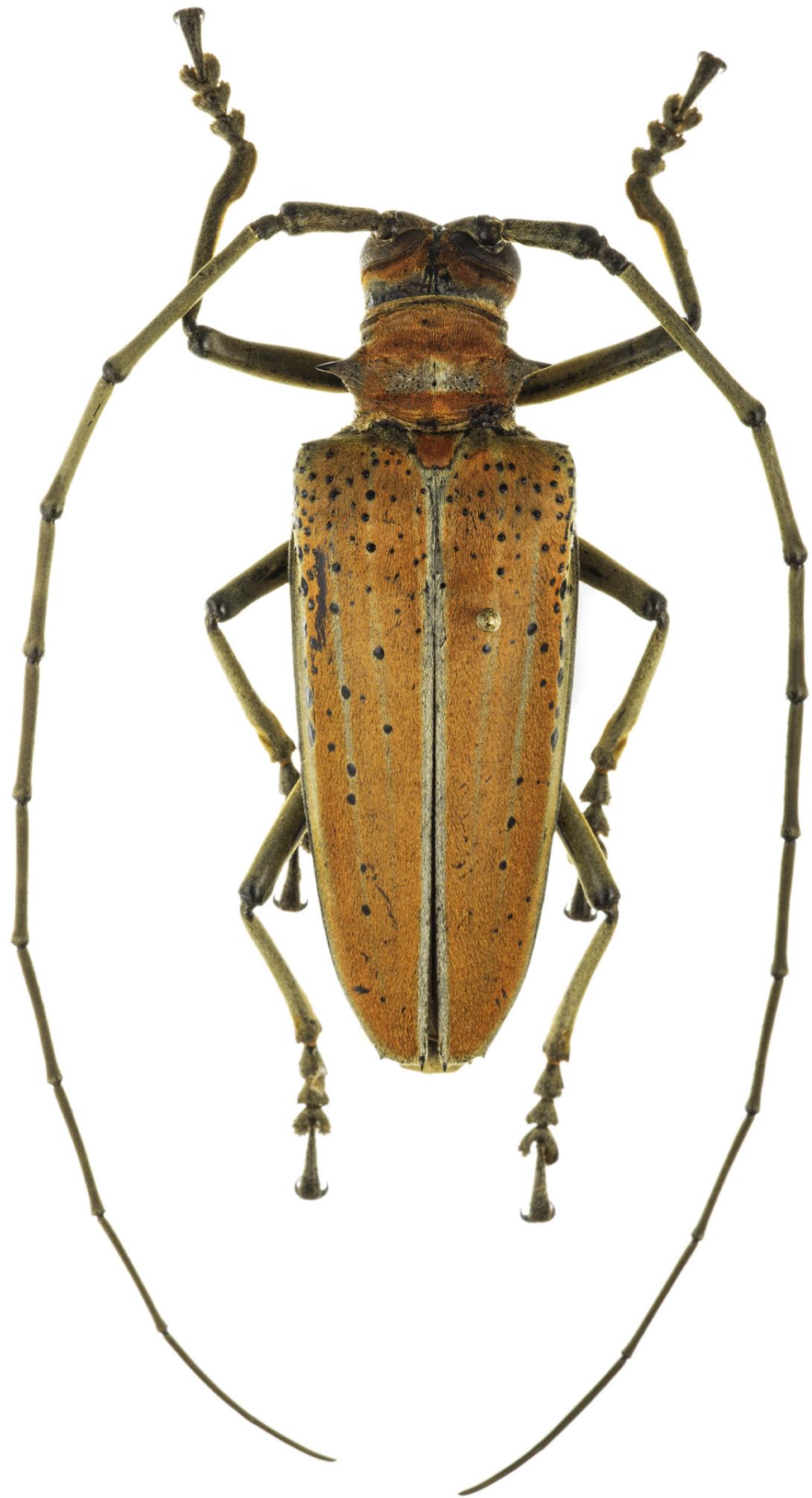
Distribution: Holotype from Papua New Guinea, Morobe province, Aseki area. Neotype and GCR-C9Q5T from Eastern Highlands, Okapa.

Concerning the holotype, the last owner of Allard's collection (Mr. Alfred Punchner) informed us that the holotype of *Rosenbergia dianneae* was lost, destroyed during an infestation of *Anthrenus*.

Figures 12-14
Holotype male of *Rosenbergia valentinae eki*
ssp. nov. dorsal, ventral and lateral view.

Figures 15-16
Holotype of *Rosenbergia valentinae eki*
male tergite VIII dorsal view and parameres,
dorsal view. Scale bar = 1 mm.

Figure 17
Paratype male of *R. valentinae eki*
dorsal view.



1 mm

1 mm

Rosenbergia valentinae valentinae Rigout, 2004: 4, pl. 1, fig. 5 **stat. nov.**

Rosenbergia diannae valentinae Rigout, 2004 (original combination).

Original description.

“Close to the nominate subspecies, but immediately distinguishable by less extensive granulation and more abundant pilosity, which only allows two grey bands to be visible: one marginal and the other sutural. The colour is brick red rather than orange.

Holotype: 12,58 mm, Pesea-Aseki, Morobe Province, Papua New Guinea, 2/01/1992, in collection Carlo Arrigo Casadio.

Paratypes: 1 male, Aya-Aseki, Morobe Province, Papua New Guinea, 02/1992, in collection Carlo Arrigo Casadio; 1 male, same data in collection Thierry Porion; 1 male same data in collection Jean-Pierre Bader.

The insect is dedicated to the late Valentina Casadio.”

Remarks. Following the designation of a neotype for *R. diannae*, it was possible to separate and raise to species level *Rosenbergia valentinae*, formerly considered a subspecies of *R. diannae*. We consider this species to belong to *R. diannae* species group. In addition, the dissected material allowed us to ascertain an unjustified relationship between *R. diannae* and *R. valentinae* since they differ consistently and clearly in genitalia and habitus. It is important to note that both the mentioned species are sympatric and, according to the well accepted definition (Mayr, 1979), subspecies cannot be sympatric.

***Rosenbergia valentinae eki* ssp. nov.**

Holotype: adult male (dissected, genitalia on cardboard attached to pin) from Fak Fak, 03-2003, in GCC (GCR-CM0NE; GCR-CM0NEG). Red label handwritten by the first author.

Paratype: 1 male (GCR-Y370U).

Diagnosis: a *Rosenbergia* species related to *R. valentinae valentinae* (ferruginous red pubescence covering the elytra except for a grey vitta on elytral suture and one pre-marginal darker) but more elongated and different in genitalia and current known distribution.

Description. Holotype, male, total length 50 mm; pronotum + elytra 46 mm.

Head with lower eyes lobes more high than wide. Distance between eyes (measured as above) 6 mm.

Antenna total length 75 mm, black, with moderate elongated scape. Apex of antennomeres glabrous. Third article 3 mm longer than fourth; antennomeres covered at base with grey setae that become grey, finer and shorter after article 3.

Pronotum base 9 mm, 8 mm height; covered with orange pilosity on the anterior margin, long axis crossed by carinae, posteriorly interspersed by swollen, small, glabrous and shiny black tubercles, same at base of lateral thorns. Lateral thorns black, parallel to humeri, cylindrical and sharp. Distance between apices 14 mm.

Scutellum U-shaped, entirely covered with orange setae, with weak indentation on the middle posterior margin, quite erect from elytral surface; anterior margin with lighter pilosity at sides.

Elytra strongly elongated, reddish brown, covered with orange pilosity except for one band at the elytral suture, other two barely hinted, very thin, and one pre-marginal quite extended and darker on each elytron, covered with silvery grey setae. Interspersed glabrous tubercles, small, swollen and subcircular at humeral side, being larger from 1/3 of each elytron up to 3/4 of it, and on the elytral sides. No visible carinae. Distance between humeri 16 mm, with small, short lateral spines. Apex with two black sharp spines at each elytron, the sutural one more elongated.

Prosternum black covered with ochre setae; prosternum, mesosternum and metasternum from epimer apex to sternite VII covered with lighter orange pilosity mixed with whitish ochre setae forming longitudinal or transversal narrow bands. All except the last visible ventrite, rimmed on the posterior margin with light orange setae. Legs dark as the antennae, covered with ochre and greyish setae, more elongated on tibiae and tarsi in dorsal view. Single black long hairs visible on tarsi.

Genitalia. Tergite VIII (proctiger) 4 mm wide at base. Strongly sclerotised. Covered with sparse long yellow setae, mainly located on the posterior margin which forms a rounded apex. Base straight, apex with weak tip in the middle. Not visible punctuated base such as apex with well-developed and elongated, sometimes joined, squared microreticulation. General look of rounded proctiger with quite more sclerotised central vertical suture line. Parameres 1.8 mm long, 1.4 mm wide, stubby, with barely hinted longitudinal carinae dorsally. Penis 4.2 mm long, 1.6 mm wide at base, strongly curved and swollen. Rounded and elongated towards apex as for *R. diannae*. Dorsal side strongly furrowed in the middle.



Figure 18
Paratype of *R. valentinae valentinae*
male tergite VIII, dorsal view. Scale bar = 1 mm.

Figure 19
Paratype male of *R. valentinae valentinae*
dorsal view.



Figure 20
Paratype male of *R. valentinae valentinae*
parameres, dorsal view. Scale bar = 1 mm.



Remarks. *R. valentinae eki* **ssp. nov.** is strongly related to the nominal species *valentinae valentinae* in habitus and penis, but the latter is more curved in the subspecies. Proctigera are similar in setae colour and distribution but differ in general shape. Body shape more elongated and with smaller elytral tubercles in *R. valentinae eki* subspecies. In addition, the type locality of *R. valentinae valentinae* is geographically distant from the collection locality of this subspecies.

Distribution: West Papua, Fak Fak and Timika area.

Etymology. The new species is named in honour of Mrs. Eko Susilowati, wife of Mr. Edy Bhaskara, local insect collector who was not received enough credit over the last few years for his enormous contributions in discovering beautiful entomological species. Eko is the Javanese variation of Eka, a name with Sanskrit origins. Since the name (Eka) meaning is "the first" (used in past for example in chemical discoveries), it is a classical origin name derived from Greek and used for both men and women. We latinised it as Ekus (nominative) and Eki (genitive in Latin second declension).

***Rosenbergia weiskei* (Heller, 1902) species group: Wallin & Nylander, 2007: 3.**

Characterised by reddish pubescence with elytra marked with narrow longitudinal grey bands and glabrous tubercles. This species group consists of *R. weiskei* Heller, 1902, *R. humeralis* Gilmour, 1966 and *R. rubra* Gilmour, 1966.

***Rosenbergia humeralis* Gilmour, 1966: 256, pl. 2, fig. 6.**

Diagnosis: a *Rosenbergia* species mainly located in the Arfak Mountains with elongate body and medium-large flat tubercles.

Male: Elongate and robust. Body length 42–52 mm. Lower eye lobes higher than wide. Pronotum with quite short black spines at sides. Scutellum rounded and swollen at the posterior margin, with weak indentation in the middle and covered for 2/3 with orange pilosity. Body dorsally with dispersed glabrous and very flat red-brown tubercles, which do not exceed 2/3 of the elytra in length. These are sometimes small, but often of medium size. Four longitudinal orange bands almost meet at the elytral apex. Ventrally covered with mixed brown-orange pilosity. Orange pilosity is concentrated on prosternum, mesosternum and metasternum distal sides. Each ventrite covered with orange setae at the posterior margin. Legs as antennae, covered with brown pilosity, sparser on tibiae with the presence of black setae too. Genitalia with unique shape especially in

proctiger, which shows a squared side at the posterior margin towards apex, and is well sclerotised with dispersed yellow long setae.

Remarks. *R. humeralis* is a distinctive species, easily distinguished from all members of the weiskei group. Unique genitalia, generally larger sized tubercles and an elongated body compared to *R. drumonti*. *Rosenbergia xenium* differs in the presence of rarely complete orange bands, a less elongated body and a very restricted and local distribution (so far only found in PNG and near Paiwini village). *R. samuelsoni* shows lighter colour bands and smaller and sparser tubercles than *R. humeralis*. The species was proposed in the past as junior synonym of *R. rufolineata* (Rigout, 1982), later (Wallin & Nylander, 2007), *R. humeralis* was considered to be a good species. These two species are distinguished by the genitalia, and elytral granulation (tubercles very large and distributed on whole elytral surface in *R. rufolineata*).

Distribution: all the examined males come from West Papua, Arfak Mountains and Jayapura. One specimen examined as a photograph is from Pass Valley.

Notes on the holotype: a female considered lost by Wallin & Nylander (2007), who were unable to find it in MHNL. It has now been rediscovered and is illustrated at the end of this paper with updated red labels. We also consider this to be a good species.



Figure 21
Holotype female of *Rosenbergia humeralis*
dorsal view.

Figure 21b
Holotype female of *R. humeralis* original
picture from Gilmour, 1966.

Figure 22
Holotype female of *R. humeralis* labels.

Figure 23
Rosenbergia humeralis male (GCR-96295)
dorsal view.

Figures 24–25
R. humeralis (GCR-96295G)
male tergite VIII dorsal view and parameres,
dorsal view. Scale bar = 1 mm.



Figure 26
Rosenbergia weiskei male (GCR-A2E3G)
dorsal view.

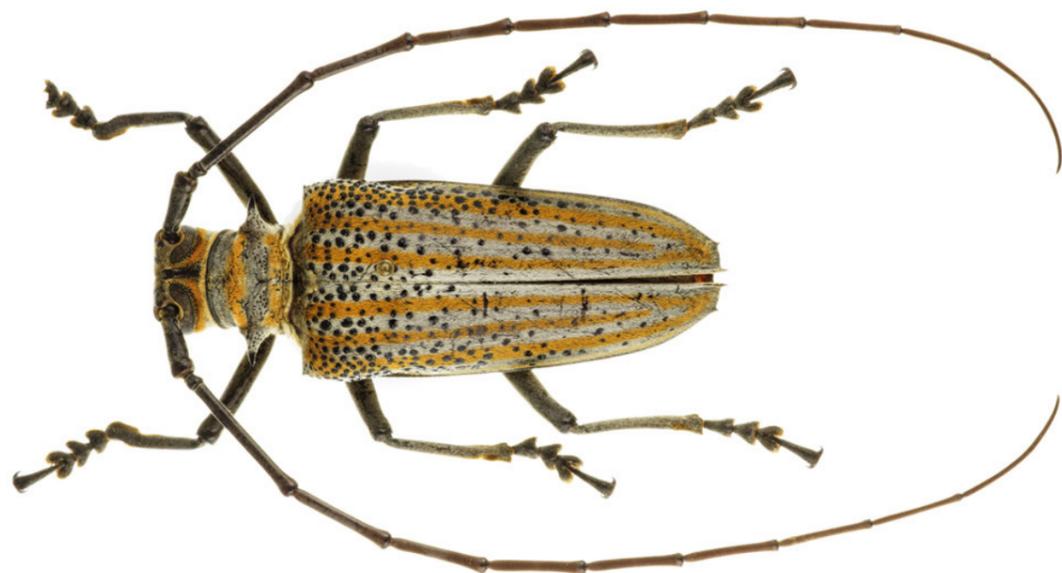
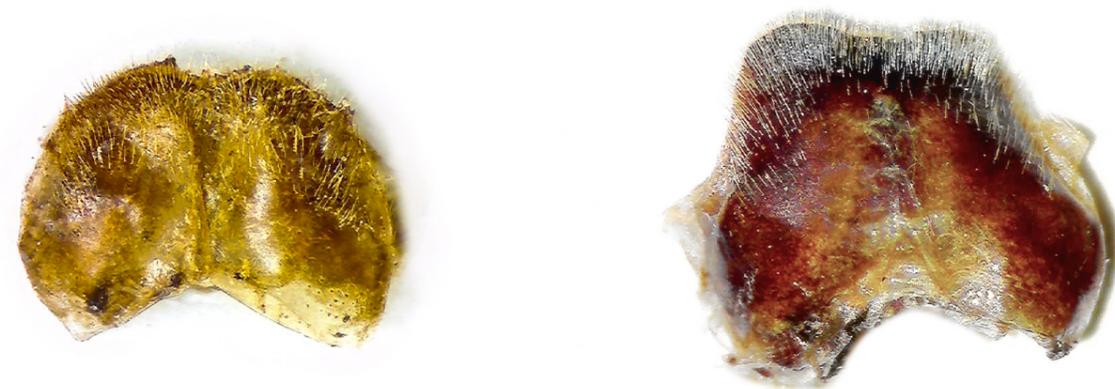


Figure 27
Rosenbergia drumonti male (GCR-EBCD4)
dorsal view.



1 mm

1 mm



1 mm

Figures 28-29
R. weiskei (GCR-A2E3GG)
male tergite VIII dorsal view and parameres,
dorsal view. Scale bar = 1 mm.



1 mm

Figures 30-31
R. drumonti (GCR-EBCD4G)
male tergite VIII dorsal view and parameres,
dorsal view. Scale bar = 1 mm.

Rosenbergia rubra Gilmour, 1966: 245, pl. 1, fig.1.

Original description.

We hereby report the Gilmour's text in full.

"This very distinct new species is the darkest coloured member of the genus known to date. It belongs to the group with unicolorous ferruginous-red or reddish-brown pubescence and has deep reddish-brown elytra. It is closely allied to *R. mandibularis* RITSEMA, but differs conspicuously in colour, in addition to being easily separated by having much more extensive and differently distributed elytral tuberculation. The elytral tubercles are most extensive suturally to about the apical quarter, rather than extending posteriorly along the margin, but extend only to about the middle marginally. It also differs from *R. mandibularis* RITSEMA in lacking any marginal olivaceous-grey, or other coloured bands on the elytra.

Male: Elongate, robust, subcylindrically cuneiform. The antennae moderately slender, exceeding the elytral apex by the two apical segments, i.e., about one and two-seventh times as long as the body; smooth; very sparsely fringed beneath on the first three segments, thereafter only occasional setae beneath to the apex; segments five to ten, slightly, but distinctly somewhat spinously produced at their external apex; segments three to seven with a few minute spines beneath at their apices, these becoming more extensive distally, on segments eight to ten they completely encircle the apices; the scape with a very broad, very shallow, not very distinct, oblique internal pre-basal groove; the apical cicatrix more or less obsolete, indiscernible; the first three segments and basal half of the fourth, with numerous moderately large scattered punctures, the interstices and rest of the segments very finely and closely punctured; the third segment one and two-thirds as long as the scape, one and two-fifths as long as the fourth, which is one and a quarter times as long as the scape; the following segments gradually decreasing in length, except the apical which is elongate, about one and a half times as long as the pre-apical and not quite as long as the third segment. The lower lobe of the eye about one and a fifth times as broad as long, twice as broad as the irons, about three times as long as the genae. The frons rather narrow, a little more than twice as long as broad, rather strongly internally rounded on each side; very finely and closely punctured, with a few moderately large, but indistinct, hair-bearing tubercles round the upper border of the lower lobe of the eye; the lower border with a fine, slightly curved, transverse groove, which is quite well-marked laterally, but becomes almost obsolete towards the mid-line, with a very fine median longitudinal line, which becomes much stronger and much more distinct on the vertex, extending to the posterior border of the head. The vertex rather distinctly rugosely punctured,

particularly postero-medially, the rest very finely and closely punctured, with a single or double irregular row of very variably sized (from very large to small), glabrous hair-bearing tubercles round the borders of the upper lobes of the eyes; with two longitudinal, obtuse, but distinct, carinae on each side of the mid-line, the inner the strongest and well-marked, not united anteriorly and extending from about the level of the posterior border of the eyes, to the posterior border of the head; the more lateral carinae shorter, less distinct, arising at about the same level, but not extending to the posterior border of the head.

The pronotum transverse, almost twice as broad as long; slightly, but quite distinctly, narrower anteriorly than posteriorly; bearing on each side a long, slender, straight, pointed, conical spine; with one narrow anterior and two narrow posterior, rather well-marked, transverse grooves; the disc not very strongly raised, rather straight, transverse wrinkle along the anterior border, and one or two short much more obtuse transverse grooves behind; on each side of the posterior half of the disc a distinct group of 17-20 glabrous hair-bearing tubercles, and on the posterior and ventral surfaces of the lateral spines a larger number of similar tubercles; completely very finely and closely punctured. The scutellum about one and a third times as broad as long, sub-triangular, moderately rounded apically, with a fairly distinct, though shallow median apical emargination.

The elytra convex, cuneiform; the humeri not very strongly swollen or projecting; the humeral angle bearing a rather long, obtusely pointed, moderately strong spine; each elytron with numerous small glabrous tubercles placed basally anterior to a line from about the sutural third to the middle of the margin, these largest and closest baso-humerally, becoming distinctly smaller posteriorly; the rest of the elytra very finely and closely punctured; on each elytron very faint traces of two almost obsolete, discal, longitudinal carinae; the elytral apices truncate, very slightly sinuate, both sutural and marginal angles bearing strong pointed spines of which the sutural are slightly more elongate and more slender.

The legs moderately slender, the anterior not noticeably elongate; the anterior tibiae distinctly, rather strongly curved; smooth; all the legs finely and closely punctured, with a number of slightly larger, more distinct, scattered punctures on the tibiae, particularly distally. The underside completely very finely and closely punctured; the prosternal process strongly rounded, moderately longitudinally depressed post-medially, strongly rectangularly laterally dilated between the coxae, the apex broadly rounded, rather broadly and distinctly emarginate medially, giving a distinct bilobed appearance; the mesosternal process very broadly rounded, moderately broad, with an extremely large, very broadly conical, slightly raised, pointed, strongly anteriorly projecting tubercle at the anterior border, very strongly posteriorly concave vertically; the apex truncate. The apical ventrite more or less semicircular, very broadly truncate apically, the apex rather strongly excavately emarginate, the lateral angles distinct, more or less rectangular; the posterior border of the first to fourth abdominal sternites very narrowly glabrous and shining.

Black, shining where glabrous. Covered above and below with reddish-brown pubescence, which is darker above (brick-red), except for the head (apart from the borders of the eyes), the anterior and posterior borders broadly of the pronotum and very narrowly, but distinctly, the sutural margin of the elytra which are all of greyish-red; the underside and legs reddish-brown, a little lighter on the upperside; the basal segments of the antennae to about the middle of the fourth segment thinly greyish-pubescent, the following segments becoming very dark reddish-brown pubescent.

Length: 45 mm.

Breadth: 16 mm.

Locality: N. E. West Irian (N. E. Dutch New Guinea): Humboldt Bay district. (J. KLEINBERG).

Material examined: Holotype (male) in the GILMOUR collection. Unique."

Remarks. We did not dissect this species but we are able to confirm it is a valid species. It is possible to separate it from other species belonging to the *R. dianneae* species group by the absence of a robust and large body, shorter antennae and well developed elytral sutural spines. The subspecies *R. rubra fakfakensis* Rigout, 2004 requires further analysis to confirm its validity. In this paper, a picture of the holotype of *Rosenbergia rubra* is depicted (Fig. 32).

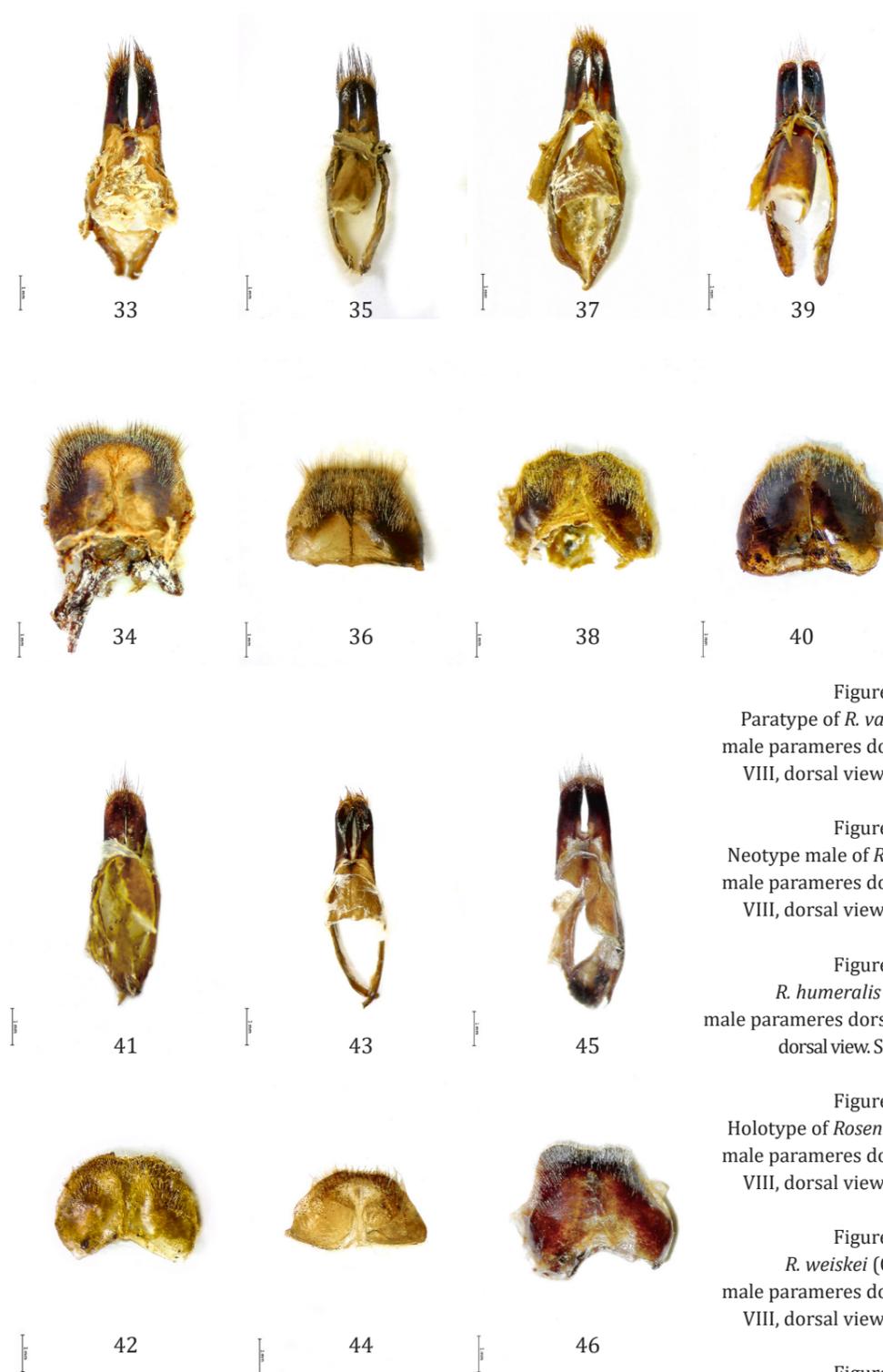
Discussion

In studying all the material cited and literature available relating to the genus *Rosenbergia* it was possible to define a new species group, a new species and subspecies. Some species, once considered part of *R. weiskei* species group have been transferred to another group. We analysed especially male specimens and their genitalia, and for this reason the paratype male of *R. valentinae valentinae* is illustrated, as the holotype is a female. During the study of localities of all the specimens determined as *R. weiskei*, we found some specimens of *R. drumonti*, representing a new distribution record of this species in the Arfak mountains. The authors of this paper noted that at least two holotypes are untraceable, causing considerable difficulties in the definition of valid species. Wallin & Nylander (2007) tried to trace the holotype of *R. humeralis* and put into doubt the validity of *R. dianneae*. However, to work on the *R. weiskei* group and with the aim of good storage and diagnosis of all the specimens placed in GCC collection, it was necessary to trace these holotypes. This involved, in the case of *R. humeralis*, writing to MHL where the apparently lost holotype specimen was stored in the Lepesme collection, as originally described by Gilmour (1966). The authors were able to examine the unique drawer of *Rosenbergia* held in the Lepesme collection, with the help of old photographs showing the exact distribution of the tubercles, and they were able to confidently identify the supposed lost holotype. In this paper we provide a description of the male and are able to confirm it as a good species.

In the case of *R. dianneae*, the holotype illustrated in suppl. 1 (Rigout, 2004) is a low resolution photograph that did not allow for the study all the features of this rare species. We began to search for the type specimen but were unaware of the current location of the Vincent Allard collection (18 December 1921 – 22 January 1994). Mr. Patrick Arnaud informed us that Allard's collection was sold to Gerhard Beinhunder and, after some research with the assistance of Prof. Renzo Perissinotto, we received correspondence from the last owner of that collection, Mr. Alfred Punchner. Unfortunately, he wrote us that all the *Rosenbergia* collection was destroyed by Dermestidae-*Anthrenus* infestation. As *R. dianneae* is a rare species without a holotype, it was still necessary to confirm the validity of the species at that point still in doubt. ICZN, Art. 75.3. states that "A neotype is validly designated when there is an exceptional need [...]". Following Art. 75.3.4., confirmation of the lost holotype is available and under Art. 75.3.5. we declare a neotype perfectly consistent with the description and the holotype female specimen pictured in the literature (Rigout, 2004) (although of a different sex).



Figure 32
Holotype male of *Rosenbergia rubra*
dorsal view.



Figures 33-34
Paratype of *R. valentinae valentinae*
male parameres dorsal view and tergite
VIII, dorsal view. Scale bar = 1 mm.

Figures 35-36
Neotype male of *Rosenbergia dianneae*
male parameres dorsal view and tergite
VIII, dorsal view. Scale bar = 1 mm.

Figures 37-38
R. humeralis (GCR-96295G)
male parameres dorsal view and tergite VIII,
dorsal view. Scale bar = 1 mm.

Figures 39-40
Holotype of *Rosenbergia valentinae eki*
male parameres dorsal view and tergite
VIII, dorsal view. Scale bar = 1 mm.

Figures 41-42
R. weiskei (GCR-A2ERGG)
male parameres dorsal view and tergite
VIII, dorsal view. Scale bar = 1 mm.

Figures 43-44
Holotype male of *Rosenbergia cheesmanae*
male parameres dorsal view and tergite
VIII, dorsal view. Scale bar = 1 mm.

Figures 45-46
R. drumonti (GCR-EBCD4G)
male parameres dorsal view and tergite
VIII, dorsal view. Scale bar = 1 mm.

Following Art. 75.3.6. and consequently, Art. 76.1. and recommendations, we declare the neotype specimen locality as Okapa, Eastern Highlands province as the new type location being this as nearly as practicable from the original type locality. The neotype will be immediately deposited at New Guinea Binatang Research Centre, Madang, Papua New Guinea following publication, with the aim to return to native people their own biodiversity richness. This officially renowned research centre is accessible to global researchers for the study of the type material and promotes the conservation of a permanent collection. The *Rosenbergia weiskei* group now consists of three species *R. weiskei*, *R. humeralis* and *R. rubra*. The *Rosenbergia dianneae* group now consists of three species and two subspecies: *R. dianneae*, *R. drumonti*, *R. valentinae valentinae*, *R. valentinae eki* **ssp. nov** and *R. cheesmanae* **sp. nov**.

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