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# New species and new records of the genus Sphallomorpha Westwood from Australia. Supplement to the "Revision of the Pseudomorphinae of the Australian Region 1."

(Insecta, Coleoptera, Carabidae)

# By Martin Baehr

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As a supplement to the first part of the revision of the Pseudomorphinae of the Australian region new records of species of the genus Sphallomorpha Westwood are presented and five new species are described: Sphallomorpha eungellae, spec. nov., S. carnavona, spec. nov., both from Queensland, S. latior, spec. nov. from northwestern Australia, S. demarzi, spec. nov. from central Western Australia, and S. atrata, spec. nov. from southwestern Australia. They belong to the semistriata-, guttigera-, and unicolorgroups of the revision, respectively. S. eungellae is closely related to S. semistriata (Castelnau) and is a montane sister species of the latter being restricted to the Eungella Range in northeastern Queensland. S. carnavona from the Carnarvon Range in central Queensland is most closely related to S. thouzetoides Baehr of northeastern Queensland. It is the most inland living species of the guttigera-group. S. latior is closely related to S. quadrata Baehr from the northern part of the Northern Territory, but is even more apomorphic than that species. S. demarzi is related to S. unicolor Baehr, but is apparently slightly more apomorphic. It may be a southwestern offshoot of this species. S. atrata takes an intermediate position between S. unicolor Baehr, a species widespread throughout northern tropical Australia, and S. pernigra Baehr from northeastern Queensland. It is perhaps also closely related to S. demarzi from central Western Australia.

Dr. Martin Baehr, Zoologische Staatssammlung, Münchhausenstr. 21, W-8000 München, Germany.

#### Introduction

While the first part of my revision of the Pseudomorphinae of the Australian Region (Baehr 1992), dealing with the genus *Sphallomorpha* Westwood (including the previous genus *Silphomorpha* Westwood), was already in print, I received further samples of *Sphallomorpha* specimens from the Australian Museum, Sydney, the Department of Primary Industries, Mareeba, the Frey Museum, Tutzing (now München), the Institut Royal des Sciences Naturelles de Belgique, Brussels, and the Cornell University Insect Collection, Ithaca, for identification. To my regret, it was impossible to include the new species of these samples in the revision. Hence they are described as a supplement.

#### Methods

Abbreviations, chiffres, measurements, and used characters are the same as in the revision (Baehr 1992).

Abbreviations of Institutions

AMS Australian Museum, Sydney CBM Collection M. Baehr, München

CUIC Cornell University Insect Collection, Ithaca
DPIM Department of Primary Industries, Mareeba

FMT Frey Museum, Tutzing

IRSNB Institut Royal des Sciences naturelles, Bruxelles

# New species semistriata-group

Sphallomorpha eungellae, spec. nov. Figs 1, 6, 11, 16

Types. Holotype:  $\eth$ , Broken R., Eungella, Qld, 11 Dec.1961, McAlpine & Lossin (AMS). - Paratypes: 1  $\eth$ , same data (AMS); 2  $\eth$   $\eth$ , same locality and collector, 8 Dec.1961 (AMS, CBM).

Diagnosis. Species of *semistriata*-group of revision by means of presence of angular gular sutures, absence of mental tooth, absence of mental setae, presence of 1 gular seta, absence of denticulate rod within apex of internal sac of  $\eth$  aedeagus. Distinguished from other species of *semistriata*-group by feebly convex elytral intervals and presence of but 1 seta or no setae at all on  $\eth$  sternum VII. Further distinguished from *S. semistriata* by slightly shorter  $\eth$  aedeagus and longer left paramere, and by slightly wider pronotum and even denser pilosity on upper surface.

# Description

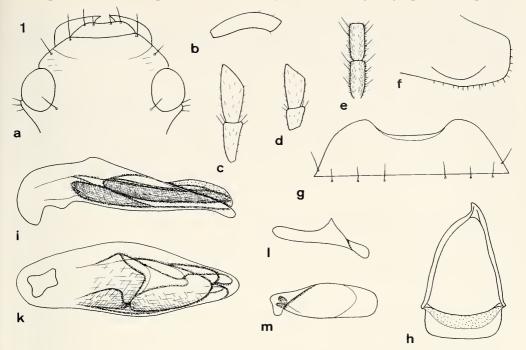
Measurements. Length: 8.3-9 mm. Ratios. Width pronotum/head: 1.65-1.72; width elytra/pronotum: 1.10-1.12; width/length of pronotum: 2.51-2.59; length/width of elytra: 1.16-1.20; length elytra/pronotum: 3.32-3.40.

Colour (Fig. 1). Reddish-piceous, head slightly darker, labrum and mouth parts reddish, antennae light reddish. Lower surface reddish, lateral parts of head and centre of abdomen slightly darker. Legs reddish, femora barely lighter.

Chetotaxy (Figs 1a,g, 6). Supraorb: 1; preorb: 1; clyp: 1; labr: 4; ment.med: -; ment.lat: 4-5 short; gloss: 4; gul: 1; postorb: 2-3; suborb: 3-4; pron.ant: 1-(2); pron.post: 1; proeps: 1-2 + 2-3; marg: 20-21; st VI: 3;  $\delta$  st VII: 0-(1);  $\circ$  st VII: ?.

Head (Figs 1a-e, 6). Moderately wide, feebly convex, frontal impressions absent. Eyes rather large and convex. moderately projecting. Clypeus almost straight, clypeal sutures fairly short, convex. Lateral border of head oblique, slightly convex, feebly incurved in front of eyes. Labrum rather wide, laterally obliquely convex, anteriorly barely excised, medially slightly raised. Gular sutures markedly angulate, almost rectangular, at angles slightly obtuse. Mentum without tooth, though with shallow, medially feebly convex prominence. Wings of mentum short, wide, at apex widely rounded off, subapically convex, medially oblique. Glossa barely excised, not excavate, border obtuse. Dorsal part slightly surpassing ventral, medially excised, with some distinct hairs. Terminal segment of labial palpus moderately elongate, widened, apex very oblique, of maxillary palpus moderately elongate, not widened, apex fairly oblique, though not securiform. Galea rather large, widened to apex, apex cut off. Antenna moderately short, median segments c. 2.5 x as long as wide. Microreticulation dense and fine, surface with some fine, transverse strioles laterally of clypeal sutures, with few, irregular strioles on frons and vertex, and with very fine, though dense pilosity, rather dull. Palpi with distinct, fairly sparse pilosity. Galea with some fine hairs at apex. Ventral surface with very sparse pilosity.

Pronotum (Fig. 6). Moderately wide, fairly convex, laterally not explanate. Apex rather narrow, with fairly deep excision. Anterior angles fairly acute and elongate, at apex slightly obtuse. Sides evenly convex, widest slightly in front of posterior marginal seta. Posterior angles obtusely rounded. Base medially convex. Lateral margin anteriorly with rather coarse border line, this becoming fine towards base. Discal impressions shallow. Microreticulation very dense and fine, distinct, slightly silky, puncturation sparse, moderately coarse, more or less easily visible, surface with rather distinct network of irregular strioles and with fine, dense pilosity, rather dull.



Figs 1a.-m. *Sphallomorpha eungellae*, spec. nov. Details of head, prosternum, and genitalia. a. Dorsal surface of head. b. Galea. c. Terminal segments of labial palpus. d. Terminal segments of maxillary palpus. e. 5th and 6th segments of antenna. f. Prosternal process. g.  $\delta$  sternum VII. h.  $\delta$  genital ring. i. Lateral view of aedeagus. k. Lower surface of aedeagus. l. Right paramere. m. Left paramere. Mouth parts to same scale.

Elytra (Figs 6, 11). Fairly elongate, rather ovate, moderately convex, laterally not explanate, lateral border evenly rounded. Apex moderately narrow, transversely convex. Striae slightly impressed, impunctate. Intervals gently convex, near base depressed. Series of marginal pores inconspicuous, slightly spaced in middle. Microreticulation very dense and coarse, slightly more superficial at apex, puncturation dense, moderately coarse, rather distinct despite of strong microreticulation, in apical half even slightly rugose, surface with very fine, dense pilosity, dull, apart from the very apex.

Lower surface (Fig. 1f). Prosternal process moderately elongate, narrow, apex feebly rounded to almost straight, ventral surface convex, feebly curved to apex, with several short hairs. Metepisternum c. 1.8-1.9 x as long as wide.

Legs. Elongate, rather slender. Metatarsus as long as metatibia. 1st segment of metatarsus as long as 2nd and 3rd segments together.

♂ genitalia (Figs 1g-m). Sternum VII rather wide, with very wide, rather shallow excision. Genital ring fairly wide, rather symmetrical, base feebly convex, lateral angles rounded off, basal plate wide and short, feebly excised anteriorly, arms gently convex, right slightly bisinuate. Aedeagus rather short and wide, depressed, slightly sinuate, lower border gently sinuate. Apex fairly wide, gently convex or almost transverse at the very tip, slightly curved down. Orificium elongate. Internal sac without conspicuous dark areas, with a characteristic triangular plate about in middle, as seen from below. For pattern of internal sac see figs 1i,k. Right paramere depressed, apex narrow and elongate. Left paramere rather elongate, apex slightly attenuate.

♀ genitalia. Unknown.

Variation. Some variation noted only in relative width of pronotum and in degree of puncturation and convexity of elytral intervals.

Distribution (Fig. 16. Northeastern Queensland. Known only from type locality in the Eungella Range west of Mackay.

Material examined (4). Only the type series.

Habits. Not specified. So far collected in December. Eungella Range is mainly grown with tropical rain forest where Pseudomorphinae are unlikely to occur. However, there are patches of eucalypt forest in the Broken River area, where the beetles were most likely collected.

Etymology. Named from the range of this species.

Relationships. *S. eungellae*, spec. nov. is closely related to *S. semistriata* (Castelnau), a species widely distributed in the eastern states of Australia. Apart from the striking differences in the number of the marginal setae of  $\beta$  sternum VII (0-1 in *S. eungellae*, 5-6 in *S. semistriata*) the number of which is usually highly specific throughout the genus, both species are fairly similar. Hence, *S. eungellae* is presumably an upland offshoot of the widely ranging *S. semistriata*. The isolated Eungella Range generally favours endemism to a high degree, mainly because of the steep ascend to over 900 m from the coastal plain which causes rather different, markedly cooler and wetter climatic conditions in the upland.

## Recognition

For identification of *S. eungellae*, the key to the species in my revision (Baehr 1992) has to be changed as following:

- 80. Sternum VII with 0-1 setae. Intervals not markedly raised, Northern Qld ......eungellae, spec. nov.

80a. = 80. ff.

and:

- 86. Slightly larger species (8.3-10.2 mm), with longer elytra (ratio 1/w of elytra 1.16-1.20, ratio length elytra/pronotum 3.23-3.29) and moderately raised intervals. Puncturation of elytra very dense. 3-5 suborbital setae present. Sternum VII fairly elongate, with <6 setae. Aedeagus with slightly narrower, more acute apex ... 86a.

86a. Sternum VII with 5-6 setae. Apex of both parameres shorter. NSW, eastern Qld ...... semistriata (Castelnau)

- Sternum VII with 0-1 seta. Apex of both parameres longer (Figs 1l,m). Northeastern Qld .. eungellae, spec. nov.

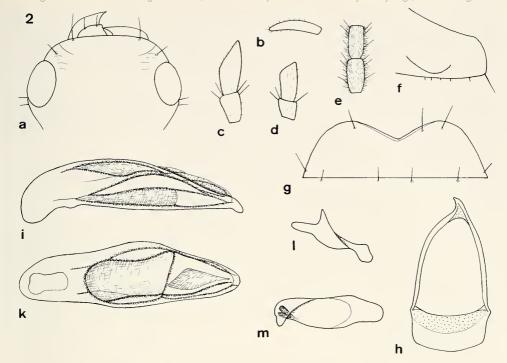
Note. It should be noted that at present 99 of S. eungellae are not separable from 99 of S. semistriata.

# guttigera-group

Sphallomorpha carnavona, spec. nov. Figs 2, 7, 12, 16

Types. Holotype: &, Carnarvon Ra, Q, Feb. 1944, N. Geary (AMS).

Diagnosis. Species of *guttigera*-group of revision by means of absence of supraorbital seta, rather convex mental prominence, obtusely angular gular sutures, absence of elytral striae, and shape of  $\delta$  aedeagus and parameres. Distinguished from other species of *guttigera*-group by narrow elytral spot, complete absence of elytral striae, comparatively deep excision of  $\delta$  sternum VII, and narrow and elongate  $\delta$  left paramere. Further distinguished from most closely related  $\delta$ . *thouzetoides* Baehr by distinct elytral puncturation, narrower, proportionally longer pronotum, less sinuate left  $\delta$  paramere, and longer apex of  $\delta$  right paramere.



Figs 2a.-m. *Sphallomorpha carnavona*, spec. nov. Details of head, prosternum, and genitalia. For legends see fig. 1. Mouth parts to same scale.

## Description

Measurements. Length: 5.35 mm. Ratios. Width pronotum/head: 1.68; width elytra/pronotum: 1.06; width/length of pronotum: 2.28; length/width of elytra: 1.22; length elytra/pronotum: 3.07.

Colour (Fig. 2). Head and elytra reddish-piceous, pronotum in centre reddish, laterally feebly darker, elytra with small, narrow, light reddish sutural spot widely separated from base and apex. Spot laterally surpassing slightly position of 2nd stria. Lateral border of elytra with narrow reddish border. Labrum and mouth parts light reddish, antenna yellow. Lower surface reddish, centre of head slightly darker. Legs reddish, femora barely lighter.

Chetotaxy (Figs 2a,g, 7). Supraorb: -; preorb: 1; clyp: 1; labr: 4; ment.med: 2; ment.lat: c. 6; gloss: 5; gul: 2; postorb: 2; suborb: 6-7; pron.ant: 1 short; pron.post: -; proeps: 1 + 1-2; marg: 16-17; st VI: 2; 3 st VII: 1-2; 4 st VII: 4 st VIII: 4 st VII: 4 st V

Head (Figs 2a-e, 7). Moderately wide, convex, frontal impressions invisible. Eyes depressed, not interrupting outline of head. Clypeus straight, clypeal sutures well impressed, conspicuous, elongate. Lateral border of head moderately convex, especially near eyes, though not incurved, slightly incised at clypeal suture. Labrum moderately transverse, anterior border unknown, because partly destroyed. Gular sutures obtusely, though distinctly angulate. Mentum with fairly convex prominence. Wings of mentum wide, short, apex rectangular, subapically convex, medially rather oblique. Glossa slightly triangularly excised, border moderately sharp. Dorsal part much surpassing ventral, medially barely excised, with some short hairs. Terminal segment of labial palpus wide, rather short, with very oblique apex, slightly securiform, of maxillary palpus short and wide, not attenuate. Galea narrow, little attenuate. Median segments of antenna c. 1.9-2 x as long as wide. Microreticulation dense, distinct, isodiametric, puncturation not well visible, surface with feeble strioles laterally of clypeal sutures and some irregular strioles near eyes, impilose, rather dull. Palpi with comparatively dense and conspicuous pilosity. Galea with fairly dense fringe of hairs along anterior border and at apex. Ventral surface with several short hairs.

Pronotum (Fig. 7). Rather narrow, convex, laterally evenly curved, widest slightly in front of posterior angles. Apex wide, deeply excised. Anterior angles projecting, slightly obtuse. Base almost straight, medially feebly convex. Posterior angles shortly rounded off. Lateral margins anteriorly with fine border line. Discal impressions extremely shallow, far removed from base. Microreticulation dense, distinct, though rather superficial, puncturation very dense, fine, distinct, surface with some irregular strioles, impilose, rather glossy.

Elytra (Figs 7, 12). Fairly elongate, convex, laterally rounded, widest a short distance behind base, then evenly convex. Apex fairly narrow, obliquely convex. Striae absent. Series of marginal pores almost uninterrupted. Microreticulation indistinct, almost absent, apart from near apex. Puncturation very fine, irregular, rather dense. Surface with some very fine, transverse lines, giving the surface a somewhat transversely striated appearance. Surface impilose, glossy.

Lower surface (Fig. 2f). Prosternal process elongate, basally rather wide, regularly attenuate to the obliquely transverse apex. Ventral surface depressed, almost straight, apparently with a long seta near apex and some short hairs. Metepisternum c. 1.5-1.6 x as long as wide.

Legs. Moderately elongate. Metatarsus slightly shorter than metatibia. Tarsi impilose. 1st segment of metatarsus almost as long as 2nd and 3rd segments together.

& genitalia (Figs 2g-m). Sternum VII short and wide, with markedly triangular, in middle even deeper excision. Margin laterally of excision completely rounded. Genital ring moderately wide, basal border little convex, lateral angles rounded off, basal plate fairly short, anteriorly barely excised, left arm markedly convex. Aedeagus moderately elongate, asymmetrically sinuate, apex rounded, slightly pointed down. Orifice rather short. Internal sac moderately microtrichiate, anteriorly with rather sclerotized, folded piece, for pattern see figs 2i,k. Right paramere large, with elongate and fairly narrow apex, lower border conspicuously sinuate before apex. Left paramere narrow, elongate, rather straight, feebly sinuate, apex fairly attenuate.

♀ genitalia. Unknown.

Variation. Unknown.

Distribution (Fig. 16). Carnarvon Range, central Queensland. Known only from type locality.

Material examined (1). Only the holotype.

Habits. Not specified. Holotype collected in February.

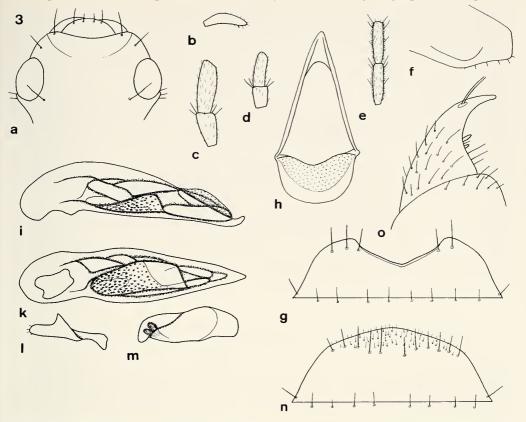
Etymology. Named from the type locality.

Relationships. By means of the small elytral spot and of the shape of  $\delta$  genitalia, especially of both parameres, this species is most closely related to S. thouzetoides Baehr from northeastern Queensland. In some characters, however, S. carnavona takes a fairly isolated position within the guttigera-group. In comparison with the other species, S. carnavona occupies a far inland range, though still within the borders of the Great Dividing Range which in this area is markedly deflected westwards. Hence S. carnavona occurs perhaps in more arid conditions than the other species and considerably enlarges the known range of the whole group inland.

#### Recognition

For identification of *S. carnavona*, the key to the species in my revision (Baehr 1992) has to be changed as following:

- 157a. Sutural spot wider, attaining base and almost apex. Pronotum wider and shorter (ratio w/1 of pronotum 2.52, length elytra/pronotum 3.22-3.26). Microreticulation of elytra distinct, puncturation sparse. Left paramere markedly sinuate near apex, apex distinctly attenuate. Northeastern Qld ...... thousetoides Baehr



Figs 3a.-o. Sphallomorpha latior, spec. nov. Details of head, prosternum, and genitalia. For legends see fig. 1. n.  $\circ$  sternum VII. o.  $\circ$  stylomere 2. Mouth parts to same scale.

#### unicolor-group

Sphallomorpha latior, spec. nov. Figs 3, 8, 13, 16

Types. Holotype: 3, Australia: n. WA Kununurra 22.XII.1991-5.1.1992, R. I. Storey (QMB T.12773). - Paratypes:  $1\ 3$ ,  $2\ 9\ 9$ , same data (CBM, DPIM).

Diagnosis. Species of *unicolor*-group of revision by means of absence of mental tooth, convex gular sutures, completely black surface, elongate  $\delta$  aedeagus with upturned apex, and distinctly setose apex of  $\delta$  right paramere. Closely related to *S. quadrata* Baehr from Northern Territory, but distinguished from this species by even wider pronotum, wider and shorter body, widest diameter of elytra near shoulder, more v-shaped excision of  $\delta$  sternum VII, denser pilosity on head and pronotum, and absence of the elongate anterior and the posterior marginal seta of pronotum.

# Description

Measurements. Length: 7.5-7.8 mm. Ratios. Width pronotum/head: 2.0-2.08; width elytra/pronotum: 1.03-1.08; width/length of pronotum: 2.65-2.71; length/width of elytra: 0.94-1.01; length elytra/pronotum: 2.69-2.87.

Colour (Fig. 3). Completely black, but borders of pronotum and elytra distinctly, though narrowly translucent. Scutellum and labrum with reddish borders, mandibles, mouth parts, and antenna reddish-piceous. Lower surface reddish to reddish-piceous, head piceous. Legs piceous, femora slightly lighter.

Chetotaxy (Figs 3a,g,n, 8). Supraorb: 1; preorb: 1; clyp: 1; labr: 4; ment.med: 2; ment.lat: c. 14; gloss: 5; gul: 2; postorb: 3-4; suborb: c. 10; pron.ant: 5-6 short; pron.post: -; proeps: 2 + 1-2; marg: 14-15; st VI: 4-5;  $\delta$  st VII: 2-3;  $\varphi$  st VII: 3-5.

Head (Fig. 3a-e, 8). Moderately wide, rather depressed, frontal impressions very shallow. Eyes rather depressed. Clypeus feebly concave, clypeal sutures moderately distinct, elongate. Lateral border of head feebly convex, barely incurved in front of eyes. Labrum rather narrow, almost semicircular. Mentum with extremely shallow, medially slightly excised prominence. Wings of mentum elongate, rather narrow, apex obtusely rounded, subapically feebly convex, medially slightly oblique. Glossa slightly triangularly excised, border sharp. Dorsal part moderately surpassing ventral, medially deeply excised, with some short hairs. Terminal segment of labial palpus fairly elongate, with fairly oblique apex, not securiform, of maxillary palpus elongate, attenuate. Galea short, very attenuate. Median segments of antenna almost 4 x as long as wide. Microreticulation fine, regular, distinct, with fine puncturation not easily visible, surface with some transversal strioles laterally of clypeal sutures, with dense, though very short pilosity, rather dull, slightly silky. Palpi with fairly sparse pilosity. Galea with several short hairs along anterior border and at apex. Ventral surface fairly densely pilose.

Pronotum (Fig. 8). Very wide, fairly depressed, laterally not explanate. Apex rather excised. Anterior angles wide, rather short, apex obtuse. Sides strongly and evenly convex, widest slightly in front of posterior marginal pore. Posterior angles evenly rounded. Base almost straight. Lateral margin with faint border line. Discal impressions very shallow. Elongate anterior and posterior marginal setae absent, though in some specimens pore of posterior seta still visible. Anterior angles with numerous (6-8) short hairs. Microreticulation distinct, dense, rather fine, puncturation almost invisible, surface with more or less easily visible, fine, irregular strioles, with dense, though very short pilosity, rather dull.

Elytra (Figs 8, 13). Very short and wide, ususally even wider than long, depressed. Widest diameter at or near shoulders, lateral border behind shoulder barely convex, slightly oblique or at most straight, posteriorly evenly convex. Apex narrow, obliquely convex. Striae almost absent or indicated as extremely vague rows of minute strioles. Series of marginal pores almost uninterrupted, pores far removed from lateral border. Microreticulation dense, distinct, not much coarser than on fore body, isodiametric. Puncturation rather sparse, not easily visible. Intervals sometimes with some extremely fine, irregular strioles, pilosity rather sparse and short, far less dense than on fore body, surface fairly dull.

Lower surface. Prosternal process moderately elongate, rather narrow, apex almost straight, ventral surface slightly depressed, feebly curved to apex, with some short hairs. Metepisternum c.  $1.6-1.7 \times 1.6 \times 1.0 \times 1$ 

Legs. Rather elongate. Metatarsus almost as long as metatibia. 1st segment of metatarsus as long as 2nd and 3rd segments together.

d genitalia (Figs 3g-m). Sternum VII rather wide, with wide, shallow, somewhat v-shaped excision. Genital ring narrow, elongate, basal border almost semicircular, lateral angles completely rounded off, basal plate elongate, anteriorly gently excised, arms feebly convex. Aedeagus narrow, elongate, apex acute, slightly upturned. Orificium elongate. Internal sac elongate, conspicuously microtrichiate, for pattern see figs 3i,k. Right paramere rather short, with fairly elongate, parallel apex bearing some short hairs. Left paramere large, slightly sinuate on upper border, apex slightly attenuate, with some short hairs.

♀ genitalia (Figs 3n,o). Sternum VII elongate, apical border convex, with several short hairs along border. Stylomere rather elongate, apex acute, rather curved laterally, with two small ves and c. 3 elongate setae near base.

Variation. Some variation in shape and relative width of pronotum and elytra noted.

Distribution (Fig. 16). Extreme northeastern part of Western Australia, close to border of Northern Territory. Known only from type locality.

Material examined (4). Only the type series.

Habits. Not specified. So far collected in the period of December-January.

Etymology. Named from the even wider shape compared with the nearest relative S. quadrata Baehr.

Relationships. S. latior is in some respects more evolved than its relative S. quadrata Baehr from northernmost Northern Territory: even wider body shape, loss of elongate marginal setae on pronotum, apparent reduction of marginal setae of elytra, and denser pilosity on head and pronotum. The

3 genitalia of both species, however, are rather similar. *S. latior* is certainly a rather recently evolved western offshoot of *S. quadrata*, perhaps through range extension of the latter species during the last glacial period and subsequent isolation in the northeastern Kimberleys. Future collecting work will reveal the actual distributions of both species.

## Recognition

For identification of *S. latior*, the key to the species in my revision (Baehr 1992) has to be changed as following:

# Sphallomorpha demarzi, spec. nov. Figs 4, 9, 14, 16

Types. Holotype: 3, Carnarvon, W. A., Demarz, 4.1967, det. suturalis (FMT).

Diagnosis. Species of the *unicolor*-group of revision by means of absence of mental tooth, convex gular sutures, unicolorous surface, elongate  $\delta$  aedeagus with upturned apex, and distinctly setose apex of  $\delta$  right paramere. Distinguished from the other species of *unicolor*-group by body shape, impilose surface of head and pronotum, neither markedly acute, nor obtuse apex of wings of mentum, more than 2 elongate gular setae; strongly upturned apex of  $\delta$  aedeagus, and very elongate, straight left  $\delta$  paramere.

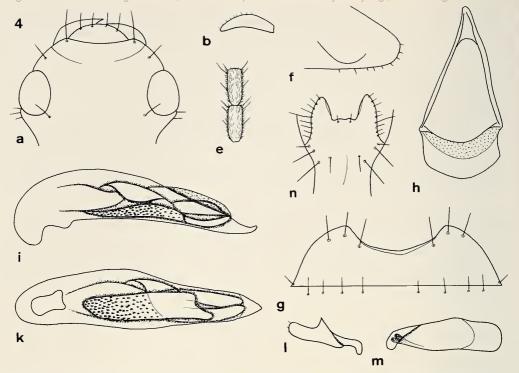
# Description

Measurements. Length: 8.6 mm. Ratios. Width pronotum/head: 1.79; width elytra/pronotum: 1.08; width/length of pronotum: 2.53; length/width of elytra: 1.16; length elytra/pronotum: 3.18.

Colour (Fig. 9). Very dark piceous to almost black, pronotum and elytra faintly lighter than head. Lateral borders of pronotum and elytra and posterior part of suture reddish translucent. Lateral part of labrum, mandibles, mouth parts, and antenna reddish. Ventral surface piceous, lateral parts slightly lighter. Legs piceous, femora feebly lighter.

Chetotaxy (Figs 4a,g). Supraorb: 1; preorb: 1; clyp: 1; labr: 4; ment.med: 2; ment.lat: c. 10; gloss: 5; gul: 2+2; postorb: 3; suborb: c. 10; pron.ant: 1+1 short; pron.post: 1; proeps: 2+1-2; marg: 17-18; st VI: 4; 3 st VII: 3; 4 st VII: ?.

Head (Figs 4a-e, 9). Moderately wide, rather depressed, frontal impressions extremely shallow. Eyes very large, moderately depressed. Clypeus fairly concave, clypeal sutures moderately distinct, elongate. Lateral border of head feebly convex, slightly incurved in front of eyes. Labrum rather narrow, almost semicircular. Mentum with very shallow, medially slightly excised prominence. Wings of mentum elongate, rather narrow, apex obtuse, though not widely rounded off, subapically feebly convex, medially slightly oblique. Glossa gently and slightly triangularly excised, border sharp. Dorsal part moderately surpassing ventral, medially deeply excised, with some short hairs. Both palpi absent. Galea short, fairly attenuate. Median segments of antenna c. 2.6 x as long as wide. Gula with two very elongate and two less elongate setae on either side. Microreticulation very fine, regular, puncturation invisible, surface with some extremely fine longitudinal strioles near eyes, apparently impilose, moderately glossy, slightly silky. Galea with several short hairs along anterior border and at apex. Ventral surface almost impilose.



Figs 4a-b, e-n. *Sphallomorpha demarzi*, spec. nov. Details of head, prosternum, and genitalia. For legends see fig. 1. n. Mentum. Mouth parts to same scale.

Pronotum (Fig. 9). Wide, fairly depressed, laterally not explanate. Apex gently excised. Anterior angles wide, rather short, apex obtuse. Sides evenly convex, widest slightly in front of posterior marginal seta. Posterior angles evenly rounded. Base almost straight. Lateral margin with faint border line. Discal impressions very shallow. Microreticulation very fine, dense, rather distinct, puncturation almost invisible, surface impilose, moderately glossy.

Elytra (Fig. 9, 14). Rather short and wide, moderately depressed, laterally slightly convex. Apex moderately wide, obliquely convex. Striae absent. Series of marginal pores almost uninterrupted. Microreticulation dense, distinct, less fine than on fore body, isodiametric. Puncturation virtually invisible. Intervals with some extremely fine, irregular strioles, with extremely sparse and short pilosity, rather glossy.

Lower surface. Prosternal process rather short, moderately wide, apex rounded, ventral surface slightly depressed, feebly curved to apex. Metepisternum c. 1.7 x as long as wide.

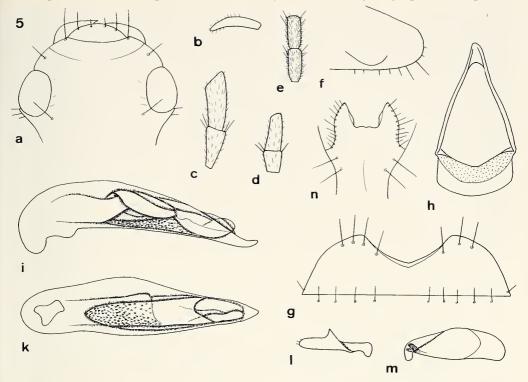
Legs. Moderately elongate. Metatarsus almost as long as metatibia. 1st segment of metatarsus as long as 2nd and 3rd segments together.

♂ genitalia (Figs 4g-m). Sternum VII rather wide, with wide, fairly shallow, somewhat v-shaped excision. Genital ring narrow, elongate, basal border convex, lateral angles marked, though rounded, basal plate elongate, anteriorly gently excised, arms gently convex. Aedeagus elongate, narrow, especially in apical half, apex acute, hook-shaped upturned. Orificium very elongate. Internal sac narrow, elongate, conspicuously microtrichiate, for pattern see figs 4i,k. Right paramere short, with fairly wide apex bearing very short hairs. Left paramere very elongate, straight, very narrow, apex rounded off.

♀ genitalia. Unknown.

Variation. Unknown.

Distribution (Fig. 16). Westernmost part of Western Australia. Known only from type locality.



Figs 5a.-n. *Sphallomorpha atrata*, spec. nov. Details of head, prosternum, and genitalia. For legends see fig. 1. n. Mentum. Mouth parts to same scale.

Material examined (1). Only the holotype.

Habits. Not specified. Holotype collected in April.

Etymology. Named in honour of the collector.

Relationships. *S. demarzi* is closely related to *S. unicolor* Baehr from northern tropical Australia, but differs from that species - and is perhaps more apomorphic - in the wider body shape, the absence of pilosity, the polysetose gula, and the very elongate and at apex impilose left  $\delta$  paramere. In both latter characters it is actually the most apomorpic species of the whole species-group.

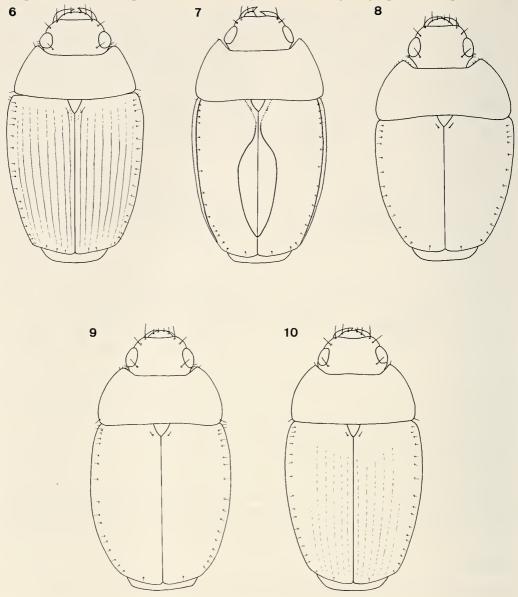
# Recognition

For identification of *S. demarzi*, see under next species *S. atrata*, spec. nov.

# Sphallomorpha atrata, spec. nov. Figs 5, 10, 15, 16

Types. Holotype:  $\delta$ , John Forrest Nat'l Park, Darling Ranges, W. A., 21 Jan.1971, mv lamp, G. A. Holloway & H. Hughes (AMS).

Diagnosis. Species of the *unicolor*-group of revision by means of absence of mental tooth, convex gular sutures, completely black surface, elongate  $\delta$  aedeagus with upturned apex, and distinctly setose apex of  $\delta$  right paramere. Distinguished from the other species of *unicolor*-group by body shape, impilose surface, neither markedly acute, nor obtuse apex of wings of mentum, apparent absence of median mental setae, and but moderately upturned apex of  $\delta$  aedeagus.



Figs 6.-10. Habitus. 5. Sphallomorpha eungellae, spec. nov. 7. S. carnavona, spec. nov. 8. S. latior, spec. nov. 9. S. demarzi, spec. nov. 10. S. atrata, spec. nov. Lengths: 8.7 mm; 5.35 mm; 7.6 mm; 8.6 mm.

# Description

Measurements. Length: 8.6 mm. Ratios. Width pronotum/head: 1.71; width elytra/pronotum: 1.12; width/length of pronotum: 2.49; length/width of elytra: 1.18; length elytra/pronotum: 3.33.

Colour (Fig. 5). Black, inclusive labrum and mandibles. Mouth parts and antennae reddish-piceous. Ventral surface dark piceous, lateral parts slightly lighter. Legs almost black, femora feebly lighter.

Chetotaxy (Figs 5a,g,n, 10). Supraorb: 1; preorb: 1; clyp: 1; labr: 4; ment.med: -; ment.lat: 10-12; gloss: 5; gul: 2; postorb: 2-3; suborb: c. 10; pron.ant: 1; pron.post: 1; proeps: 2 + 1-2; marg: 16-17; st VI: 4-5;  $\beta$  st VII:  $\beta$ 

Head (Figs 5a-e,n, 10). Moderately wide, rather depressed, frontal impressions shallow. Eyes rather depressed. Clypeus barely concave, clypeal sutures moderately distinct, elongate. Lateral border of head feebly convex, slightly incurved in front of eyes. Labrum rather narrow, almost semicircular. Mentum with very shallow, medially slightly excised prominence, apparently without median mental setae. Wings of mentum elongate, rather narrow, apex moderately acute, subapically feebly convex, medially slightly oblique. Glossa gently and slightly triangularly excised, border sharp. Dorsal part moderately surpassing ventral, medially deeply excised, with some short hairs. Terminal segment of labial palpus fairly elongate, with fairly oblique apex, not securiform, of maxillary palpus elongate, attenuate. Galea short, very attenuate. Median segments of antenna c. 2.4 x as long as wide. Microreticulation very fine, regular, with fine puncturation not easily visible, surface with some transversal strioles laterally of clypeal sutures and some irregular strioles on vertex, apparently without pilosity, moderately glossy, slightly silky. Palpi with fairly distinct pilosity. Galea with several short hairs along anterior border and at apex. Ventral surface almost impilose.

Pronotum (Fig. 10). Moderately wide, fairly depressed, laterally not explanate. Apex gently excised. Anterior angles wide, rather short, apex obtuse. Sides evenly convex, widest slightly in front of posterior marginal seta. Posterior angles evenly rounded. Base gently bisinuate. Lateral margin with faint border line. Discal impressions very shallow. Microreticulation very fine, dense, rather distinct, puncturation almost invisible, surface with network of fine, irregular strioles, impilose, moderately

glossy.

Elytra (Figs 10, 15). Rather elongate, moderately depressed, laterally feebly convex. Apex moderately wide, obliquely convex. Striae obsolete, marked by rows of fine longitudinal strioles, outer striae indistinct, intervals depressed. Series of marginal pores almost uninterrupted. Microreticulation dense, less fine than on fore body, isodiametric. Puncturation virtually not visible. Intervals with some fine, irregular strioles, impilose, rather glossy.

Lower surface. Prosternal process rather short, moderately wide, apex almost straight, ventral surface slightly depressed, feebly curved to apex. Metepisternum c. 1.8 x as long as wide.

Legs. Moderately elongate. Metatarsus almost as long as metatibia. 1st segment of metatarsus as long as 2nd and 3rd segments together.

♂ genitalia (Figs 5g-m). Sternum VII rather wide, with wide, fairly shallow, somewhat v-shaped excision. Genital ring fairly narrow, elongate, basal border convex, lateral angles marked, though rounded, basal plate rather elongate, anteriorly gently excised, arms almost straight, right distinctly sinuate. Aedeagus elongate, narrow, apex acute, triangular, moderately upturned. Orifice elongate. Internal sac narrow, elongate, conspicuously microtrichiate, for pattern see figs 5i,k. Right paramere moderately elongate, with fairly wide apex and moderately elongate hairs. Left paramere elongate, fairly narrow, apical half attenuate, gently bent down. Both parameres longer than in other species of unicolor-group apart for *S. demarzi*.

♀ genitalia. Unknown.

Variation. Unknown.

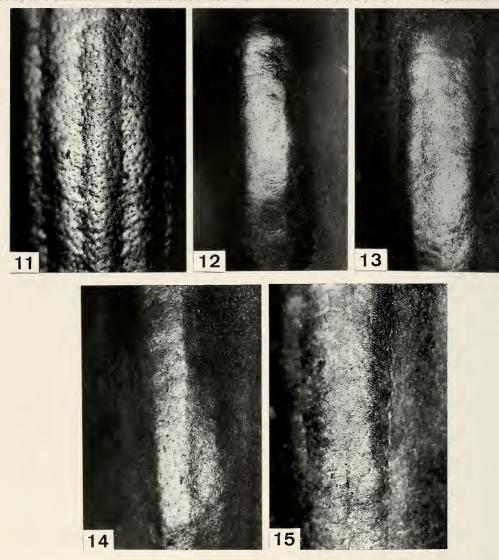
Distribution (Fig. 16). Darling Range, southwestern Australia. Known only from type locality.

Material examined (1). Only the holotype.

Habits. Not specified. Holotype collected in January.

Etymology. Named from the colour of the upper surface.

Relationships. *S. atrata* takes an intermediate position between *S. unicolor* Baehr from tropical northern Australia and *S. pernigra* Baehr from northeastern Queensland. By means of the fairly sharp, though not markedly acute wings of mentum *S. atrata* seems more advanced in this respect than *S. unicolor*, though less so than *S. pernigra*. In the impilose upper surface and in shape of the apex of the aedeagus, however, *S. atrata* is very similar to *S. demarzi*, spec. nov. and *S. pernigra*, and in the latter character also to the most advanced species of the *unicolor*-group, *S. quadrata* Baehr from Northern Territory and *S. latior*, spec. nov. from northwestern Australia. The limited ranges of *S. pernigra* on the eastern border, and of *S. demarzi* and *S. atrata* near the southwestern border, respectively, of the extensive range of *S. unicolor*, suggest two independent offsprings from an *unicolor*-like ancestor in the northeast and the southwest of its range, and subsequent isolation of the southwestern populations to become the present *S. demarzi* and *S. atrata* further south, while in the east the ranges of *S. unicolor* and of *S. pernigra* still overlap.



Figs 11.-15. Striation and microsculpture of median part of left elytron. 11. *Sphallomorpha eungellae*, spec. nov. 12. *S. carnavona*, spec. nov. 13. *S. latior*, spec. nov. 14. *S. demarzi*, spec. nov. 15. *S. atrata*, spec. nov. 20x magnification.

# Recognition

For identification of *S. demarzi* and *S. atrata*, the key to the species in my revision (Baehr 1992) has to be changed as following:

- 117. Wings of mentum remarkably acute at apex. Central and northern Qld......pernigra Baehr.



Fig. 16. Distribution of *Sphallomorpha eungellae*, spec. nov.:  $\bullet$ ; *S. carnavona*, spec. nov.:  $\blacktriangledown$ ; *S. latior*, spec. nov.:  $\blacktriangle$ ; *S. demarzi*, spec. nov.:  $\blacksquare$ ; and *S. atrata*, spec. nov.:  $\bullet$ .

#### New records

For the benefit of he reader the page number in the revision is added to each species.

#### Sphallomorpha viridis Baehr

Baehr, 1992, p. 54

1 ♂, 1 ♀, Collection E. Rousseau, Silphomorpha speciosa dét E. Rousseau (IRSNB).

# Sphallomorpha grandis (Castelnau)

Baehr 1992, p. 60.

1 ♀, Australie, Silphomorpha grandis Westw. dét...(ISRNB); 1 ♀, Australie, R.I.Sc.N.B. I.G. Coll. Gen. (ISRNB); 2 ♂ ♂, NSW: 10 km E Broke, 17-II.1983, J. Doyen, Silphomorpha sp. (in MCZ) det. J. Liebherr 1987 (CUIC); 1 ♂, Australie, Silphomorpha vicina Cast. dét... (IRSNB).

#### Sphallomorpha similata Baehr

Baehr, 1992, p. 69.

1 &, Australie, Collection E. Rousseau, R.I.Sc.N.B. I.G. Coll. Gen. (ISRNB).

## Sphallomorpha fallax (Westwood)

Baehr 1992, p. 79.

 $1 \ ^{\circ}$ , Sph. fallax W<sup>wd</sup> Adelaide (Schm.), Soc. Ent. Belg. Coll. PUTZEYS, Silphomorpha fallax Westw. dét. J. Putzeys (ISRNB;  $1 \ ^{\circ}$ , Australie?, New Holland?, Coll. H. d'Udekem d'Acoz Silphomorpha fallax West. (ISRNB);  $2 \ ^{\circ}$ , Putz Australie, Coll. H. d'Udekem d'Acoz Silphomorpha fallax West. (ISRNB);  $1 \ ^{\circ}$ , Australie, Silphomorpha grandis Westw.

dét..., Silphomorpha grandis Cast. Austral (ISRNB); 1 &, Australie, Silphomorpha fallax Westw. dét. P. Dupuis (IRSNB); 1 &, N.S.W. Dohrn, Soc. Ent. Belg. Coll. PUTZEYS, Silphomorpha fallax Westw. dét. J. Putzeys (IRSNB);

#### Sphallomorpha mastersii mastersii (Macleay)

Baehr 1992, p. 84.

1 &, S. Mastersii M.L. P. Denison Dup. 12.67, Soc. Ent. Belg. Coll. PUTZEYS, Silphomorpha Mastersii M.L. dét. J. Putzeys (ISRNB).

#### Sphallomorpha boops (Blackburn)

Baehr 1992, p. 87.

1 & (defect), P. Denison Wequen (?), Soc. Ent. Belg. Coll. PUTZEYS, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB).

#### Sphallomorpha difficilis (Blackburn)

Baehr 1992, p. 127.

2  $\circ$   $\circ$ , Sydney N.S. Wales, R. Mus. Hist. Nat. Belg. I. G. 12.595 (IRSNB), 1  $\delta$ , Australia Brisbane Q. 1.91, leg. Wachtel (CBM).

#### Sphallomorpha dubia (Castelnau)

Baehr 1992, p. 132.

2 ♂ ♂ , 3 ♀ ♀ , ACT: Black Mtn. I-29-1983, J. T. & E. A. Doyen, *Silphomorpha striata* Castelnau det. J. Liebherr 1987 (CBM, CUIC); 1 ♂ , S.W.A., Soc. Ent. Belg. Coll. PUTZEYS, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB); 1 ♂ , Collection F. Reiber, *Silphomorpha fallax* Westw. Australie (IRSNB).

#### Sphallomorpha semistriata (Castelnau)

Baehr 1992, p. 135.

1  $\eth$  (defect), Australie, Collection E. Rousseau, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB); 1  $\Im$ , Collection E. Rousseau, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB).

#### Sphallomorpha ovalis (Castelnau)

Baehr 1992, p. 140.

1 ♀, Rockhampt., R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB); 1 ♂, NSW, Crowdy Bay NP, Diamond Head, II-24-1983, J. Doyen, on trunks at nite, *Silphomorpha* sp.? (not in MCZ) det. J. Liebherr 1987 (CUIC).

#### Sphallomorpha polita (Macleay)

Baehr 1992, p. 157.

1 &, Australie, Collection E. Rousseau, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB).

#### Sphallomorpha striata (Castelnau)

Baehr, 1992, p. 177.

1 9, NSW, Glen Innes, 29.12.92, leg. Wachtel (CBM).

#### Sphallomorpha impilosa Baehr

Baehr, 1992, p. 202.

1 9, Collection E. Rousseau, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB).

#### Sphallomorpha discoidalis (Castelnau)

Baehr 1992, p. 214.

3 ♂♂, 2 ♀♀, NSW, Barrington Tops, Devils Hole 1550m, II-23-1983, J. Doyen, Wet Sclerophyll, Sphallomorpha discoidalis Castelnau det. J. Liebherr 1987 (CBM, CUIC).

#### Sphallomorpha castelnaui (Reiche)

Baehr 1992, p. 231.

1 &, S.W.A. 21.11.61, Soc. Ent. Belg. Coll. PUTZEYS, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB).

#### Sphallomorpha maculata (Newman)

Baehr 1992, p. 235.

1 ♂, Adelaide Tonnoir, maculata Nwm., Soc. Ent. Belg. Coll. PUTZEYS, Silphomorpha maculata Newm. dét. J. Putzeys (IRSNB).

#### Sphallomorpha bicolor (Castelnau)

Baehr 1992, p. 238.

1 9 (defect!), Australie, Collection P. Dupuis, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB).

# Sphallomorpha hydroporoides (Westwood)

Baehr 1992, p. 243.

1 ♂, Adelaide, Pseudomorpha hydroporoides Westw. det... (IRSNB).

#### Sphallomorpha maculigera (Macleay)

Baehr 1992, p. 274.

1 &, Silphom. Melbourne Thorey Austr., Coll. H. d'Udekem d'Acoz (IRSNB); 1 &, N.S.A. Th. 67, brisbanensis Cast., Soc. Ent. Belg. Coll. PUTZEYS, Silphomorpha brisbanensis Cast. dét. J. Putzeys (IRSNB); 1 &, 1 \, Collection E. Rousseau, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB); 1 \, Australia, Dohrn, Silphomorpha brisbanensis Cast. Austral (IRSNB); 1 \, Q., Brisbane, 14.1.93, leg. Wachtel (CBM).

#### Sphallomorpha suturalis Germar

Baehr 1992, p. 278.

1 &, Vic, Wyperfield N.P.17.IV.1983, J. Doyen coll., *Sphallomorpha suturalis* Germ. det. J. Liebherr 1987 (CUIC); 1 &, Océanie, *Silphomorpha suturalis* Germ. det....(IRSNB); 1 &, *Sph. suturalis* Grm. Adel<sup>de.</sup> (Tonn.), Soc. Ent. Belg. Coll. PUTZEYS, *Sphallomorpha suturalis* Germ. dét. J. Putzeys (IRSNB); 1 &, Queensland, *Silphomorpha rufomarginata* M. L. dét....(IRSNB); 1 \$\frac{9}{2}\$, Australie, *Sphallomorpha suturalis* Germ. dét. P. Dupuis (IRSNB).

#### Sphallomorpha incerta Baehr

Baehr, 1992, p. 300.

1 ♂, Australie, Silphomorpha maculigera M. L. (ISRNB).

#### Sphallomorpha albopicta (Newman)

Baehr 1992, p. 318.

1  $\mathring{\sigma}$ , Adelaide, Pseudomorpha colymbetoides Westw. Adelaide (ISRNB); 1 ?, Adelaide, Pseudomorpha colymbetoides Westw. dét. P. Dupuis (ISRNB); 1 ?, S. colymbetoides W. d. Ad'de (Tonn.), Soc. Ent. Belg. Coll. PUTZEYS, Pseudomorpha colymbetoides Westw. dét. J. Putzeys (ISRNB).

## Sphallomorpha ruficollis Baehr

Baehr, 1992, p. 322.

1 ♂, Nov. Holland Silphomorpha, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB).

#### Sphallomorpha biplagiata (Castelnau)

Baehr 1992, p. 327.

1 δ, S. nitiduloides Grm. N. Holl. (Tonn.), Soc. Ent. Belg. Coll. PUTZEYS, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB); 1 ♀, Adelaide, R.I.Sc.N.B. I.G. Coll. Gen. (IRSNB); 1 ♀, Silphom. sp. n. Sidney Austr, Coll. H. d'Udekem d'Acoz Silphomorpha bimaculata Cast. (ISRNB).

#### Sphallomorpha nitiduloides Guérin

Baehr 1992, p. 334.

1 &, N.S.A. Th. 676, nitiduloides Guer., Soc. Ent. Belg. Coll. PUTZEYS, Sphallomorpha nitiduloides Guer. dét. J. Putzeys (IRSNB); 1 &, Océanie? Australie?, Coll. H. d'Udekem d'Acoz Pseudomorpha colymbetoides Westw. (ISRNB).

Baehr 1992, p. 338.

1  $\circ$ , Port-Denison, A. Simson, 41/4319, Phallomorpha nitiduloides Guer. dét... (IRSNB); 1  $\circ$ , Collection F. Reiber, Silphomorpha picta Cast. Australie, nididuloides ? (IRSNB); 1  $\circ$ , Australie, Sphallomorpha nitiduloides Guer. dét. P. Dupuis (IRSNB); 1  $\circ$ , Collection E. Rousseau, Sphallomorpha nitiduloides Westw. dét. E. Rousseau (IRSNB); 1  $\circ$ , Silphom nitidul Thorey Austral, Coll. H. d'Udekem d'Acoz (ISRNB).

#### Sphallomorpha amabilis (Castelnau)

Baehr 1992, p. 343.

1 &, Collection E. Rousseau, Sphallomorpha nitiduloides Westw. dét. E. Rousseau (IRSNB).

#### Correction of errata in the revision

p. 41. 3rd line: "ovalis (Castelnau)" instead of "ovalis, spec. nov." p. 167. Fig. 97. captions **g** and **n** are changed.

#### Acknowledgements

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