

# *Australytta*, a new blister beetle genus from Southern Africa (Coleoptera : Meloidae)

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**Résumé – *Australytta*, un nouveau genre de Méloïdes de l’Afrique méridionale (Coleoptera : Meloidae).** – Dans ce travail est décrit *Australytta*, un nouveau genre de Coléoptères Méloïdes de la tribu des Lyttini. Ce genre comprend six espèces de la Namibie, de l’Afrique du Sud, et marginalement du Mozambique et Zimbabwe, précédemment considérées comme un groupe isolé de *Lytta*. Est également décrite la larve du premier stade de deux espèces (*A. rubrolineata* et *A. enona*), et sont résumées toutes les caractéristiques écologiques et zoogéographiques du genre. Une clef d’identification des espèces et un catalogue faunistique avec des observations taxonomiques sont aussi présentés.

**Abstract – *Australytta*, a new Meloid genus endemic to Southern Africa, is described.** Six species previously referred to the *spilotella* group of the genus *Lytta* are incorporated into the new genus. First instar larvae of two species are described and relationships of the genus are discussed. A summary of bionomics, a key to the species and a commented catalogue with brief descriptions of the species are also given.

The genus *Lytta* Fabricius, 1775 included in the past a large number of very diverse blister beetle species, also described as *Cantharis* Geoffroy, 1762 (nec Linné 1758), distributed on all continents, with the exclusion of the Australian region.

During the last century, Péringuey (1909) and Denier (1933) were the first to place some African and South American species into new genera, now included in the tribes Lyttini, Pyrotini, and Epicautini (Péringuey 1909: *Prionotolytta*, *Psalydolytta*, *Cyaneolytta*; Denier 1933: *Wagneria*, afterwards changed in *Wagneronota*). After the Second World War Kaszab, in a long series of papers, described or revised several African and South American genera referring to them numerous species previously identified as *Lytta* (1948: *Cabalia* Mulsant & Rey, 1858; 1952a and 1953c: *Epicauta* Dejean, 1834; 1952b: *Denierella*, new genus; 1952c: *Lyttolydulus* Reitter, 1915; 1953a: *Cyaneolytta* Péringuey, 1909; 1954: *Psalydolytta* Péringuey, 1909; 1955: *Cylindrothorax* Péringuey, 1909 (a junior synonym of *Lydomorphus* Fairmaire, 1882); 1958: *Teratolytta* Semenow, 1894; 1959: *Acrolytta*, *Afrolytta*, *Prolytta*, *Lyttamorphia*, *Pseudopyrota*, *Denierota*,

*Brasiliota*, and *Aeneopyrota*, new genera, the last one a junior synonym of *Glaphyroytta*; 1967: *Prolytta*). MacSwain (1951) placed in the tribe Epicautini the new genus *Linsleya* for a few North American species. New South American genera of Pyrotini and Lyttini, based on species previously identified as *Lytta*, were described by Martinez (1958: *Glaphyroytta*) and Selander (1960a: *Epispasta*, *Megalytta*, *Dictyolytta*, and *Paniculolytta*, a junior synonym of *Pseudopyrota*).

Following this “cleaning” process, Selander (1960b) provided a revision of the Nearctic *Lytta* and a tentative arrangement of the whole genus. Kaszab (1962) completed the subgeneric division of the Palaearctic species and corrected some erroneous interpretation made by Selander. Minor rearrangements of this *Lytta* classification were proposed by Pinto & Bologna (1999) and Bologna & Pinto (2002).

As discussed by Bologna (1991), Pinto & Bologna (1997, 1999), Bologna & Di Giulio (2002), and Bologna & Pinto (2002), *Lytta* is primarily a Holarctic genus. A single South American species (*neivai* Denier, 1940), which is probably a new genus (Selander, 1987; Bologna, 1991; Pinto & Bologna, 1999), and a southern Africa group of species included by Kaszab (1953b) in the *spilotella* group, remains the only Southern Hemisphere species still assigned to *Lytta*.

Selander (1960b) considered the *spilotella* group of species to comprise a possible distinct genus and proposed that it should be referable to the tribe Epicautini. This hypothesis was probably affected by Borchmann's (1917) classification, and by the phenetic resemblance to the genus *Epicauta* Dejean, probably noted also by Kaszab, who identified some specimens in different collections (JP; SMWN; cfr. "Material and methods") using the unpublished name *Epicaulytta*. On the basis of the biological records published by Gess & Gess (1976), Bologna (1983) proposed the separation of this group of southern African species as a distinct genus. Afterwards (Bologna 1991), based on preliminary studies on adult morphology, indicated this genus as *Australytta*, a *nomen nudum*, referred as *incertae sedis* to the Lyttini, considering the possibility of epicautine relationships. Bologna & Pinto (2001), mostly on the base of larval characters, also considered *Australytta* as a lyttine genus of *incertae sedis*.

The recent examination of the types of several species and other adult material, as well of the triungulins of two species, permitted a complete review of this genus, which is formally described in this paper. *Cantharis elegantula* Péringuey, 1909 from Namibia and western South Africa, included by Kaszab (1953b) into the same group of species, actually must be referred to a new genus, as well as a correlate undescribed species from South Angola (Bologna & Pinto, unpubl.), as discussed below.

### Material and methods

For the present study 315 adults of *Australytta* were examined: 15 *A. enona* (Péringuey, 1899) (Holotype included); 1 *A. namaqua* (Kaszab, 1953) (Holotype); 44 *A. rubrolineata* (Kaszab, 1953) (Holotype and Paratype included); 124 *A. spilotella* (Péringuey, 1904) (5 Syntypes included); 70 *A. szekessyi* (Kaszab, 1953) (Holotype and Paratype included); 61 *A. vellicata* (Erichson, 1843).

Adult specimens examined are in the following collections (associated acronyms reported in the text):

CB	Marco A. Bologna coll., Università "Roma Tre", Rome;
CP	Johan Probst coll., Wien;
FSCA	Florida State Collection of Arthropods, Gainesville (the L.F. and R.B. Selander coll. of Meloidae);
JP	J.D. Pinto coll., University of California, Riverside;
MNHN	Muséum National d'Histoire Naturelle, Paris;
NHB	National Museum of Natural History, Budapest;
NHP	Museum of Natural History, Pretoria (ex Transvaal Museum);

NMB	National Museum (Department of Entomology), Bloemfontein;
PPRI	National Collection of Insects, Plant Protection Research Institute, Pretoria;
SAMC	South African Museum, Cape Town;
SMWN	State Museum of Namibia, Windhoek.

Descriptions of egg and first instar larvae are based on the following material.

(1) *Australytta rubrolineata*, about 250 triungulins and several eggs preserved in 70% ethanol (vials 446, 447, 448), 4 triungulins mounted in Canada balsam on the slide M366 and 4 mounted on stubs (all deposited in the M. Bologna collection, Dipartimento di Biologia, Università "Roma Tre", Rome, Italy): Namibia, Ondangwa city (Punya Hotel), 1 100 m, disturbed savannah, 28.ii.2001 M. Bologna and P. Bombi leg. adult at light between 9.15 and 9.50 p.m., oviposition 1.iii.2001, hatch 16.iii.2001, larvae fixed 17.iii.2001.

(2) *Australytta enona*, one triungulin, mounted on slide with Canada balsam with label: "*Lytta enona* Péringuey, ex nest 2 (1) of *Parachilus insignis* (Saussure) (Eumenidae), Hilton, 27.xi.73, F. & S. Gess" (preserved in the Albany Museum, Grahamstown (South Africa). Additional information on the geographic and ecological characteristic of this locality (South Africa, Eastern Cape Province, Grahamstown) is summarised in the paragraph of "Bionomics", and detailed by Gess & Gess (1976).

Morphological analyses and illustrations were performed by using: (a) stereomicroscope Olympus SZX12 for dried and alcohol preserved material; (b) light microscope Leitz Laborlux S for material mounted on slides with Canada balsam; (c) scanning electron microscope Philips XL30 for material mounted on stubs, after critical point dehydration and gold sputtering. Measures reported in the descriptions mainly refer to the larvae cleared and mounted on slides. For morphological nomenclature of larval structures we refer to MacSwain (1956), Lawrence (1991), and Bologna & Pinto (2001).

## *AUSTRALYTTA* n. gen.

*Lytta* of the *spilotella* group, Kaszab, 1953b: 74 (pars)  
*Australytta* Bologna, 1991: 30, 46, 74, 97, 168 (*nomen nudum*; pars)

**Type species** – *Lytta spilotella* Péringuey, 1904; fixed by present designation.

**Etymology** – The name originates from the addition of the Latin word *australis* (= southern), indicating the distribution of the genus in southern Africa, and *Lytta*, the name of the genus to which the species of this new genus were previously referred.

**Description and diagnostic traits** (fig. 1) – Integument non metallic, whole body covered by short, dense cinereous setae, with glabrous spots of varying size on elytra evidencing the black or brown background colour; head largely rounded on temples, without fore impressions, black with two large lateral orange spots, or largely red; antennal segments more or less submonil-



**Figure 1**  
*Australytta spilotella*, adult (South Africa, Kruger Nat. Park, Letaba).

iform, segment I subequal to III; antennae longer in male, with sparse and elongate setae on the last segments in *A. spilotella* and *A. rubrolineata*; galeae large. Pronotum about as long as wide, sulcate longitudinally in the middle; wings completely developed, lacking wing venation A2; elytra largely bordered on sides, costae evident; mesepisterna moderately elongate in middle with large border areas and distinctly delimited, touching one another; both metatibial spurs widened apically (fig. 25); claws smooth; male with pro- and mesotarsal pads; male first protarsus more or less widened (fig. 26), exception *A. spilotella*. Male last visible abdominal sternite distinctly emarginate and longitudinally

more or less membranous along the middle (fig. 23), penultimate sternite emarginate; female last visible sternite emarginate; male gonostyli not fused on the apical third, very narrowed at apex on lateral view; aedeagus with two hooks, endophallus hook short (fig. 16-21); spiculum gastrale largely membranous on basal arms (fig. 22); female gonostyli well sclerotised.

First instar larva campodeiform, triungulin shaped, different from all other genera of this tribe at least by the abdominal sterna each largely covered by a single sternal plate.

The combination of characters distinguishes the new genus from all lyttine genera, especially from those distributed in Southern Africa (see Bologna & Pinto 2002). The metatibial spurs both widened apically and the dense cinereous setation, are the most distinctive characters from all southern Africa taxa. Moreover, *Prionotolytta* has the antennae serrate-flabellate and micropubescent claws; also *Afrolytta* has microsetate claws and hind legs modified; *Lydomorphus* has the eyes ventrally extended, an elongate pronotum anteriorly narrowed, male last sternum modified and male gonostyli scarcely sclerotised; *Prolytta* has wing venation A2 present, male gonostyli largely fused, last sternum scarcely visible, and female gonostyli absent. Adults of the genus *Cyaneolytta*, similar to some lyttine, but recently referred to Epicautini by Bologna & Pinto (2001), have metallic integument, metasternum partially red, antennae more or less depressed.

The larval character of the abdominal sternite sclerotised is a typical condition of several phoretic taxa (e.g. of the tribe Meloini, and subfamilies Tetraonycinae and Nemognathinae) as well as of the mylabrine genus *Croscherichia* Pardo Alcaide, 1950, the biology of which is almost unknown.

**Generic limits** – Kaszab (1953b: 75) included in the *spilotella* group of “*Lytta*” also “*Cantharis*” *elegantula* Péringuey, 1909, described from the “Cape Colony (Clanwilliam)”, and listed by Borchmann (1917: 74) as *Epicauta elegantula*. Afterwards Kaszab identified some specimens of this species (Transvaal Museum, identification of 1977) as “*Prolytta elegantula*”. The Hungarian specialist, after the description of the genus *Prolytta* (Kaszab 1959) and his partial revision (Kaszab 1967), probably referred to this genus also *L. elegantula*.

The recent examination of some additional specimens of *L. elegantula* from Namibia, and of a possible new species from southern Angola, suggests that these species belong to a new genus, with intermediate characters between Eleticinae and Meloinae (Bologna & Pinto, unpublished). Consequently *Australytta* includes only six of the species of the *spilotella* group as defined by Kaszab (1953b).

When the taxonomic position of “*Cantharis*” *elegantula* will be defined, no more African species of “*Lytta*” remains with uncertain generic attribution will remain.

### Egg and larval morphology

Eggs of *A. rubrolineata* are white, elongate cylindrical, round at both ends, slightly wider at one end.

**Description of first instar larvae** – Certain *Australyitta* larval characters of *A. enona* were used for a phylogenetic reconstruction of the whole family (Bologna & Pinto 2001). However, the first instar larva of the genus remained almost undescribed. An extremely generalised description of *A. enona*, with an undetailed figure, was published by Gess & Gess (1976, 1983). The recent discovery of the triungulin of a second species (*rubrolineata*) and the possibility to examine a large number of specimens also by SEM microscope, permit a more detailed description. No great differences were found in the larval morphology between *A. enona* and *A. rubrolineata*. The triungulin of *A. enona* is described only for comparison to *A. rubrolineata* on the base of the single triungulin examined, and the figure is included.

(1) *Australyitta rubrolineata* (figs. 2-10) – *Habitus*. Triungulin campodeiform (figs. 2-3); colour pale brown, slightly darker on head and thorax; line of dehiscence complete on pronotum, restricted to anterior 2/3 on mesonotum, lacking on metanotum, and abdominal tergite I. Body length (slide mounted specimens): 1.3 mm; length of longest pair of caudal setae: 0.32 mm; head length: 0.18 mm and 0.2 mm width; antenna length: 0.07 mm and apical seta of segment III, 0.09 mm. Setation composed by normal, unmodified setae on whole body.

*Head* (figs. 4-5) convex on frons, broader than long, widest on the middle, lateral margin parallel, anterior margin truncate. Epicranial suture Y-shaped, stem long, frontal arms widely diverging at base, afterwards parallel and markedly curved laterally with two setae and one sensory pit, extending perpendicularly to the external margin of head, just at the level of the antennal base. Stemmata small, round convex, dorsally placed, on side (fig. 5). Epicranial setation and pits as in fig. 4. Ocular seta positioned medially to the stemmata, posterior to the ocular pit, about ten times as long as the closest seta, which is posterior to stemmata. Setae short, the only elongate setae are the ocular one, the first and third setae along frontal arms, one seta on side.



**Figures 2-6**

*Australyitta rubrolineata*, triungulin (Namibia, Ondangwa), SEM photographs. – 2, dorsal view. – 3, lateral view. – 4, head, dorsal view. – 5, head, lateral view. – 6, head, ventral view, details. Bar: 0.1 mm (figs. 2-3); 0.05 mm (figs. 4-6).

Epipharynx simple, basal margin open and normal. Labrum free, distinct from clypeus, transverse, subrectangular but evidently narrowing on basal margins, with elongate setae on anterior margin. Mandibles (fig. 6) very robust conico-falcate, ventrally concave, well separated basally, without mola, microtrichiae and retinaculum, smooth on ental surface, setae short and 2 pits mesodorsally. Maxilla (fig. 6) with mala simple, lobiform; stipes with medial seta on anterior row elongate, more than twice as long as lateral seta, normal at base. Cardo present with very short seta. Maxillary palpi (fig. 6) with cylindrical segments, I and II short, III elongate and narrower than II and more than 3 times as long, apically with short sensory appendix and sensilla. Gula fused with submentum forming a gulamentum well defined, and mentum not fused with submentum. Labial palpi 2-segmented, II twice as long as I. Genae normal. Hypopharyngeal rods and suspensorium absent. Antennae (fig. 7) short, 3-segmented; I slightly broader than II and similar in length, about 1/2 as long as segment III. Segment II over twice the width of III, asymmetrical, longer along dorsal margin, apex oblique with 2 elongate setae. Segment III elongate, narrow, slightly enlarged at tip, apical seta setiform, longest than the entire antenna, with 3 additional setae at apex. Sensory appendix of segment II broad, conical, positioned at apex.

*Thorax* (fig. 2) segments broader than head, transverse, decreasing in size: pronotum 1.5 as long as meso- and metanotum. Pronotum subrectangular, clearly wider than head, sides parallel, fore angles slightly prominent. Tergites without anterior transverse ridge; principal setation and pits as in fig. 2; setae very short, distributed in three parallel rows. Sternites only weakly sclerotised, with 6 setae on three rows, the posterior one longer.

*Legs* (fig. 2) tapered, femur not enlarged in the middle, shorter than tibia. Principal chaetotaxy as in fig. 1. Fore femur slightly longer than meso- and metafemur; femoral setae normally shaped, fore and mesofemoral seta I twice as long as seta II. Tibiae tapered at apex; apical setae of metatibiae slightly longer than width at the tibial apex. Tarsungulus (fig. 8) conico-falcate, smooth ventrally, elongate, basal setae setiform, slightly displaced one another, elongate and slightly different in length.

*Abdomen* (fig. 2) fusiform, maximal width on segment V, about 1.8 as long as thorax. Principal dorsal chaetotaxy as in fig. 2; setae very short, unmodified, middle row present. Tergite I more rounded anteriorly than others; posterior margin of tergites entire; tergites II-VIII with 24 setae and pits, the posterior ones without basal evaginations. Epipleurites well sclerotised, not fused to tergites, except I, partially fused. Sterna slightly sclerotised, except the medial sternite; this latter undivided, completely sclerotised, subrectangular, transverse, not covering the entire sternum, with posterior margin entire; setation on sternite composed of one anterior and one middle rows of two setae, and one third posterior row of 8 elongate setae, all positioned along the posterior margin of sternite. Two long caudal setae (fig. 9), longer than last four urites, and two lateral short apical setae, shorter than last urite.

*Spiracles*. Mesothoracic spiracle suboval-rounded, placed laterally on pleurite, slightly larger than abdominal spiracle I, which is suboval-rounded, positioned on surface, less than half the length of segment I, placed more dorsally on laterotergite;

abdominal spiracle II-VIII laterally positioned on laterotergites, progressively slightly decreasing in size. Spiracles with a greatly crenulate peritreme (fig. 10).

(2) *Australytta enona* (fig. 11) – Similar to *A. rubrolineata*, except in the following characters: (a) body length (slide mounted specimen), 1.44 mm; (b) length of longest pair of caudal setae, 0.5 mm; (c) head length, 0.22 mm, and width 0.28 mm; (d) antenna length, 0.07 mm and apical seta of segment III, 0.08 mm; (e) head widest on the posterior third, laterally slightly rounded, sides narrowing toward base; (f) anterior margin of head slightly rounded; (g) seta II on frontal arms shorter; mandibles partially microcrenulate on the fore ental surface; (h) mandibular setae more elongate; (i) abdominal laterotergites slightly fused to the tergites.

## RELATIONSHIPS

The phylogenetic relationships of this genus remained unclear: a recent cladistic study (Bologna & Pinto 2001) did not resolve possible relationships of *Australytta* with other taxa, and the present study tentatively places it in the Lyttini tribe, based on adult morphology. Similarities and possible synapomorphies of both adult and first instar larva are briefly discussed below.

According to Bologna (1991), and Bologna & Aloisi (1994), Lyttini genera could be divided in two sections respectively characterised by smooth or dentate claws in the adult. According to Bologna & Pinto (2001, 2002), serrate claws represents a synapomorphic condition of some Mediterranean genera, related also by larval traits (*Alosimus* Mulsant, 1857, *Lydus* Latreille, 1802, *Muzimes* Aksentjev, 1988, *Oenas* Latreille, 1802, *Eolydus* Denier, 1913), but only found as an exception of single species in other lyttine genera (*Lytta*, *Lydomorphus*).

*Australytta* belongs to the first section of Lyttini, characterised by smooth claws, and is probably related to a group of genera characterised by well developed wings and elytra. It furthermore belongs within a subgroup of genera with mesepisterna touching one another along the midline, and unsculptured ventral lobe of tarsal claws. This subgroup includes several genera with world wide distribution (except in Australia).

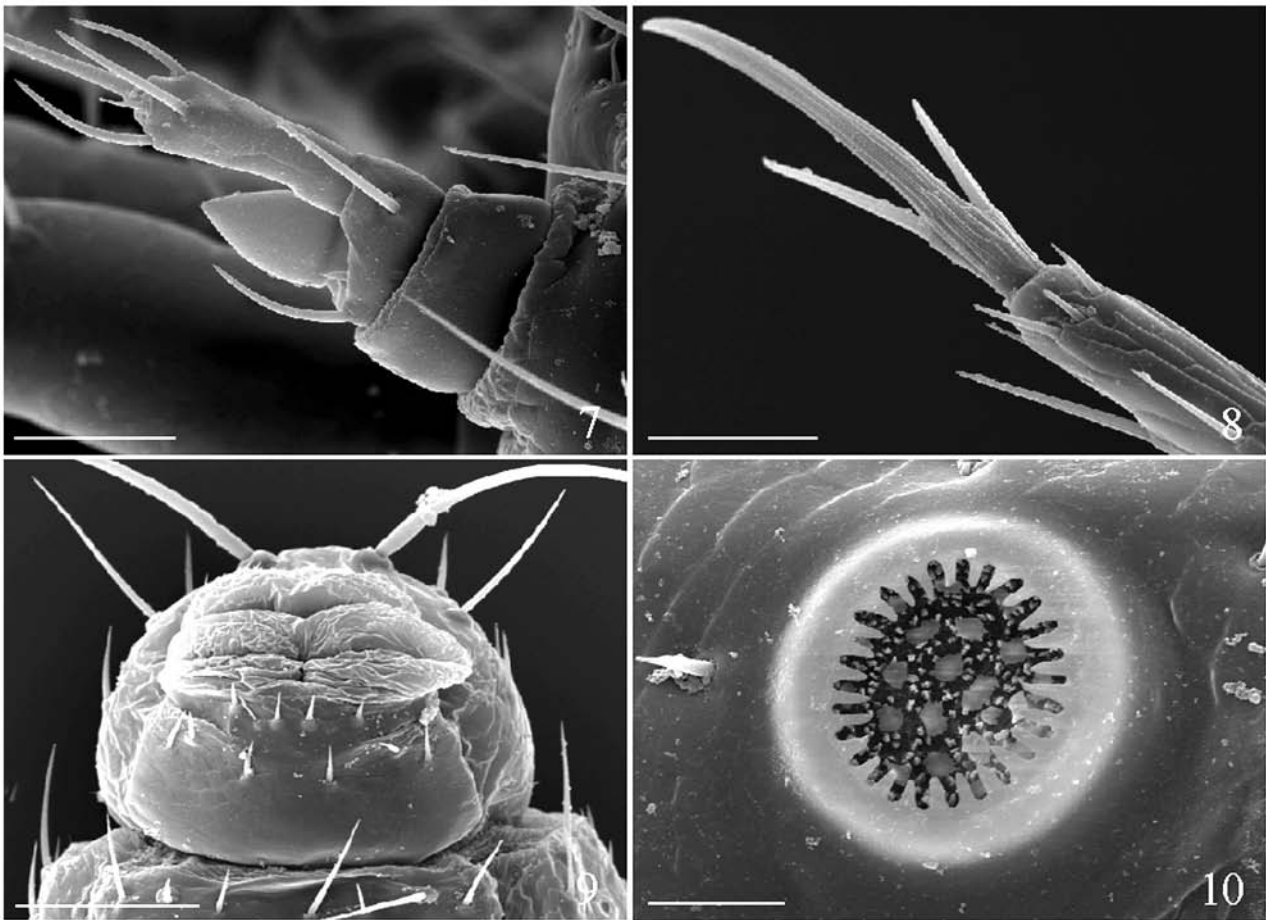
A possible synapomorphy between *Australytta* and *Prolytta*, both belonging to this subgroup and endemic to Southern Africa, is the large emargination of the males last visible abdominal sternite, associated with the scarce sclerotisation of the middle area of this sclerite. A similar condition is showed by some North American *Lytta* (*Poreospasta*) and by *Lagorina* Mulsant & Rey, 1858 from West Mediterranean Basin. Also *Lydomorphus* has the last segment deeply cleft reaching near to the base but with the divided sections elongate and usually twisted to bring their ventral surfaces to face laterally (Bologna & Pinto 2002).

The enlargement of both metatibial spurs is a character which is present only in *Acrolytta*, a Neotropical genus. Only two species of *Prollytta* [*tarsalis* Kaszab, 1967, *lucida* Haag-Rutenberg (1880)], have both metatibial spurs short and slightly enlarged apically, but not spatulate as in *Australytta*. The presence of a small glabrous callus dorsoposteriorly along the apical ridge of the fore tibia is evident in *Australytta* (cited by Pinto & Bologna (1997) as “an undescribed lyttine genus from southern Africa”), and in the Neotropical genus *Lyttana* Pinto & Bologna, 1997

Triungulins of several lyttine Meloidae were recently studied for a phylogenetic analysis (Bologna & Pinto 2001). The larval morphology of *Australytta* presents a true mosaic of characters for comparison with other Lyttini genera. The evident sclerotisation of the abdominal sterna, all largely covered by a single sternal plate, is an autapomorphic condition among Lyttini; it is

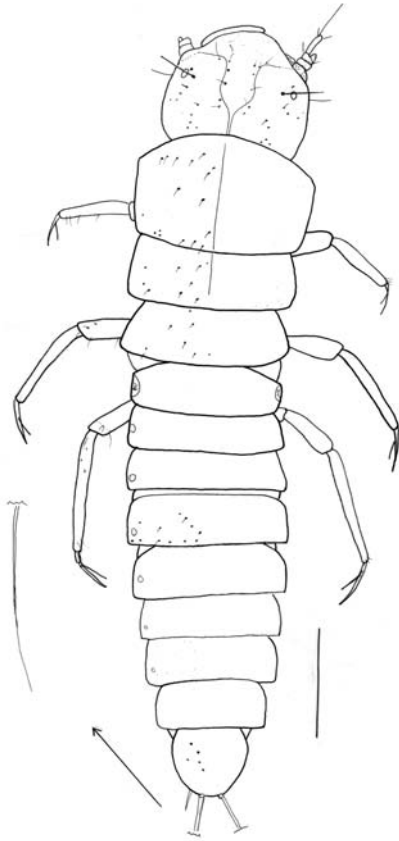
usually typical of phoretic taxa. A large, but incomplete sclerotisation, is present in *Berberomeloe* Bologna, 1989 and *Trichomeloe* Reitter, 1911, two wingless and brachelytrous Mediterranean lyttine genera belonging to a different lineage. Moreover, *Australytta* has several characters in a plesyotypic condition. Some larval characters are listed below to compare *Australytta* with *Lytta* and with other genera, especially from Old World, with a special attention to the southern African genera.

*Australytta* is characterised by the following characters: (a) presence of only three setae on each side of the frontoclypeal region (as in *Cabalia* Mulsant and Rey, 1858, *Prollytta*, *Lydomorphus*, *Berberomeloe*, *Acrolytta*, and different in *Lytta* and *Prionotolytta*); (b) antennal segment II subequal in length to I (as in *Alosimus*, *Acrolytta*, *Dictyolytta*, *Lydomorphus*, *Lydus*, *Oenas*, and different in *Lytta*, *Prollytta*, *Cabalia*, *Prionotolytta*); (c) terminal antennal seta about as long as the entire



**Figures 7-10**

*Australytta rubrolineata*, triungulin (Namibia, Ondangwa), SEM photographs. – 7, antenna. – 8, tarsungulus. – 9, pygopod and caudal setae. – 10, I abdominal spiracle. Bar: 0.02 mm (figs. 7-8), 0.05 mm (fig. 9), 0.01 mm (fig. 10).



**Figure 11**  
*Australytta enona*, triangulin (South Africa, Hilton). Bar: 0.2 mm.

antenna (as in *Prolytta*, *Lydomorphus*, *Dictyolytta*, and different in other lyttini); (d) fore and mesofemoral seta I twice as long as II (as in *Prolytta*, *Prionotolytta*, different in *Lytta*, *Lydomorphus*, *Cabalia* and other Mediterranean genera); (e) abdominal laterotergites present (as in *Cabalia*, *Lydomorphus*, *Prolytta* and in some Mediterranean genera, and different in *Lytta* and in the Mediterranean genera with serrate claws); (f) abdominal spiracle I on laterotergite (as in *Acrolytta* and *Berberomeloe*); (g) abdominal spiracles II-VIII lateral in position (as in the most Lyttini, but different in *Lytta*).

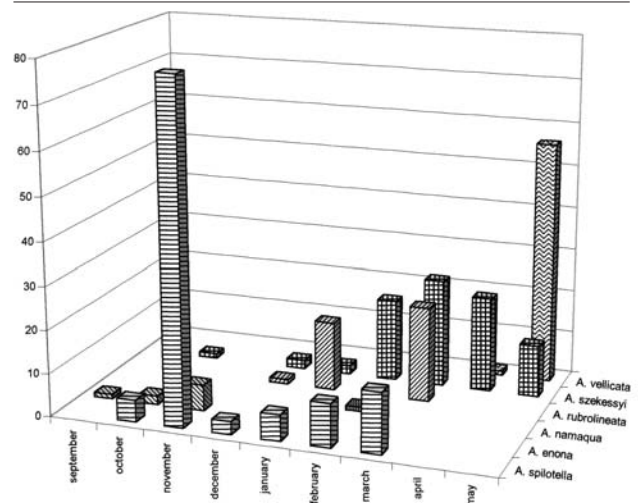
For comparison to *Prolytta*, a southern Africa genus which has some characters in common at the adult stage, differences concern: (a) no modified setae; (b) sensory pit along frontal arm present, not transformed in seta; (c) ocular seta much longer than adjacent seta; (d) ocular seta medial relative to stemma; (e) only two elongate seta at apex of segment II; (f) basal setae of tarsungulus slightly displaced one another; (g) abdominal spiracle I on laterotergite.

## BIONOMICS

Very little information is available on bionomics of *Australytta*. Three field expeditions to South Africa (1993, 1994, 1999), and two to Namibia (1997, 2001), were personally carried out, but specimens were personally collected only during the last one. Other scarce information was derived from literature and collection labels.

**Zoogeography** – *Australytta* is endemic to a large part of southern Africa (figs. 13-15), specifically to an arcuate area extended from southern Angola (about from 15° S) to South Namibia, and along the Karoo to the eastern Cape Province (about to 34° S), the eastern South Africa, just to the extreme southern Mozambique and southern Zimbabwe (about to 33° E). This range of distribution is divided in three distinct subranges: the first one extended along the coastal regions of southern Angola and northern Namibia, to central and southern Namibia, the Kalahari and Bushmanland; the second one in southern Karoo; the third one extended in the eastern South Africa, East to the boundary regions of Mozambique and Zimbabwe.

This pattern of distribution, common to several other insect genera, including the meloid genus *Prionotolytta*, is referable to the “Cape-bilateral extension” proposed by Endrödy-Younga (1978). As discussed by Bologna (2000) and Bologna *et al.* (2001), other blister beetle genera, as *Iselma* Haag-Rutenberg, 1879, *Paractenodia* Péringuey, 1904, and *Mimesthes* Marseul, 1872, have ranges of distribution similar but including also the South African Namaqualand and the Cape Region, and excluding the eastern South Africa.

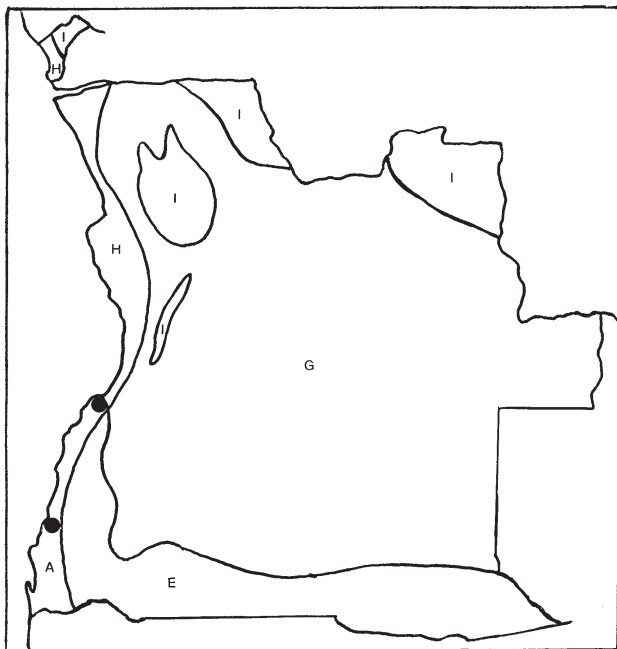


**Figure 12**  
Monthly distribution of records of *Australytta* species through their distributional range.

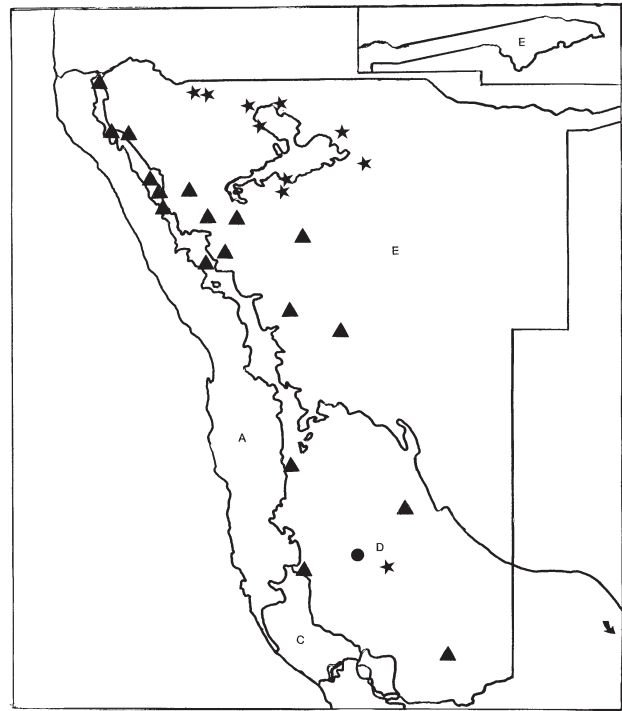
The *Australytta* species are usually allopatric. Only the Namibian species are partially sympatric: *A. rubrolineata* and *A. szekessyi* in Northern Namibia; *A. szekessyi*, *A. rubrolineata* and *A. namaqua* in Central and Southern Namibia (fig. 14). As in the case of the mylabrine genus *Mimesthes* (Bologna, 2000), the *Australytta* species perhaps represent primarily vicariant elements derived from speciation events in the original isolated xeric area. The recent modifications of the original habitat probably caused by livestock grazing (see Acocks 1988: maps 1 and 2), produced partial overlap of ranges.

**Ecological information** – Scarce information is available on habitat preference of this genus. In the literature the only available record was published by Gess & Gess (1976) which described the Little Karoo habitat of *enona*.

The main ecosystems inhabited by *Australytta* are: (a) Namib desert in Angola and North West Namibia (*A. vellicata*); (b) arid Savanna (“Mopane”, “Thorn scrub Savanna”, “Highland Savanna”) in Namibia and South African Kalahari (*A. rubrolineata*, *A. szekessyi*); (c) Nama Karoo semidesert (or “Dwarf shrub Savanna”) in South Namibia (*A. namaqua*, *A. szekessyi*); (d) Main Karoo deserts and semideserts (Little Karoo, Great Karoo) in the Eastern Cape Province (*A. enona*); (e) Bushveld



**Figure 13**  
Distribution of *Australytta vellicata* correlates to Angolan ecosystems. – A: Namib Desert. – E: Savannah. – G: Miombo Woodland. – H: Coastal savannah and thicket. – I: Forest/ Savannah mosaic.



**Figure 14**  
Distribution of *A. rubrolineata* (star), *A. szekessyi* (triangle; the arrow indicates the presence of a South African record of this species), *A. namaqua* (shaded circle) correlates to Namibian ecosystems. – A: Namib Desert. – C: Succulent Karoo. – D: Nama Karoo. – E: Savannah.

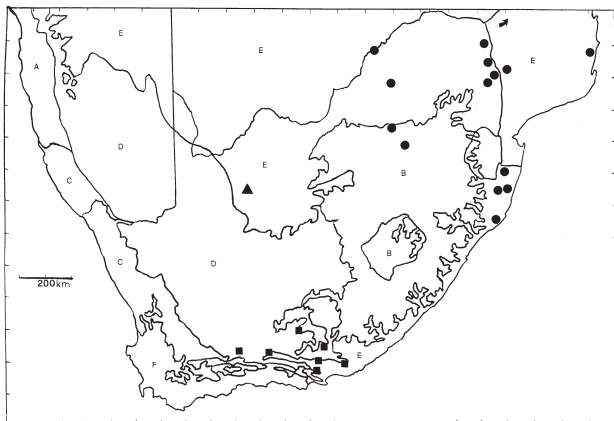
(more mesic Savannas types) in eastern South Africa, Zimbabwe and Mozambique (*A. spilotella*) (for habitat and bioclimate details see: Giess 1971; White 1983; Acocks 1988; Seely 1990; Irish 1994; Rutherford & Westfall 1994; Barnard 1998). In the maps of distribution (figs. 13-15) records of each species are correlated to southern African ecosystems.

*Australytta* species occur in low or middle elevations: *A. vellicata* particularly on coastal areas in Angola; the Namibian species on the plateau, from about 1000 to 1500 meters a.s.l.; the South African species from about 500 to 1000 meters a.s.l.

**Adult activity, predators and parasites** – Adult activity seems to be concentrated into two different main periods (fig. 12), clearly related to rainy seasons, and differing in the three distribution subranges of the genus.

The xeric habitats of southern Angola and Namibia are characterised by scarce rain from January to April, and records of *A. namaqua*, *A. rubrolineata*, *A. szekessyi* and *A. vellicata* are particularly concentrated from January to May. In the Little Karoo (West Cape Province) rainfall lasts from September to October, and





**Figure 15**

Distribution of *A. enona* (square), *A. spilotella* (shaded circle; the arrow indicates the presence of records of this species along the Zimbabwe/Mocambique boundary), *A. szekessyi* (triangle) correlates to southern African ecosystems. -A: Namib Desert. - B: Grassland. - C: Succulent Karoo. - D: Nama Karoo. - E: Savannah. - F: Fynbos.

*A. enona* occurs between September and November. The Savanna habitats of eastern South Africa and neighbouring regions has richest rain, especially distributed from September to February, as well as the records of *A. spilotella*, which has the most numerous data in November.

No food preferences are known, even if phytophagous condition must be supposed as in other blister beetles. A single specimen of *A. enona* (CB) was collected with “ground-traps 42 days with faeces bait”, but probably only the bait humidity attracted this specimen.

Probably *Australytta* is primarily nocturnal. *A. rubrolineata* and *A. szekessyi* (respectively 14 and 2 specimens) were personally collected in Northern Namibia (Ondangwa) at artificial light concentrated between 9.15 and 9.50 p.m, February 28, 2001, just after one day of rain. A few specimens of *A. spilotella* were collected during the day time (S. Endrödy-Younga and F. Cassola, personal communications), but several labels of *A. enona*, *A. rubrolineata*, *A. spilotella*, *A. szekessyi*, indicate “at light” or “at flood light” (respectively 4, 1, 23, 69 examined specimens). Similar bimodal activity (both diurnal and nocturnal) was detected for the lyttine genus *Lydomorphus* and the epicautine genus *Epicauta* in southern Africa. A single specimen of *A. rubrolineata* from the Etosha National Park (Namibia) was collected by pitfall traps.

According to the collection label, a specimen of *A. spilotella* from the Kruger National Park (South

Africa) was “removed from Hornbill stomach”; it is not specified if this ingestion caused the death of the Hornbill. As summarised by Bologna (1984), only a few Vertebrate species could ingest cantharidin, a toxic natural product, without ill effects.

Undetermined phoretic Acari were found on a male specimen of *A. vellicata* from SW Angola, positioned between the prosternum and metacoxae; another mite was found on the inferior side of head of a specimen of *A. spilotella* from Mpamalanga (Kruger National Park). Other similar cases of phoretic mites, uncommon in Meloidae, were summarised by Bologna & Pinto (1998).

No cleaning, sexual or other behavioural information is available.

**Larval biology** – The only detailed information on the developmental biology concerns *A. enona*, studied by Gess & Gess (1976) in the Eastern Cape Province. These biological records were summarised by Gess (1983) and by Gess & Gess (1983), who also published undetailed figures of adult, triungulin, and coarctate larva. One specimen of this first instar larva was used for the description and figure in the present paper.

*A. enona* is parasitic on *Parachilus insignis* (Saussure) (Hymenoptera: Eumenidae). As discussed by Gess & Gess (1976, 1983), Gess (1983), and Bologna (1983, 1991), this biological specialisation is very uncommon in blister beetles: usually they parasitise wild bees of several families, or acridid grasshoppers (only the tribes Mylabrini and Epicautini). Other cases of parasitism on aculeate wasps (respectively Sphecidae and Masaridae) were described in an European species of *Cerocoma* Geoffroy, 1762 (tribe Cerocomini), and in South African *Ceroctis* Marseul, 1870 (Mylabrini), but in both genera other species regularly parasitise wild bees.

Adults of *A. enona* were found walking on the ground within the nesting site of *P. insignis*, but in a single case inside a sealed nest of this wasp, probably waiting to emerge. Triungulins were found singly in sealed egg compartment containing prey and wasp eggs, feeding upon caterpillars stored for *Parachilus* larvae; perhaps they also ate wasp eggs. Larvae of 3th to 6th instars also were found inside of the sealed egg compartments. Developmental times for instars 4-6 and pupa were described by Gess & Gess (1976) in detail; development from triungulin, found in the cell, to the adult full pigmentation was completed in about 12-13 months.

As concerns *A. rubrolineata*, data on egg development are summarised in the “Material and methods” paragraph.

### Key to the species

1. Head red, but antennal segments IV-XI and apex of II and III, fore part of frons, clypeus, a middle longitudinal frontal stripe, and middle ventral part black; Pronotum red with narrow black area on sides, with a middle longitudinal narrow groove, extended from base to the anterior third; Legs red-yellow, but black coxae, tarsi and apex of tibiae; Elytra yellow-red with sparse setation, with sparse, bare black spots, 4 yellow stripes on the scarcely elevated venations; Ventral surface black, with red-yellow meso- and metasternum  
 ..... *A. spilotella* (Péringuey)
- Head black with two red lateral spots; Pronotum black or with orange spots; Legs black or rarely tibiae yellowish; Elytral ground black or red-orange with bare black spots; ventral surface entirely black ..... 2
2. Pronotum black with two broad oval and oblique orange spots; surface between punctures on head and pronotum rugose and opaque; longitudinal groove of pronotum scarcely visible ..... *A. rubrolineata* (Kaszab)
- Pronotum entirely black; longitudinal groove of pronotum well visible ..... 3
3. Antennae short, barely reaching the base of pronotum, with short segments, VII-X subconical, about as wide as long; head punctures dense, large and deep; vertex longitudinally impressed with dense punctures  
 ..... *A. enona* (Péringuey)
- Antennae slender, reaching the humeral region, with more elongate, subcylindrical segments; head punctures sparse or dense, but fine; vertex not as above ..... 4
4. Tibiae yellow-brown ..... *A. namaqua* (Kaszab)  
 (possibly conspecific with *A. szekessyi*)
- Tibiae black (rarely reddish) ..... 5
5. Elytra largely dark brown to black with bare spots; suture, base, lateral margins and a stripe on the inner side of the humerus brown-red; Antennal segments (fig. 27) more elongate (ratio length/width as detailed described in the taxonomy section); Male gonostyli in lateral view (fig. 18) progressively narrowed from the basal half. Tibiae black  
 ..... *A. vellicata* (Erichson)
- Elytra yellow-red with sparse bare dark brown spots; suture, lateral margins and the venation on the inner side of the humerus yellow-brown, rarely the black colouration extended as in *vellicata*; Antennal segments (fig. 28) shorter (ratio length/width as detailed described in the taxonomy section); Male gonostyli in lateral view (fig. 17) wide and cylindrical in the basal half. Tibiae black or rarely reddish ..... *A. szekessyi* (Kaszab)  
 (possibly conspecific with *A. namaqua*)

### TAXONOMY AND CATALOGUE

No characters considered useful for a cladistic analysis of the genus were detected and consequently phylogenetic classification is not proposed. From a phenetic point of view, we can recognise at least two groups of species: (a) the *spilotella* group, including only this

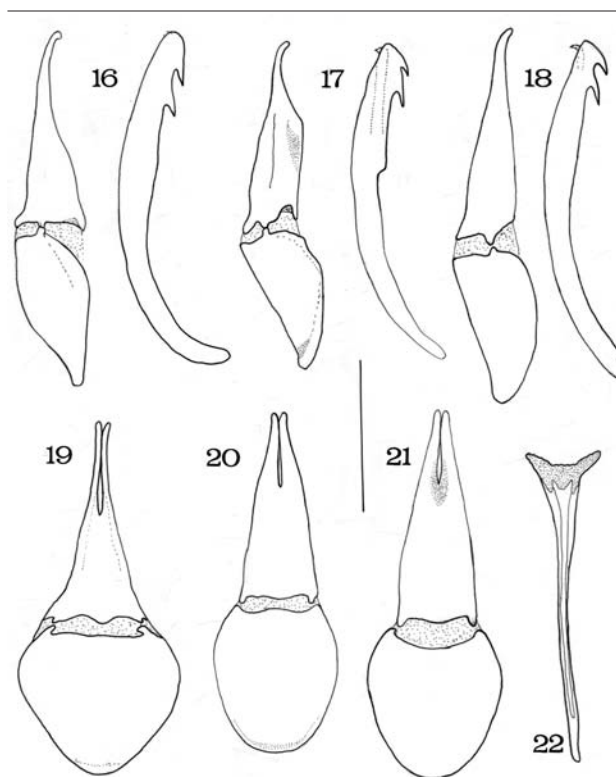


Figure 16-21

Male genitalia of *Australytta* species. – 16-18, Gonoforceps and aedeagus in lateral view of *A. spilotella* (fig. 16), *A. szekessyi* (fig. 17), *A. vellicata* (fig. 18). – 19-21, Gonoforceps in ventral view of *A. spilotella* (fig. 19), *A. szekessyi* (fig. 20), *A. vellicata* (fig. 21). – 22, Spiculum gastrale of *A. szekessyi*. Bar: 1 mm.

species, characterised by extended red colouration of body, other than on elytra; (b) the *vellicata* group, including the other five species, one of which (*A. enona*) is well distinguished by the short antennae.

### *Spilotella* group

#### *Australytta spilotella* (Péringuey, 1904) (figs. 1, 16, 19)

*Lytta spilotella* Péringuey, 1904: 286; Kaszab, 1953b: 74.

*Cantharis spilotella*, Péringuey, 1909: 265.

*Epicauta spilotella*, Borchmann, 1917: 83.

**Type locality** – “Transvaal (Waterberg District)”.

**Type material** – According to the original description, the type was “in the Pretoria Museum”. Probably the type series includes more than the Holotype, and the designation of a Lectotype and Paralectotypes is still impossible because the Péringuey’s collection was divided in different South African Museums. I exam-

ined one specimen labelled Type in the SAMC (which could be selected as Lectotype), and 4 additional specimens similarly labelled in the NHP.

**Distribution** (fig. 15) – SOUTH AFRICA (NORTHERN PROVINCE): Transvaal Stockpoort 23° 25' S-27° 22' E (NHP); Waterberg district (Péringuey 1904, 1909; Kaszab, 1953b; SAMC; NHP); Soutpansberg (Kaszab, 1953b; FLCA; NHB; NHP); Kruger Nat. Park (CB); Kruger Nat. Park, Shingwedzi 23° 07' S- 31° 26' E (NHP; PPRI); Kruger Nat. Park, Letaba 23° 59' S-31° 50' E (CB; NHB; NHP). (EASTERN TRANSVAL): 15 km E of Pretoria (CB); Kruger Nat. Park, Skukuza 24° 59' S-31° 35' E (JP; PPRI); Kruger Nat. Park, Nwanetsi Firebreak (NHP). (NATAL-KWA ZULU): near Richards Bay 28° 25' S-32° 15' E (PPRI); Makatini Falls 27° 24' S- 32° 11' E (PPRI); near Jozini 27° 26' S-31° 10' E (PPRI); Ndumo (NHP); Ndumo Store (NHP). – *Unidentified localities of South Africa*: Plat River (CB; NHP). – MOZAMBIQUE (MAPUTO): Mapulanguene [near Nwaneti] (NHP). (INHAMBANE): Porto Henrique [near Massinga] (JP; NHP). – ZIMBABWE (UMTALI): Chirinda Forest [near Chipinga, on the boundary with Mozambique] (NHP).

**Remarks** – The male genitalia of this species, are represented in figs. 16 and 19.

### *Vellicata* group

#### *Australytta enona* (Péringuey, 1899)

*Lytta enona* Péringuey, 1899: 318; Kaszab, 1953b: 75; Gess & Gess, 1976: 95; 1983: 5; Gess, 1983: 25.  
*Epicauta enona*, Borchmann, 1917: 74.  
*Cantharis enona*, Péringuey, 1909: 266.

**Type locality** – “Cape Colony (Uitenhage)”.

**Type material** – Species probably described only on the Holotype preserved in the SAMC and briefly examined.

**Distribution** (fig. 15) – SOUTH AFRICA (WESTERN CAPE): Karoo, Farm Zwartkraal 33° 10' S- 22° 32' E (CB). (EASTERN CAPE): Willowmore (NHP; NHP); Graaf-Reinet, Wellwood (NMB); Somerset (NHP); Uitenhage (Péringuey 1899; 1909; Kaszab 1953b; Gess & Gess 1976; SAMC); Dunbrody (S of Kirkwood) (NHP); Farm Hilton, 18 km WNW of Grahamstown (Gess & Gess 1976; 1983).

#### *Australytta namaqua* (Kaszab, 1953)

*Lytta namaqua* Kaszab, 1953b: 75.

**Type locality** – “S.W. Afrika, Gr. Namaqualand, Bethanie”.

**Type material** – The description is based only on the male Holotype (as “Monotypus”), preserved in the NHP collections, and examined for this revision. Label of this specimen has additional information: “1.II.1885” cited by Kaszab (1953b), and the name of collector (“A. Schrenck”) not indicated on the original description.

**Distribution** (fig. 14) – NAMIBIA (BETHANIE): Bethanie (Kaszab, 1953b; NHP).

**Remarks** – A possible synonymy of this species with *A. szekessyi* is here suspected. Both taxa were described in the same paper by Kaszab (1953b) on the base of single specimens collected in two northern Namibian localities (Sesfontein, Kaross: *A. szekessyi*) and one southern (Bethanie: *A. namaqua*). According to the present knowledge, these species, apparently allopatric when described, are actually sympatric. The eventual name priority could be for *A. namaqua*, described two pages before *A. szekessyi*. Only the examination of a large number of specimens from the type locality of *A. namaqua* could definitively resolve this possible synonymy.

The diagnostic characters, proposed by Kaszab (1953b) are: (a) the colour of tibiae, yellow in *A. namaqua* and black in *A. szekessyi*; (b) the shape of the pronotum, wide and transverse, slightly narrower than head and parallel on sides in *A. namaqua*, and as long as wide, narrower than head and convergent anteriorly in *A. szekessyi*; (c) the head puncturation, fine and sparse in *A. namaqua*, similar but including also micro-punctures on the ground in *A. szekessyi*. The tibial colour in *A. szekessyi* seems to be clinal: black in northern and central Namibia (e.g. 100% on 14 specimens from Kunene River, 9 from Palmwag and 6 from Orupembe, as well as in single specimens from other localities); mixed black or red-yellow in southern Namibia [about 28% black on 11 specimens from Mukorob]. In some specimens the extension of black colour is variable. The tibial colour is not informative in examining single specimens from other southern localities: the colour can be yellow (Karasburg) or black (Sesriem, Olifantshoek). Also the shape of the pronotum it is extremely variable in specimens from the same locality. Finally the differences in puncturation seem to be very scarce and could enter in a range of variability.

#### *Australytta rubrolineata* (Kaszab, 1953)

*Lytta rubrolineata* Kaszab, 1953b: 76.

**Type locality** – “S.W. Afrika, Nagusib (ungefähr 24 km. SO Von Namutoni)” (Holotype); actually, the correct spelling of this locality (representing a farm) is Nakusib.

The female Paratype is cited from “S.W. Afrika, Onolonga (ungefähr 50 km. SW Von Ondangwa, Ovamboland)”; on the original label this locality is indicated as “Onoolonga”; the correct spelling of this locality is Onalonga.

**Type material** – The original description is based on two specimens, both examined, respectively preserved in the SAMC (Holotype) and NHP (Paratype) collections. Other information cited by Kaszab (1953b), which are reported on the Holotype and Paratype labels, respectively indicated “I.1923, Mus. Expedition”, and “II.1923, Mus. Exped.”

**Distribution** (fig. 14) – NAMIBIA (UTAPI): Tsandi 17° 46' S – 14° 52' E (SMWN); Iikango 17° 51' S – 15° 14' E (SMWN). (EENHANA): Elakalapwe 17° 24' S – 15° 44' E (CB, SMWN); Ohanvaala 17° 25' S – 16° 13' E

(SMWN). (ONDANGWA): Ondangwa town (CB); Onalonga, ca. 50 km SW Ondangwa (Kaszab 1953b). (Tsumeb): Andoni plains 18° 29' S – 16° 48' E (CB, SMWN). (OUTJO): Nakusib ca. 24 km SE Namutoni (Kaszab 1953b; SAMC); Okaukuejo 19° 09' S – 15° 56' E (SMWN); Ethosa Pan, Okaukuejo Camp 19° 10' S – 15° 55' E (NHP). (BETHANIE-KEETMANSHOOP): between Gavaams 6 Farm and Bethanie, SE 2617 Bc (NHP).

*Australytta szekessyi* (Kaszab, 1953)

(figs. 17, 20, 22, 28)

*Lytta Székessyi* Kaszab, 1953b: 77.

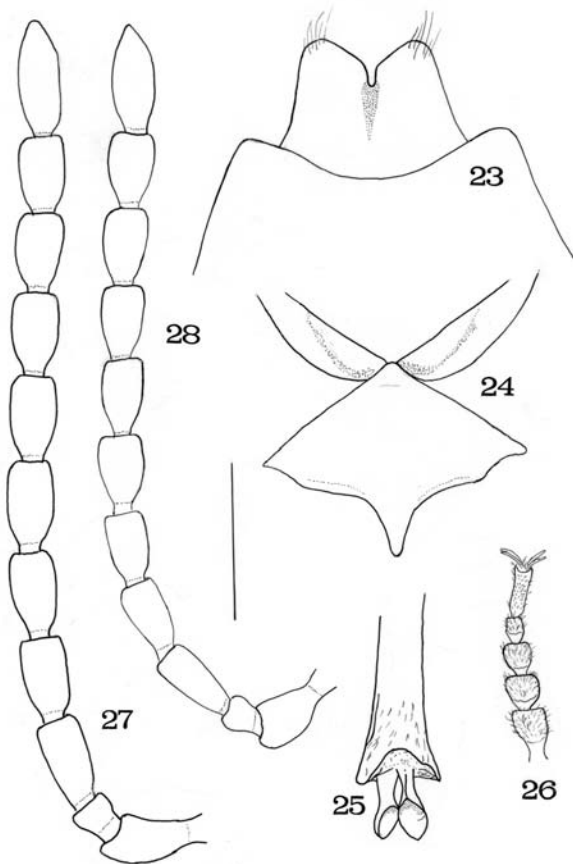
**Type locality** – “S.W. Afrika, Kaokoveld, Zesfontein” (Holotype). The Paratype is labelled “S.W. Afrika, Kaross (ungefähr 100 km. SO. Von Zesfontein)”.

**Type material** – The original description is based on two specimens respectively preserved in the SAMC (Holotype), and NHB (Paratype) collections. Both were briefly examined.

**Distribution** (fig. 14) – NAMIBIA (OPUWO): Kunene River, W Hartbmbg 17° 12' S – 12° 10' E (CB; NHP); idem, 23 km S 17° 24' S – 12° 18' E (NHP); Hippo Pool 17° 24' S – 14° 12' E (SMWN); Okambel 17° 37' S – 14° 03' E (SMWN); Orubempe 18° 10' S – 12° 31' E (SMWN); idem SE 1812 Be (CB; SMWN); Omungunda 1813 SE 1813 Ad (SMWN); Sesfontein (Kaszab 1953b; SAMC; NHP); 10 km NW of Giribes Vlake SE 1813 Cd (SMWN). (ONDANGWA): Ondangwa town (CB). (KHORIXAS): Aub Area 19° 20' S – 13° 53' E (SMWN); Kaross (Kaszab, 1953b; NHP); Palmwag 19° 50' S – 13° 53' E (CB; SMWN); Twyfelfontein Res. (SAMC; SMWN); Khorixas (NHP). (OUTJO): Kamanjab (NHP); Otjitambi Farm (SAMC); Outjo (NHP). (OMARURU): Vis (CB); Omaruru (CP). (OKAHANDJA): Okahandja (CP). (MALTAHÖHE): Sesriem Farm SE 2415 Dc (SMWN). (MARIENTAL): Mukorob Farm 25° 30' S – 18° 10' E (CB; SMWN). (LÜDERITZ): Aus (CP). (KARASBURG): Karasburg 28° 01' S – 18° 45' E (PPRI). – *Unidentified localities of Namibia*: Springbokwater (NHP). Jezfontein (NHP). – SOUTH AFRICA (NORTHERN CAPE): Olifantshoek 27° 56' S – 22° 44' E (PPRI).

**Remarks** – The possible synonymy with *A. namaqua* was previously discussed. The possibility that *A. namaqua*, *A. szekessyi* and *A. vellicata* could represent a specific complex must be tested on most numerous material, and possibly with other techniques.

*A. szekessyi* is very similar to *vellicata* which differs by the larger extension of the black colouration and the



**Figure 23-28**  
23, Last abdominal sternite of *A. vellicata*. – 24, Mesosternum of *A. vellicata*. – 25, Metatibial spurs of *A. vellicata*. – 26, Male protarsus of *A. vellicata*. – 27, Male antenna of *A. vellicata*. – 28, Male antenna of *A. szekessyi*. Bar: 1 mm, and fig. 26, bar: 0.5 mm.

antennal shape. Specimens of *A. szekessyi* were examined from several Namibian localities. The black colouration of elytra is progressively reduced from North to South with a clinal variation: single specimens from North West Namibia (Palmwag, Kunene River), mixed with some typical ones, show an elytral colouration similar to that of *A. vellicata*; in the extreme South the black extension is very reduced. No geographic variability of *A. vellicata* was evidenced, probably because the numerous specimens examined were collected in the same Angolan region.

A diagnostic character of *A. szekessyi* vs. *A. vellicata* is the antennal shape. Antennal segments (except II and XI) are more elongate in *A. vellicata* (fig. 27). The length/width ratio of the antennal segments in *A. vellicata* is: 1.87 (I), 0.71 (II), 1.80 (III), 1.60 (IV), 1.67 (V), 1.73 (VI), 1.73 (VII), 1.44 (VIII), 1.44 (IX), 1.75 (X), 2.12 (XI). The length/width ratio of antennal segments in *A. szekessyi* is (fig. 28): 1.67 (I), 0.82 (II), 1.64 (III), 1.40 (IV), 1.44 (V), 1.50 (VI), 1.37 (VII), 1.33 (VIII), 1.39 (IX), 1.56 (X), 2.27 (XI).

Male genitalia of *A. szekessyi* are represented in fig. 17, 20, 22. The gonostyli of *A. szekessyi* differ from those of *A. vellicata* because in lateral view are more cylindrical in the basal half and not so progressively narrowed as in *A. vellicata*. Characters of antennae and genitalia must be carefully checked in several populations of *A. vellicata*.

Apparently these two species are allopatric and ecologically distinct: *A. vellicata* is distributed in the Angolan Namib; *A. szekessyi* is largely distributed in Namibia, excluded from the Namib Desert. Their ranges of distribution are almost in contact along the Angolan border.

### *Australytta vellicata* (Erichson, 1843)

(figs. 18, 21, 23, 24, 25, 26, 27)

*Lytta vellicata* Erichson, 1843: 258; Wellman, 1908:619; Borchmann, 1917: 100; Kaszab, 1953b: 75; Ferreira, 1965: 806.

*Cantharis vellicata*, Gemminger & Harold, 1870: 2155.

**Type locality** – Angola.

**Type material** – Type not examined; according to Wellman (1908) it is preserved in the Berlin Museum.

**Distribution** (fig. 13) – Afr. austr. (= Southern Africa) (MNHN). – ANGOLA: Angola (Erichson 1843; Gemminger & Harold 1870; Wellman 1908; Borchmann 1917; Ferreira 1965); (BENGUELA): Benguela (Kaszab 1953b; MNHN; NHP). (MOÇAMEDES): Moçamedes, Rio Bero SE 1512 Aa (SMWN; NHP); Moçamedes, Pastoril do Sul SE 1512 Ba (CB; SMWN).

**Remarks** – Possible diagnostic characters vs. *A. szekessyi* were previously discussed. Male genitalia of this species are represented in figs. 18 and 21, as well as the last abdominal segment (fig. 23), the mesosternum (fig. 24), the metatibial spurs (fig. 25), the male protarsus (fig. 26), and the antenna (fig. 27).

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**ADDENDUM** – When this paper was in press, a new species of *Australytta*, here briefly described, was discovered.

*Australytta maraisi* n. sp.: Holotype female [Namibia] Kaokaland at 18° 52' S-12° 59' E, 22.ii.1995, E. Marais leg. (SMWN). Length: 12 mm. Body black, but head red, except frons, mouthparts and a very narrow area around eyes, antennae and tarsi brownish, elytra with external, sutural and fore margins and a middle longitudinal stripe orange. Setation white. Antennae short, not reaching the pronotum base, segments moniliform. Pronotum elongate, 1.15 as long as wide, parallel on sides, medially only micropunctate. Clearly distinct from other species by the colouration, and the shape of pronotum and antennae.

## REFERENCES

- ACOCKS J. P. H. 1988 – Veld Types of South Africa. – *Memoirs of the Botanical Survey of South Africa*, **57**: i-x, 1-146.
- BARNARD P. (ed.) 1998 – *Biological diversity in Namibia – a country study*. Windhoek: Namibian National Diversity Task Force, 332 p.
- BOLOGNA M. A. 1983 – Utilizzazione dei dati biologici nella sistematica dei Meloidae (Coleoptera). – Atti del XII Congresso Nazionale italiano di Entomologia, Roma, **2**: 21-36.
- BOLOGNA M. A. – 1984 Nuove osservazioni sui predatori dei Meloidae (Coleoptera). – *Bollettino dell'Associazione romana di Entomologia*, **38** [1983]: 63-64.
- BOLOGNA M. A. 1991 – *Coleoptera Meloidae. Fauna d'Italia XXVIII*. Bologna: Calderini, XIV + 541 p.
- BOLOGNA M.A. 2000 – Revision of the mylabrine genus *Mimesthes* Marseul, 1872 (Coleoptera: Meloidae). – *European Journal of Entomology*, **97**: 75-84.
- BOLOGNA M. A., ALOISI G. 1994 – Systematics and bionomics of *Physomeloe* Reitter, 1911, with description of the first instar larva (Coleoptera, Meloidae). – *EOS*, **69** [1993]: 45-56.
- BOLOGNA M. A., DI GIULIO A. 2002 – Review of the Southern Africa genus *Prolytta* Kaszab, 1959, with the description of the first instar larva, and bionomic and taxonomic remarks (Coleoptera, Meloidae). – *Invertebrate Systematics*, **16**: 177-194.
- BOLOGNA M. A., PINTO J. D. 1998 – A review of the Afrotropical species of *Meloe* Linnaeus 1758 (Coleoptera Meloidae) with descriptions of first instar larvae, a key to species and an annotated catalogue. – *Tropical Zoology*, **11**: 19-59.
- BOLOGNA M. A., PINTO J. D. 2001 – Phylogenetic studies of the Meloidae (Coleoptera), with emphasis on the evolution of phoresy. – *Systematic Entomology*, **26**: 33-72.
- BOLOGNA M. A., PINTO J. D. 2002 – The Old World genera of Meloidae (Coleoptera): a key and synopsis. – *Journal of Natural History*, **36**: 2013-2102.
- BOLOGNA M. A., FATTORINI S., PINTO J. D. 2001 – Review of the primitive blister beetle genus *Iselma* with description of the first instar larva (Coleoptera, Tenebrionioidea, Meloidae). – *African Entomology*, **9**: 105-129.
- BORCHMANN F. 1917 – *Meloidae, Cephaloidae. Coleopterorum Catalogus auspiciis et auxilio W. Junk editus a S. Schenkling*. Pars 69. Berlin: W. Junk.
- DENIER P. 1933 – Descripción de una especie nueva del genero *Lytta*. Descripción del genero *Wagneria* (Col. Meloidi). – *Revista de la Sociedad Entomologica Argentina*, **22** (1932): 87-92.
- ENDRÖDY-YOUNGA S. 1978 – Coleoptera. In: Werger M.J.A. (ed.), *Biogeography and Ecology of southern Africa*, vol. 2, p. 797-821. The Hague: W.Junk.
- ERICHSON W.F. 1843 – Beitrag zur Insecten-Fauna von Angola, in besonderer Beziehung zur geographischen Verbreitung der Insecten in Afrika. – *Archiv für Naturgeschichte, Berlin*, **9**: 199-267.
- FERREIRA M.C. 1965 – Familia Meloidae. In: Catalogo dos Coleópteros de Angola. – *Revista de Entomologia de Mozambique*, **8**: 788-817
- GEMMINGER D., HAROLD B. de 1870 – *Catalogus Coleopterorum hucusque descriptorum synonymicus et systematicus*, vol. 7, p. 1801-2189. Monachi: Gummi.
- GESS F.W., GESS S.K. 1976 – An ethological study of *Parachilus insignis* (Saussure) (Hymenoptera: Eumenidae) in the Eastern Cape Province of South Africa. – *Annals of the Cape Provincial Museums, Natural History*, **11**: 83-102.
- GESS S.K. 1983 – Meloidae (Coleoptera) associated with aculeate Wasps. – Proceedings of the 4th Entomological Congress organised by the Entomological Society of Southern Africa. Johannesburg, 6-8 September 1983: 25-26.
- GESS S.K., GESS F.W. 1983 – The private lives of Meloid Beetles. – *The Naturalist*, **27**: 5-7.
- GIESS W. 1971 – A preliminary vegetation map of South West Africa. – *Dinteria*, **4**: 5-114.
- IRISH J. 1994 – The biomes of Namibia, as determined by objective categorisation. – *Navorsinge van die Nasionale Museum, Bloemfontein*, **10**: 549-592.
- KASZAB Z. 1948 – Die Arten der Gattung *Cabalina* (Col., Meloidae). – *Folia Entomologica Hungarica*, s.n., **3**: 12-14.
- KASZAB Z. 1952a – Die paläarktischen und orientalischen Arten der Meloiden-Gattung *Epicauta* Redtb. – *Acta Biologica Academiae Scientiarum Hungaricae*, **3**: 573-599.
- KASZAB Z. 1952b – Neue Epicautinen (Col. Meloidae) aus der orientalischen Region. – *Entomologische Arbeiten aus dem Museum Gg. Frey*, **3**: 79-89.
- KASZAB Z. 1952c – Über *Lydus susicus* Esc. und die neue Arten der Gattung *Lyttolydulus* Reit. (Col. Meloidae). – *Entomologische Arbeiten aus dem Museum Gg. Frey*, **3**: 89-95.
- KASZAB Z. 1953a – Revision der Meloiden-Gattung *Cyaneolytta* Pér. (Col.). – *Annales historico-naturales Musei Nationalis Hungarici*, (s.n.) **4**: 81-93.
- KASZAB Z. 1953b – Studien über südafrikanischen Meloiden (Coleoptera). – *Annals of South African Museum*, **41**: 61-79.
- KASZAB Z. 1953c – Revision der actiopischen Arten der Meloiden-Gattung *Epicauta* Redtb. – *Acta Biologica Academiae Scientiarum Hungaricae*, **4**: 481-513.
- KASZAB Z. 1954 – Die Arten der Meloiden-Gattung *Psalydolytta* Pér. (Coleoptera, Meloidae). – *Acta Zoologica Academiae Scientiarum Hungaricae*, **1**: 69-103.
- KASZAB Z. 1955 – Die Arten der Meloiden-Gattung *Cylindrothorax* Escher. (Coleoptera). – *Annales historico-naturales Musei Nationalis Hungarici*, s.n., **6**: 225-258.
- KASZAB Z. 1958 – Die Meloiden Afghanistans (Coleoptera). – *Acta Zoologica Academiae Scientiarum Hungaricae*, **3**: 245-312.
- KASZAB Z. 1959 – Phylogenetische Beziehungen des Flügelgeäders der Meloiden (Coleoptera), nebst Beschreibung neuer Gattungen und Arten. – *Acta Zoologica Academiae Scientiarum Hungaricae*, **5**: 67-114.
- KASZAB Z. 1962 – Über das system der asiatischen *Lytta*-Arten, nebst beschreibung drei neuer Arten (Coleoptera, Meloidae). – *Annales historico-naturales Musei Nationalis Hungarici*, **54**: 289-298.
- KASZAB Z. 1967 – Über *Proyitta pallidipennis* (Haag-R.) und seine Verwandten (Coleoptera, Meloidae). – *Annales Historico-Naturales Musei nationalis hungarici, Pars Zoologica*, **59**: 283-289.
- LAWRENCE J. F. 1991 – Oder Coleoptera. In Stehr, F. W. (ed.), *Immature Insects*, vol. 2, p. 144-298. Dubuque: Kendall/Hunt.
- MACSWAIN J.W. 1951 – A new genus of Meloidae from North America. – *Pan-Pacific Entomologist*, **27**: 58.
- MACSWAIN J. W. 1956 – A classification of the first instar larvae of the Meloidae (Coleoptera). – *University of California Publications in Entomology*, **12**: I-IV, 1-182.
- MARTINEZ A. 1958 – Notas sobre Meloidae (Col.). V. – *Neotropica*, **4**: 77-80.
- PÉRINGUEY L. 1899 – VII. Fifth Contribution to the South African Coleopterous Fauna. – *Annals of the South African Museum*, **1**: 240-329, 2 pls.
- PÉRINGUEY L. 1904 – Sixth Contribution to the South African Coleopterous Fauna. Descriptions of new species of Coleoptera in the Collections of the South African Museum. – *Annals of the South African Museum*, **3**: 167-300, 1 pl.
- PÉRINGUEY L. 1909 – Descriptive Catalogue of the Coleoptera of South Africa. Family Meloidae. – *Transactions of the Royal Society of South Africa*, **1**: 165-297, pls. 22-24.
- PINTO J.D., BOLOGNA M.A. 1997. – *Lyttana priapica*, a new genus and species of Meloidae (Coleoptera) from South America. – *The Coleopterists Bulletin*, **51**: 371-377.
- PINTO J.D., BOLOGNA M.A. 1999 – The New World genera of Meloidae (Coleoptera): a key and synopsis. – *Journal of Natural History*, **33**: 569-620.
- RUTHENFORD M.C., WESTFALL R.H. 1994 – Biomes of southern Africa: an objective categorization. – *Memoirs of the Botanical Survey of South Africa*, **63**: i-viii, 1-94.
- SEELY M.K. (ed.) 1990 – Namib Ecology: 25 years of Namib research. – *Transvaal Museum Monograph* vol. 7, p. i-viii, 1-230. Pretoria: Transvaal Museum.
- SELANDER R.B. 1960a – Restriction of the genus *Lytta* Fabricius (Meloidae). – *The Coleopterists Bulletin*, **14**: 80-86.
- SELANDER R.B. 1960b – Bionomics, systematics and phylogeny of *Lytta*, a genus of blister beetles (Coleoptera, Meloidae). – *Illinois Biological Monographs*, **28**: i-vi, 1-295.
- SELANDER R.B. 1987 – Restriction of the South American genus *Acrolytta* (Coleoptera: Meloidae). – *Entomological News*, **98**: 208-210.
- WELLMAN F.C. 1908 – On the Meloidae of Angola. – *Proceedings of the Academy of Natural Sciences of Philadelphia*, **60**: 600-624.
- WHITE F. 1983 – *The vegetation of Africa*, p. 1-384, 3 maps. Paris: Unesco.