

# *Ardoiellus montanus* n. gen., n. sp. and nine new species of *Enicmosoma* Gebien from South Africa and Zimbabwe (Coleoptera: Tenebrionidae: Lupropini)<sup>1</sup>

WOLFGANG SCHAWALLER

## Abstract

*Ardoiellus* n. gen. (Tenebrionidae: Lagriinae: Lupropini), monotypical with the wingless species *A. montanus* n. sp. from the Swartberge Mountains in South Africa, and nine new species of the related genus *Enicmosoma* Gebien, 1922 from South Africa and Zimbabwe are described (*E. amatolensis* n. sp., *E. capensis* n. sp., *E. danieli* n. sp., *E. hararensis* n. sp., *E. peteri* n. sp., *E. proteacola* n. sp., *E. ruthae* n. sp., *E. sebastiani* n. sp., and *E. swartbergensis* n. sp.). *Enicmonota* Ardoïn, 1958 and *Parenicmosoma* Ardoïn, 1958 are considered as junior synonyms of *Enicmosoma* Gebien, 1922. All species are illustrated, a distribution map is provided, a key to the species of *Enicmosoma* in southern Africa and a complete species list of the genus *Enicmosoma* are given.

**Key words:** Coleoptera, Tenebrionidae, Lupropini, *Ardoiellus*, *Enicmosoma*, new genus, new species, South Africa, Zimbabwe.

## Zusammenfassung

*Ardoiellus* n. gen. (Tenebrionidae: Lagriinae: Lupropini), monotypisch mit der flügellosen Art *A. montanus* n. sp. von den Swartbergen in Südafrika, und neun neue Arten der verwandten Gattung *Enicmosoma* Gebien, 1922 aus Südafrika und Zimbabwe werden beschrieben (*E. amatolensis* n. sp., *E. capensis* n. sp., *E. danieli* n. sp., *E. hararensis* n. sp., *E. peteri* n. sp., *E. proteacola* n. sp., *E. ruthae* n. sp., *E. sebastiani* n. sp., und *E. swartbergensis* n. sp.). *Enicmonota* Ardoïn, 1958 und *Parenicmosoma* Ardoïn, 1958 werden als jüngere Synonyme von *Enicmosoma* Gebien, 1922 betrachtet. Alle Arten werden abgebildet und in einer Verbreitungskarte aufgeführt. Ein Bestimmungsschlüssel für die *Enicmosoma*-Arten des südlichen Afrikas wurde erstellt und eine vollständige Artenliste der Gattung *Enicmosoma* wird angefügt.

## Contents

|       |                                                                 |     |
|-------|-----------------------------------------------------------------|-----|
| 1     | Introduction.....                                               | 137 |
| 2     | Taxonomy.....                                                   | 138 |
| 2.1   | <i>Ardoiellus</i> .....                                         | 138 |
| 2.1.1 | <i>Ardoiellus</i> n. gen. ....                                  | 138 |
| 2.1.2 | <i>Ardoiellus montanus</i> n. sp. ....                          | 138 |
| 2.2   | <i>Enicmosoma</i> .....                                         | 139 |
| 2.2.1 | Subgenera.....                                                  | 139 |
| 2.2.2 | The species of <i>Enicmosoma</i> in southern Africa.....        | 139 |
| 3     | Key to the species of <i>Enicmosoma</i> in southern Africa..... | 148 |
| 4     | Complete species list of <i>Enicmosoma</i> .....                | 148 |
| 5     | References.....                                                 | 149 |

## 1 Introduction

The genus *Enicmosoma* (type species *E. punctum* Gebien, 1922) was established by GEBIEN (1922), based on three species from the Seychelles and Mauritius. The genus is placed in the tribe Lupropini Ardoïn, 1958 of the subfamily Lagriinae Latreille, 1825. The ovipositor is of the primitive type present in most Lagriinae, with the fourth coxite lobes long and digitiform, bearing short terminal gonostyles. Subsequently, several species of *Enicmosoma*

were described from Madagascar and Réunion (ARDOÏN 1958), one from Central Africa (ARDOÏN 1957), and one from South Africa (ARDOÏN 1964). FERRER (2005) added a species from Angola. The late Dr. SEBASTIAN ENDRÖDY-YOUNGA collected several diverse specimens from different localities in South Africa, deposited in the Museum Pretoria, which I found only recently, during my last visit. This South African material of *Enicmosoma* was unknown to me when redescribing *Terametis* Motschulsky, 1869 and discussing distributional patterns within this group

<sup>1</sup> Contributions to Tenebrionidae, no. 107. – For no. 106 see: Deutsche Entomologische Zeitschrift 60 (2013).

(SCHAWALLER 2007a). A further species was recently found in Zimbabwe, deposited in NHMB. All these newly collected specimens from South Africa and Zimbabwe turned out to be new species, which are described in the present contribution. A key to the *Enicmosoma* species in southern Africa and a list of all known species is given below. ARDOIN (1958) excluded the species *minutum* Brancsik, 1893 (Madagascar) and *natalis* Motschulsky, 1873 (Natal) from *Enicmosoma* with good arguments and placed both in *Heterophylus* Kluge, 1833. For the collecting localities of the treated species see map Fig. 1. The biological data are based on the information of the labels.

*Enicmosoma* is morphologically close to *Terametus* Motschulsky, 1869 from the Table Mountain on the Cape Peninsula. These two genera share the following external characters: eyes round and prominent with few but large ommatidia, terminal antennomeres distally without any distinct fields of sensilla, all tarsal segments and claws short, tibiae without external keels and without distinct spurs, punctuation on elytra irregular without rows or striae, general shape of the aedeagus with long basale and triangular apicale. The main differences between these two genera are in the structure of the lateral pronotal margins (smooth in *Terametus*, crenulate in *Enicmosoma*), and particularly in the segmentation of the antennae (11-segmented with loose 3-segmented club in *Terametus*, 10-segmented with compact 2-segmented club, or only with a single broad terminal antennomere in *Enicmosoma*). In *Terametus* the antennomere 3 is not elongate, in *Enicmosoma* the antennomere 3 is either not elongate or distinctly longer than antennomere 2.

Some specimens were found hiding in the Ditsong National Museum of Natural History in Pretoria among the numerous specimens of *Enicmosoma* from South Africa, which are similar to *Enicmosoma* but represent a different genus new to science, monotypical so far. These are described here as *Ardoiellus montanus* n. gen., n. sp. This flightless taxon might be a further endemic in the mountains of the Cape area (see SCHAWALLER 2011). It shares with *Terametus* the 11-segmented antennae with loose 3-segmented club, but differs mainly by longer and flat body, by visible scutellum and by reduced hind wings. Further genera of the tribe Lupropini in South Africa and Madagascar were treated by SCHAWALLER (2005, 2007b, 2011).

#### Acronyms of depositories

|      |                                                                    |
|------|--------------------------------------------------------------------|
| NHMB | Naturhistorisches Museum, Basel, Switzerland                       |
| SMNS | Staatliches Museum für Naturkunde, Stuttgart, Germany              |
| TMSA | Ditsong National Museum of Natural History, Pretoria, South Africa |

#### Acknowledgements

For the trustful loan of specimens from the collections under their care, for the permission to keep some duplicates in

SMNS, and for outstanding hospitality during my visits I thank RUTH MÜLLER (Pretoria), as well as Dr. MICHEL BRANCUCCI † and Dr. EVA SPRECHER (both Basel). South African authorities provided collecting permits for joint fieldwork of SMNS and TMSA. The photographs were taken by my colleague JOHANNES REIBNITZ (Stuttgart) with a Leica DFC320 digital camera on a Leica MZ16 APO microscope and subsequently processed by him with Auto-Montage (Syncroscopy) software. Last but not least I thank both referees, Dr. ROLAND GRIMM (Neuenbürg) and Dr. OTTÓ MERKL (Budapest), for improvements.

## 2 Taxonomy

### 2.1 *Ardoiellus*

#### 2.1.1 *Ardoiellus* n. gen.

**Etymology:** Named in honour of JEAN PAUL ARDOIN (1918–1978), pharmacist in Arcachon (France), specialist of *Enicmosoma* and other tenebrionids from Africa and Madagascar.

**Type species:** *Ardoiellus montanus* n. sp. by monotypy and present designation. The name is used in masculine gender.

**Diagnosis:** *Ardoiellus* n. gen. possesses all characters of the tribe Lupropini and is placed near *Enicmosoma* Gebien, 1922 and *Terametus* Motschulsky, 1869 (redescription and figures see SCHAWALLER 2007a). All species of these genera share small body size of 1.8–3.0 mm. Whereas in *Enicmosoma* species the antenna is 10-segmented with compact 2-segmented club or with broad terminal antennomere, in *Terametus* and *Ardoiellus* n. gen. the antenna is 11-segmented with loose 3-segmented club. *Ardoiellus* n. gen. can be separated from *Terametus* by flat pronotum widest before middle (highly convex and widest at base in *Terametus*), longer and flat elytra widest behind middle (round, highly convex and widest in middle in *Terametus*), visible scutellum (scutellum covered by pronotum in *Terametus*), and missing hind wings (present in *Terametus*).

#### 2.1.2 *Ardoiellus montanus* n. sp. (Figs. 2, 14)

**Holotype** (♂): South Africa, S Cape, Swartberg Pass, 1770 m, 1.VIII.1979, leg. W. BREYTENBACH, TMSA.

**Paratypes:** Same data as holotype, 1 ex. TMSA, 2 ex. SMNS. – South Africa, S Cape, Helderfontein, 1150 m, 8.III.1979, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, S Cape, Swartberge, E Blesberg, 2000 m, 5.XI.1978, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, S Cape, W Mt. Grootberg, 1450 m, 1.XI.1978, leg. S. ENDRÖDY-YOUNGA, 3 ex. TMSA, 2 ex. SMNS.

**Etymology:** Refers to the high altitude of the type locality in the Swartberge Mountains.

**Description:** Body length 1.8–2.5 mm. Dorsal and ventral surfaces and all appendages brown without colour pattern and without metallic shine; dorsal and ventral

surfaces punctured, punctures with microsetae, surface between punctures shining (Fig. 2). Head with punctation slightly coarser and denser than pronotum; genae somewhat swollen but not dilated, with transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae, consisting of about 20 ommatidia; maxillary palps with large securiform terminal palpomere; antennae with 11 antennomeres, shape of the antennomeres as in Fig. 2, antennomere 3 not elongate and as long as antennomere 2, terminal 3 antennomeres forming a loose club, all antennomeres with similar acute setae but without denser concentration of other sensilla. Pronotum widest before middle, anterior and posterior margins unbordered, lateral margins bordered and slightly undulate, anterior corners marked but not acute, posterior corners rectangular; surface convex with irregular punctation, punctures somewhat smaller than on head but of same size as on elytra, but punctation somewhat denser than on elytra, propleura with punctation coarser but sparser than on pronotum, prosternal process short and bent down, metasternal punctures larger laterally than medially. Scutellum visible, not covered by the pronotum. Hind wings completely missing. Elytra widest behind middle, lateral margins visible in dorsal view along anterior half of elytra, surface with irregular punctation not arranged in rows or striae, epipleura with punctation similarly large and dense as on elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered, membranes between ventrites 3/4 and 4/5 distinctly exposed. Legs without particular modifications, tibiae somewhat clavate, without external keels, tibial spurs absent, all tarsomeres short but broad in both sexes. Aedeagus (Fig. 14) with long basale and short spade-like apicale with rounded tip. Ovipositor with coxite lobe 4 long and digitiform, gonostyles short and attached apically, coxites combined shorter than paraproct. Without distinct external sexual dimorphism.

**Biological data:** Sifted from fynbos litter, or found in pitfall traps baited with fermented banana.

## 2.2 *Enicmosoma*

### 2.2.1 Subgenera

ARDOIN (1958) established the subgenera *Enicmosoma* s. str., *Enicmonota* and *Parenicmosoma*, which were later elevated to generic rank (ARDOIN 1964). However, this subgeneric classification was based on quite "weak" characters (i. e. shape of antennomeres, shape and colour of body). These characters cannot be the base for phylogenetical argumentation and therefore *Enicmonota* Ardoin, 1958 and *Parenicmosoma* Ardoin, 1958 are considered herein as junior synonyms of *Enicmosoma* Gebien, 1922.

### 2.2.2 The species of *Enicmosoma* in southern Africa

#### *Enicmosoma amatolensis* n. sp.

(Figs. 3, 15)

**Holotype** (♂): South Africa, Eastern Cape, Amatole Isidenge Forest Station, 18.XI.1987, leg. S. ENDRÖDY-YOUNGA, TMSA.

**Paratypes:** Same data as holotype, 2 ex. SMNS. – South Africa, Eastern Cape, Amatole Mts., Hogsback, II.1967, leg. L. SCHULZE, 2 ex. TMSA. – South Africa, Eastern Cape, Barkly East, II.1967, leg. L. SCHULZE, 1 ex. TMSA. – South Africa, Eastern Cape (labelled as Transkei), Dwesa Forest Reserve, 17.XII.1979, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Richards Bay, 5.XI.1992, leg. W. WITTMER, 1 ex. NHMB.

**Etymology:** Named after the Amatole Isidenge Forest Station, where the holotype was collected.

**Description:** Body length 2.5–2.8 mm. Dorsal and ventral surfaces and all appendages brown without metallic shine; dorsal and ventral surfaces punctured, punctures with longer adpressed, pale setae, surface between punctures shining (Fig. 3). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, with weak transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 3, antennomere 3 distinctly longer than antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest shortly before middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners rounded, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head and elytra, propleura with punctation smaller and sparser than on pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 15) with long basale and elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by smaller body size (less than 3.0 mm in the average), unicoloured light brown surface, antennomere 3 distinctly longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with rounded, slightly crenulate lateral margins and rounded anterior corners, shining surface of elytra between punctures, longer elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 15). For separation from the other species from southern Africa see the key below.

**Biological data:** Collected from fungous trunk of *Quercus*, beaten in forest, or netted from grass and inflorescences of *Arum* flowers.

*Enicmosoma capensis* **n. sp.**  
(Figs. 4, 16)

**Holotype** (♂): South Africa, Western Cape, Keurboomstrand, 15.XII.1976, leg. S. ENDRÖDY-YOUNGA, TMSA.

**Paratypes:** Same data as holotype, 2 ex. TMSA, 2 ex. SMNS. – South Africa, Eastern Cape, Heuningskloof, 6.XII.1995, leg. C. L. BELLAMY, 1 ex. TMSA.

**Etymology:** Named after the Cape of Good Hope, in whose vicinity the type series was collected.

**Description:** Body length 2.3–2.8 mm. Dorsal and ventral surfaces and all appendages brown without metallic shine; dorsal and ventral surfaces punctured, punctures with small adpressed, pale setae, surface between punctures shining (Fig. 4). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, with weak transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 4, antennomere 3 feebly longer than antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest shortly before middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners slightly marked but not prominent or acute, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head and elytra, propleura with punctation smaller and sparser than on pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 16) with long basale and elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by smaller body size (less than 3.0 mm in the average), unicoloured brown surface, antennomere 3 only feebly longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with nearly parallel, distinctly crenulate lateral margins and slightly marked anterior corners, shining surface of elytra between punctures, shorter elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 16). For separation from the other species from southern Africa see the key below.

**Biological data:** Collected from white flowering shrubs, or beaten from vegetation.

*Enicmosoma danieli* **n. sp.**  
(Figs. 5, 17)

**Holotype** (♂): South Africa, Eastern Cape (labelled as Transkei), Port St. Johns, Silaka, 29.XI. & 2.XII.1987, leg. S. ENDRÖDY-YOUNGA, TMSA.

**Paratypes:** Same data as holotype, 1 ex. TMSA. – South Africa, Mpumalanga, Mariepskop NR, Blyde River, 800–1000 m, 23.–26.XI.2008, leg. W. SCHAWALLER, 2 ex. SMNS. – South Africa, Limpopo, Lekgalameetse NR, 800–1000 m, 27.XI.–1.XII.2008, leg. W. SCHAWALLER, 2 ex. SMNS. – South Africa, Limpopo, Lekgalameetse NR, 850 m, 26.XI.–28.XI.2008, leg. R. MÜLLER, 4 ex. TMSA.

**Etymology:** Named in honour of DANIEL BARTSCH (Stuttgart), specialist of Sesiidae (Lepidoptera), for various support during our joint fieldwork in 2008, when parts of the type series were collected.

**Description:** Body length 3.0–3.5 mm. Dorsal and ventral surfaces and all appendages dark brown without metallic shine, in some specimens elytra with 2 indistinct darker longitudinal bands; dorsal and ventral surfaces punctured, punctures with small adpressed, pale setae, surface between punctures shining (Fig. 5). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, without distinct transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 5, antennomere 3 distinctly longer than antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest in middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners rounded, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head and elytra, propleura with punctation and setation similar to that of pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 17) with long basale and elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by larger body size (more than 3.0 mm in the average), dark brown surface with darker colour pattern on elytra, by antennomere 3 distinctly longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with rounded, dis-



tinctly crenulate lateral margins and rounded anterior corners, shining surface of elytra between punctures, shorter elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 17). For separation from the other species from southern Africa see the key below.

**Biological data:** Collected at UV-light, or by light trap.

*Enicmosoma freyi* Ardoin, 1964  
(Figs. 13, 18)

**Examined type material:** South Africa, NE Mpumalanga (labelled as Transvaal), Sabie (misspelled as Sabri in the description), I.1952, leg. G. FREY, ♀ holotype NHMB.

**New material:** South Africa, Gauteng (labelled as Transvaal), Kempton Park, I.1951, leg. A. R. CAPENER, 12 ex. TMSA, 5 ex. SMNS.

**Redescription:** Body length 3.0–3.5 mm. Dorsal and ventral surfaces and all appendages light brown without metallic shine; dorsal and ventral surfaces punctured, punctures with longer adpressed, pale setae, surface between punctures shining (Fig. 13). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, without distinct transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not encroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 13, antennomere 3 distinctly longer than antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest slightly before middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners rounded, posterior corners rectangular; surface feebly convex with punctation irregular, coarse and partly confluent, punctures similar to those of head and elytra, propleura with punctation and setation similar to that of pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins visible only shortly before apex, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 18) with long basale and elongate triangular apicale with rounded tip.

**Remarks:** To be recognized by larger body size (more than 3.0 mm in the average), unicoloured pale brown surface, antennomere 3 distinctly longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with nearly parallel, distinctly crenulate lateral margins and rounded anterior corners, shining surface of elytra between punctures, longer elytral setation, penul-

time tarsomeres broadened, and shape of the aedeagus (Fig. 18). For separation from the other species from southern Africa see the key below.

*Enicmosoma hararensis* n. sp.  
(Figs. 6, 19)

**Holotype** (♂): Zimbabwe, Harare, Mazoe Botanical Reserve, 1300 m, 10.II.1987, leg. W. WITTMER, NHMB.

**Paratypes:** Same data as holotype, 7 ex. NHMB, 3 ex. SMNS, 2 ex. TMSA.

**Etymology:** Named after Harare, the capital of Zimbabwe, where the type series was collected.

**Description:** Body length 2.5–3.0 mm. Dorsal and ventral surfaces and all appendages brown without colour pattern and without metallic shine; dorsal and ventral surfaces punctured, punctures with small adpressed, pale setae, surface between punctures shining (Fig. 6). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, with distinct transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not encroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 6, antennomere 3 distinctly longer than antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest in middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners slightly marked but not prominent or acute, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head and elytra, propleura with punctation and setation similar to that of pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 19) with long basale and elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by smaller body size (less than 3.0 mm in the average), unicoloured brown surface, antennomere 3 distinctly longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with nearly parallel, distinctly crenulate lateral margins and slightly marked anterior corners, shining surface of elytra between punctures, longer elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 19). For separation from the other species from southern Africa see the key below.

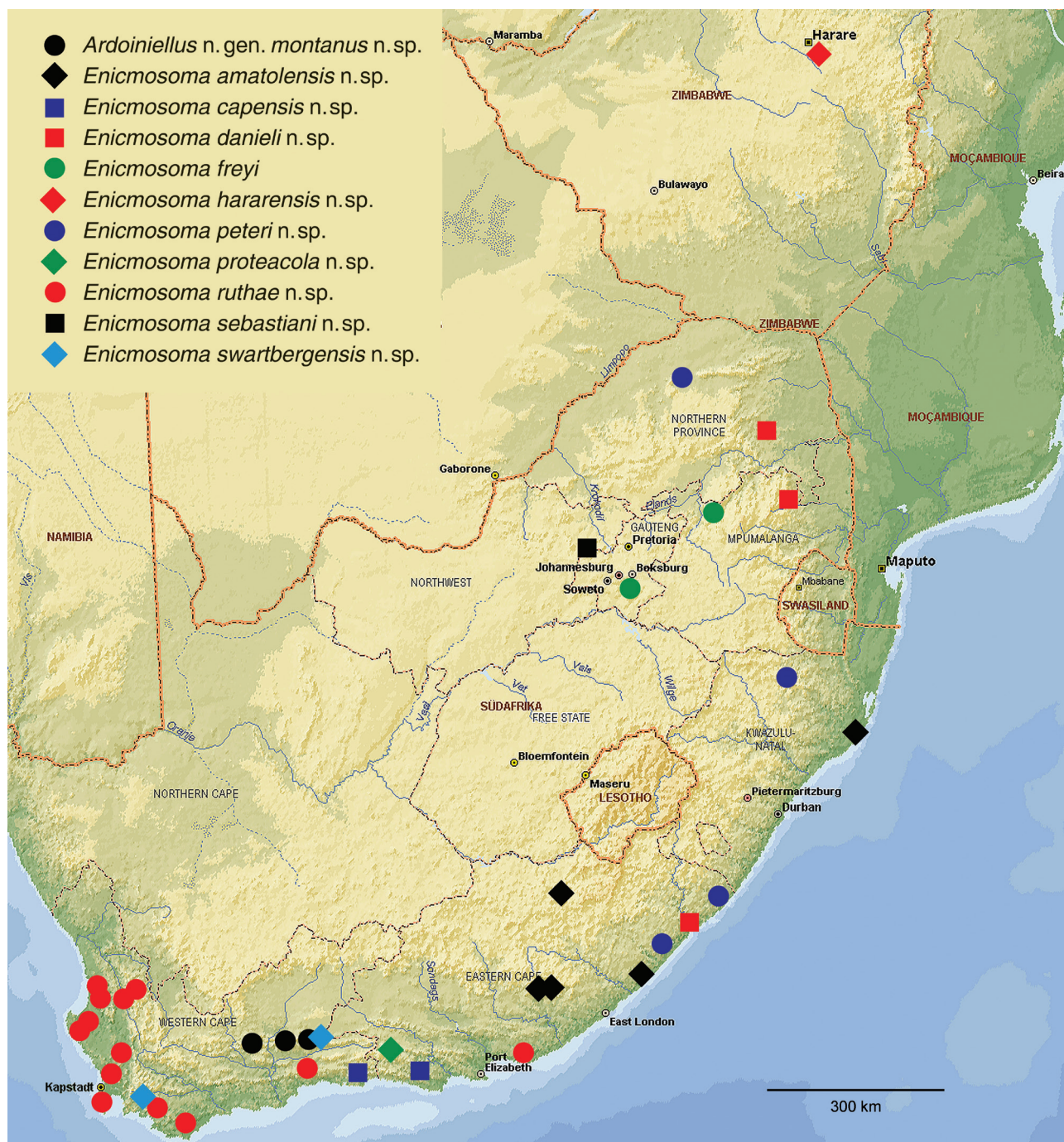


Fig. 1. Collecting localities of *Ardoiniellus montanus* n. gen., n. sp. and *Enicmosoma* species in southern Africa.

*Enicmosoma peteri* n. sp.  
(Figs. 7, 20)

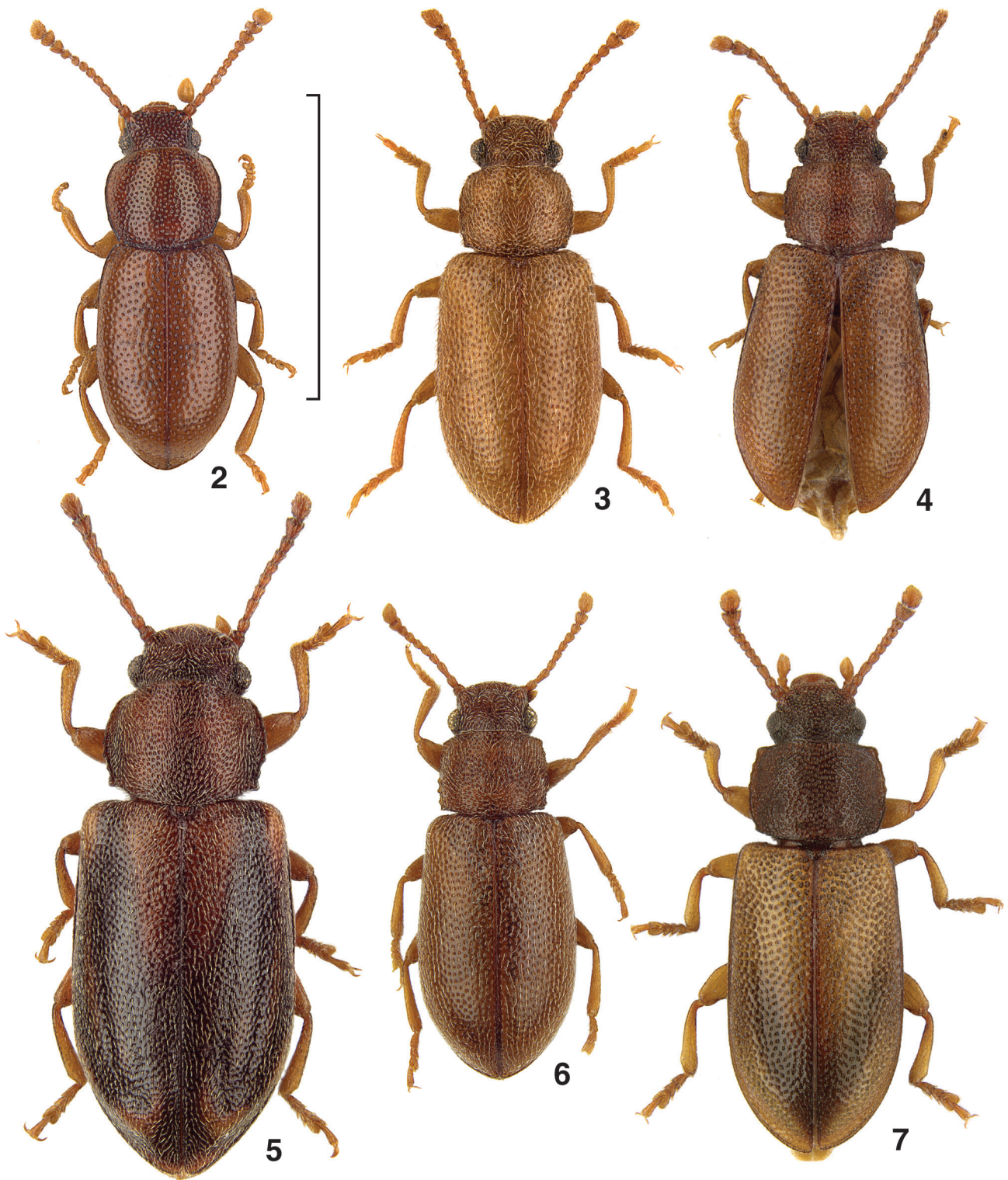
Holotype (♂): South Africa, Eastern Cape (labelled as Transkei), 12 km SE Wilovale, 14.XII.1979, leg. S. ENDRÖDY-YOUNGA, TMSA.

Paratypes: Same data as holotype, 2 ex. TMSA, 2 ex. SMNS. – South Africa, Eastern Cape (labelled as Transkei), Ntsu-

bane Forest, 24.XI.1988, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Vryheid, 29.–31.XII.2008, leg. P. SCHÜLE, 1 ex. SMNS. – South Africa, Limpopo (labelled as Transvaal), Motlakeng, Blouberg, 5000–6000 ft., 6.–15.I.1955, Transvaal Museum Expedition, 2 ex. TMSA, 1 ex. SMNS.

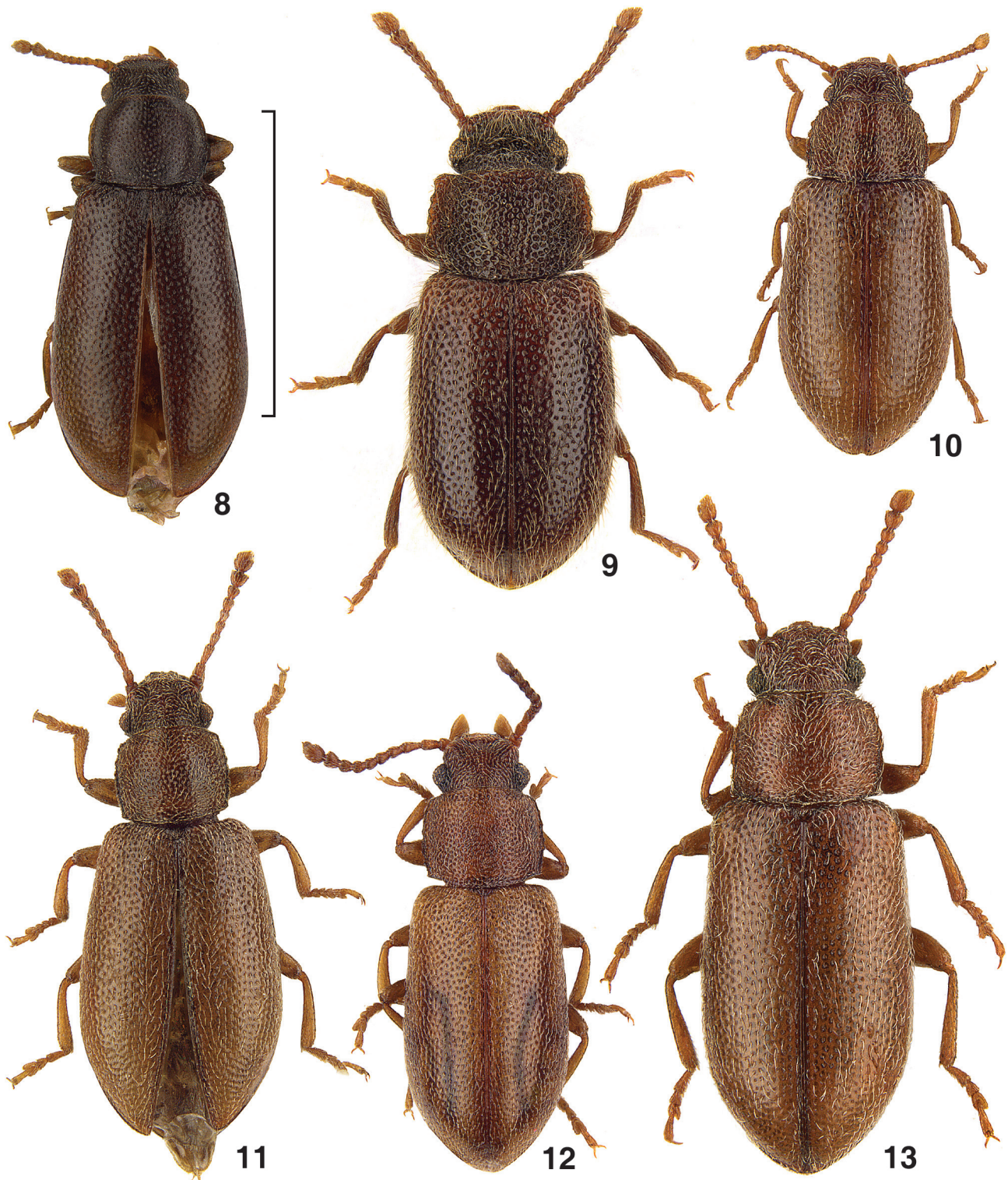
**Etymology:** Named in honour of PETER SCHÜLE (Herenberg), specialist of Carabidae, who collected part of the type series.





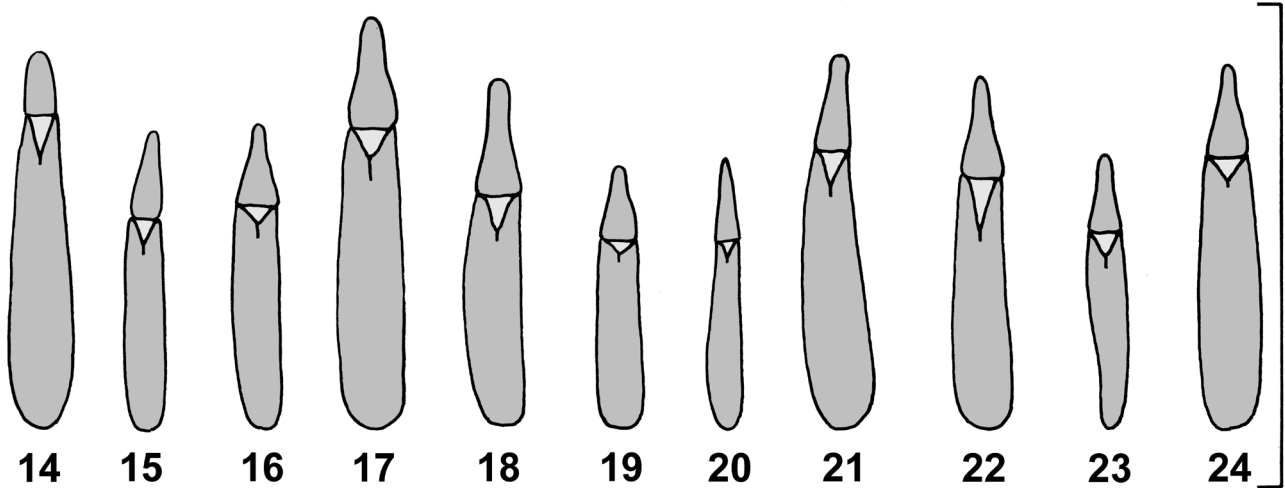
**Figs. 2–7.** Dorsal views of *Ardoiniellus* and *Enicmosoma* spp. – 2. *Ardoiniellus montanus* n. gen., n. sp., ♂ holotype TMSA. 3. *Enicmosoma amatolensis* n. sp., ♂ holotype TMSA. 4. *E. capensis* n. sp., ♀ paratype SMNS. 5. *E. danieli* n. sp., ♂ paratype SMNS. 6. *E. hararensis* n. sp., ♂ paratype SMNS. 7. *E. peteri* n. sp., ♂ paratype SMNS. – Scale: 2 mm.





**Figs. 8–13.** Dorsal views of *Enicmosoma* spp. – 8. *E. proteacola* n. sp., ♂ paratype SMNS. 9. *E. ruthae* n. sp., ♂ holotype TMSA. 10. *E. sebastiani* n. sp., ♂ paratype SMNS. 11. *E.* sp., ♀ TMSA. 12. *E. swartbergensis* n. sp., ♂ holotype TMSA. 13. *E. freyi*, ♀ holotype NHMB. – Scale: 2 mm.





**Figs. 14–24.** Aedeagi of *Ardoiniellus* and *Enicmosoma* spp. – 14. *Ardoiniellus montanus* n. gen., n. sp., ♂ holotype TMSA. 15. *Enicmosoma amatolensis* n. sp., ♂ holotype TMSA. 16. *E. capensis* n. sp., ♂ holotype TMSA. 17. *E. danieli* n. sp., ♂ holotype TMSA. 18. *E. freyi*, ♂ non-type SMNS. 19. *E. hararensis* n. sp., ♂ holotype NHMB. 20. *E. peteri* n. sp., ♂ holotype TMSA. 21. *E. proteacola* n. sp., ♂ holotype TMSA. 22. *E. ruthae* n. sp., ♂ holotype TMSA. 23. *E. sebastiani* n. sp., ♂ holotype TMSA. 24. *E. swartbergensis* n. sp., ♂ holotype TMSA. – Scale: 1 mm.

**Description:** Body length 3.0–3.5 mm. Dorsal and ventral surfaces and all appendages dark brown without metallic shine, in one specimen basal part of elytra distinctly lighter; dorsal and ventral surfaces punctured, punctures with very small adpressed, pale setae, surface between punctures dull (Fig. 7). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, without transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 7, antennomere 3 feebly longer than antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest in middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners slightly marked but not prominent or acute, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head and elytra, propleura with punctation smaller and sparser than on pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 20) with long basale and narrow elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by larger body size (more than 3.0 mm in the average), unicoloured light brown surface or sometimes with lighter basal part of the elytra, antennomere 3 only feebly longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with rounded, distinctly crenulate lateral margins and slightly marked anterior corners, dull surface of elytra between punctures, shorter elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 20). For separation from the other species from southern Africa see the key below.

**Biological data:** Collected from inflorescences of cabbage tree, and from rotten *Cussonia* fruit.

*Enicmosoma proteacola* n. sp.  
(Figs. 8, 21)

**Holotype** (♂): South Africa, Eastern Cape (labelled as Capland), Willowmore, 1.VIII.1916, leg. H. BRAUNS, TMSA.

**Paratypes:** Same data as holotype, 16 ex. TMSA, 4 ex. SMNS.

**Etymology:** Named after the shrub genus *Protea*, in whose blossoms the type series was collected.

**Description:** Body length 2.8–3.3 mm. Dorsal and ventral surfaces and all appendages dark brown without metallic shine; dorsal and ventral surfaces punctured, punctures with shorter adpressed, pale setae, surface between punctures shining (Fig. 8). Head with punctation similarly coarse and partly confluent as on pronotum; genae some-

what swollen but not dilated, with a feeble transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 8, antennomere 3 of similar length as antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest in middle, anterior and posterior margins unbordered, lateral margins unbordered but slightly crenulate, anterior corners rounded, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head and elytra, propleura with punctation and setation similar to that of pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 21) with long basale and elongate triangular apicale with knob-like rounded tip.

**Diagnosis:** To be recognized by medium body size (around 3.0 mm in the average), unicoloured dark brown surface, antennomere 3 not longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with rounded, slightly crenulate lateral margins and rounded anterior corners, shining surface of elytra between punctures, shorter elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 21). For separation from the other species from southern Africa see the key below.

**Biological data:** Collected from calyx of *Protea*.

*Enicmosoma ruthae* n. sp.

(Figs. 9, 22)

**Holotype** (♂): South Africa, Western Cape, Alexandria Forest Station, 4.–6.XII.1987, leg. S. ENDRÖDY-YOUNGA, TMSA.

**Paratypes:** Same data as holotype, 5 ex. TMSA. – South Africa, Western Cape, Houtbaai, Tierbos, XII.1960, leg. N. LELEUP, 16 ex. TMSA. – South Africa, Western Cape, Muizenberge, XI.–XII.1960, leg. N. LELEUP, 21 ex. TMSA. – South Africa, Western Cape, Table Mountain, Orange Kloof, XII.1960, leg. N. LELEUP, 3 ex. TMSA. – South Africa, Western Cape, Kirstenbosch, XI.1960, leg. N. LELEUP, 4 ex. TMSA. – South Africa, Western Cape, Cederberg, 500–1100 m, IV.1962, leg. N. LELEUP, 1 ex. TMSA. – South Africa, Western Cape, Kirstenbosch Botanical Gardens, 700 ft., 4.–7.I.1985, leg. C. E. GRISWOLD, 2 ex. TMSA. – South Africa, Western Cape, Hawequas, 5.XI.1973, leg. S. ENDRÖDY-YOUNGA, 6 ex. TMSA. – South Africa, Western Cape, Geelbek Forestry, 25.VIII.1983, leg. S. ENDRÖDY-YOUNGA & M. L. PENRITH, 1 ex. TMSA. – South Africa, Western Cape, Cederberg, Jeep track, 1380 m, 1.IX.1981, leg. S. ENDRÖDY-

YOUNGA, 1 ex. TMSA. – South Africa, Western Cape, Cederberg, Jeep track, 1130 m, 7.XI.1983, leg. S. ENDRÖDY-YOUNGA, 32 ex. TMSA, 10 ex. SMNS, 5 ex. NHMB. – South Africa, Little Karoo, E Raubenheimer Dam, 21.X.1993, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, Western Cape, Nuwedam Farm, 30.VIII.1981, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, Western Cape, 10 km NE Gansbaai, 27.VIII.1983, leg. S. ENDRÖDY-YOUNGA & M. L. PENRITH, 1 ex. TMSA. – South Africa, Western Cape, Brackfontein Farm, 23.VIII.1983, leg. S. ENDRÖDY-YOUNGA & M. L. PENRITH, 1 ex. TMSA. – South Africa, Western Cape, Nortier Farm, 25.VIII.1983, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, Western Cape, Bookram Farm, 30.VIII.1981, leg. S. ENDRÖDY-YOUNGA, 3 ex. TMSA. – South Africa, Western Cape, Arniston, dunes, 29.VIII.1983, leg. S. ENDRÖDY-YOUNGA & M. L. PENRITH, 1 ex. TMSA. – South Africa, Western Cape, Cederberg, Devil's Kloof, 850 m, 9.XI.1983, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – South Africa, Western Cape, Cederberg, Elandsloof, 820 m, 17.XI.2007, leg. E. COLONELLI, 1 ex. SMNS.

**Etymology:** Named in honour of RUTH MÜLLER (Pretoria), collection manager of the Ditsong National Museum of Natural History Pretoria for various support and hospitality during joint fieldwork and comparative studies of the author in Pretoria.

**Description:** Body length 2.5–3.5 mm. Dorsal and ventral surfaces and all appendages dark brown without metallic shine, in some specimens basal and lateral parts of elytra indistinctly lighter; dorsal and ventral surfaces punctured, punctures with long erect, pale setae, surface between punctures shining (Fig. 9). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, with distinct transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 9, antennomere 3 feebly longer than antennomere 2, terminal 2 antennomeres forming loose club, terminal antennomere feebly bipartite. Pronotum widest in middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners distinctly prominent but not acute, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head but slightly larger and denser than on elytra, propleura with punctation smaller and sparser than on pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventrites with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 22) with long basale and elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by medium body size (around 3.0 mm in the average), unicoloured dark brown



surface or sometimes basal and lateral parts of elytra lighter, antennomere 3 only feebly longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with nearly parallel, distinctly crenulate lateral margins and prominent anterior corners, shining surface of elytra between punctures, longer elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 22). For separation from the other species from southern Africa see the key below.

**Biological data:** Collected from humus, by pit-fall traps baited with banana or faeces, by shorewashing, sifted at the edge of marsh, sifted from indigenous forest litter, or taken from beneath stones.

*Enicmosoma sebastiani* **n. sp.**  
(Figs. 10, 23)

**Holotype** (♂): South Africa, Mpumalanga (labelled as Transvaal), Magaliesberg, 8.IV.1973, leg. S. ENDRÖDY-YOUNGA, TMSA.

**Paratypes:** Same data as holotype, 4 ex. TMSA, 2 ex. SMNS.

**Etymology:** Named in honour of the late Dr. SEBASTIAN ENDRÖDY-YOUNGA (1934–1999), coleopterist in the Hungarian Natural History Museum Budapest, then in the Transvaal Museum Pretoria, who collected not only the type series of this new species, but also material of several congeners.

**Description:** Body length 2.3–2.8 mm. Dorsal and ventral surfaces and all appendages brown without colour pattern and without metallic shine, some specimens dark brown; dorsal and ventral surfaces punctured, punctures with longer adpressed, pale setae, surface between punctures shining (Fig. 10). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, with weak transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 10, antennomere 3 distinctly longer than antennomere 2, only terminal antennomere broadened, not bipartite. Pronotum widest in middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners rounded, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head but slightly denser than on elytra, propleura with punctation and setation similar to that of pronotum, metasternal punctures larger laterally than medially. Hind wings completely developed. Elytra widest behind middle, lateral margins visible in dorsal view along anterior half of elytra, surface with punctation irregularly arranged in rows, epipleura with punctation large and dense similar to elytra. Ventrites with punctures larger laterally than medially, terminal ven-

trite unbordered. Legs without particular modifications. Aedeagus (Fig. 23) with long basale and elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by smaller body size (less than 3.0 mm in the average), unicoloured brown surface, antennomere 3 distinctly longer than 2, antennae 10-segmented with only the terminal antennomere broadened, pronotum with rounded, distinctly crenulate lateral margins and rounded anterior corners, shining surface of elytra between punctures, longer elytral setation, penultimate tarsomeres not broadened, and shape of the aedeagus (Fig. 23). For separation from the other species from southern Africa see the key below.

**Remarks:** This species differs from the other congeners by the antennae with 10 antennomeres but with only the last antennomere broadened (in all other species 10-segmented with the last 2 antennomeres broadened), and by the penultimate tarsomeres not broadened.

**Biological data:** Collected from flowering shrubs.

*Enicmosoma swartbergensis* **n. sp.**  
(Figs. 12, 24)

**Holotype** (♂): South Africa, Western Cape, Swartberge, E Blesberg, 2000 m, 6.XI.1978, leg. S. ENDRÖDY-YOUNGA, TMSA.

**Paratypes:** Same data as holotype, 1 ex. TMSA, 1 ex. SMNS. – South Africa, Western Cape, Caledon Distr., Revier Sonder End, I.1961, leg. N. LELEUP, 2 ex. TMSA.

**Etymology:** Named after the Swartberge Mountains, where the type series was collected in higher altitudes.

**Description:** Body length 2.7–3.3 mm. Dorsal and ventral surfaces and all appendages brown without metallic shine, elytra posteriorly with 2 indistinct darker longitudinal stripes; dorsal and ventral surfaces punctured, punctures with small adpressed, pale setae, surface between punctures shining (Fig. 12). Head with punctation similarly coarse and partly confluent as on pronotum; genae somewhat swollen but not dilated, without distinct transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes round and prominent, not enchroached by genae; antennae with 10 antennomeres, shape of the antennomeres as in Fig. 12, antennomere 3 not longer than antennomere 2, terminal 2 antennomeres forming a loose club, terminal antennomere feebly bipartite. Pronotum widest in middle, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corners rounded and not marked, posterior corners rectangular; surface convex with punctation irregular, coarse and partly confluent, punctures similar to those of head but slightly denser than on elytra, propleura with punctation smaller and sparser than on pronotum, metasternal punctures larger

laterally than medially. Hind wings reduced, basal parts present. Elytra widest behind middle, lateral margins completely visible in dorsal view, surface with irregular punctation not arranged in rows or striae, epipleura with punctation large and dense, similar to that of elytra. Ventriles with punctures larger laterally than medially, terminal ventrite unbordered. Legs without particular modifications. Aedeagus (Fig. 24) with long basale and elongate triangular apicale with rounded tip.

**Diagnosis:** To be recognized by medium body size (around 3.0 mm in the average), brown surface with darker colour pattern on elytra, antennomere 3 not longer than 2, antennae 10-segmented with the 2 last antennomeres broadened, pronotum with nearly parallel, distinctly crenulate lateral margins and rounded anterior corners, shining surface of elytra between punctures, longer elytral setation, penultimate tarsomeres broadened, and shape of the aedeagus (Fig. 24). For separation from the other species from southern Africa see the key below.

**Biological data:** Collected by sweeping grass.

*Enicosoma* sp.  
(Fig. 11)

**Material:** South Africa, KwaZulu-Natal, Tongaat beach, 18.–30.I.1992, leg. S. ENDRÖDY-YOUNGA, 1 ♀, 1 damaged ex. TMSA.

**Remarks:** The material is too poor to decide whether it represents an additional new species or if it belongs to *E. proteacola* n. sp. (but the two specimens have longer dorsal setation, longer antennomere 3 and flatter pronotum than *E. proteacola* n. sp.).

**Biological data:** Collected from coastal shrub.

### 3 Key to the species of *Enicosoma* in southern Africa

- 1 Antennomere 3 not elongate, or at most slightly longer than antennomere 2..... 2
- Antennomere 3 elongate, distinctly longer than antennomere 2..... 6
- 2 Pronotum transverse, maximum width nearly equal to width of elytral basis, with distinctly prominent anterior corners. – Figs. 9, 22..... *E. ruthae* n. sp.
- Pronotum subquadrate, maximum width narrower than width of elytral basis, with slightly marked or rounded anterior corners..... 3
- 3 Surface of pronotum and elytra between punctures dull, dorsal setae shorter than puncture diameter, body larger in the average (3.0–3.5 mm), elytra 1.8 times as long as broad. – Figs. 7, 20..... *E. peteri* n. sp.
- Surface at least on elytra between punctures shining, dorsal setae slightly or distinctly longer than puncture diameter, body smaller in the average (2.3–3.3 mm), elytra 1.6–1.7 times as long as broad..... 4
- 4 Pronotum convex, surface slightly dull and chagreened between punctures, lateral margins only slightly crenulate; dor-

sal setae of elytra only slightly longer than puncture diameter. – Figs. 8, 21..... *E. proteacola* n. sp.

- Pronotum nearly flat, surface shining between punctures, lateral margins distinctly crenulate; dorsal setae of elytra distinctly longer than puncture diameter..... 5
- 5 Pronotum with rounded anterior corners, body larger in the average (2.7–3.3 mm), elytra with darker longitudinal stripes; wingless species from high altitude mountain habitats. – Figs. 12, 24..... *E. swartbergensis* n. sp.
- Pronotum with slightly marked anterior corners, body smaller in the average (2.3–2.8 mm), elytra brown without dark patterns; species with wings from lowland habitats. – Figs. 4, 16..... *E. capensis* n. sp.
- 6 Antennae 10-segmented with only the terminal antennomere broadened, penultimate tarsomeres not broadened, elytral setation arranged in longitudinal rows. – Figs. 10, 23..... *E. sebastiani* n. sp.
- Antennae 10-segmented with compact 2-segmented club, penultimate tarsomeres broadened, elytral setation irregular..... 7
- 7 Body larger in the average (3.0–3.5 mm)..... 8
- Body smaller in the average (2.5–3.0 mm)..... 9
- 8 Punctures of pronotum and elytra sparser, on elytra interspaces between punctures distinctly wider than puncture diameter, dorsal setation longer, body unicoloured light brown. – Figs. 13, 18..... *E. freyi*
- Punctures of pronotum and elytra narrower, on elytra interspaces between punctures as wide as or narrower than puncture diameter, dorsal setation shorter, body dark brown and elytra with darker colour pattern. – Figs. 5, 17..... *E. danieli* n. sp.
- 9 Pronotum with nearly parallel lateral margins, lateral margins distinctly crenulate, anterior corners of pronotum slightly marked; Zimbabwe. – Figs. 6, 19..... *E. hararensis* n. sp.
- Pronotum with rounded lateral margins, lateral margins only slightly crenulate, anterior corners of pronotum completely rounded; Eastern Cape. – Figs. 3, 15..... *E. amatolensis* n. sp.

### 4 Complete species list of *Enicosoma*

|                                     |                                   |
|-------------------------------------|-----------------------------------|
| <i>amatolensis</i> n. sp.           | South Africa                      |
| <i>barclayi</i> Ferrer, 2005        | Angola                            |
| <i>burbonense</i> Ardoïn, 1957      | La Réunion                        |
| <i>cantaloubei</i> Ardoïn, 1957     | Cameroon, Congo, Uganda, Tanzania |
| ssp. <i>guineensis</i> Ardoïn, 1957 | French Guinea                     |
| <i>capensis</i> n. sp.              | South Africa                      |
| <i>crassicornis</i> Ardoïn, 1958    | Madagascar                        |
| <i>danieli</i> n. sp.               | South Africa                      |
| <i>decorsei</i> Ardoïn, 1958        | Madagascar                        |
| ssp. <i>haafi</i> Ardoïn, 1964      | Madagascar                        |
| <i>freyi</i> Ardoïn, 1964           | South Africa                      |
| <i>gebieni</i> Ardoïn, 1958         | Madagascar                        |
| <i>hararensis</i> n. sp.            | Zimbabwe                          |
| <i>insulare</i> Ardoïn, 1958        | Madagascar                        |
| <i>lathridioides</i> Gebien, 1922   | Mauritius (Rodriguez)             |
| <i>lineatum</i> Ardoïn, 1958        | Madagascar                        |
| <i>nebulosum</i> Ardoïn, 1958       | Madagascar                        |
| <i>nitens</i> Ardoïn, 1958          | Madagascar                        |
| <i>peteri</i> n. sp.                | South Africa                      |



|                                     |                       |
|-------------------------------------|-----------------------|
| <i>proteacola</i> n. sp.            | South Africa          |
| <i>punctatissimum</i> Ardoïn, 1958  | Madagascar            |
| <i>punctum</i> Gebien, 1922         | Seychelles (Mahé)     |
| <i>quadrimaculatum</i> Ardoïn, 1958 | Madagascar            |
| <i>ruthae</i> n. sp.                | South Africa          |
| <i>sebastiani</i> n. sp.            | South Africa          |
| <i>swartbergensis</i> n. sp.        | South Africa          |
| <i>uncinatum</i> Gebien, 1922       | Mauritius (Rodriguez) |
| <i>vadoni</i> Ardoïn, 1958          | Madagascar            |

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Author's address:

Dr. WOLFGANG SCHAWALLER, Staatliches Museum für Naturkunde, Rosenstein 1, 70191 Stuttgart, Germany;  
e-mail: wolfgang.schawaller@smns-bw.de

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