

Scarabaeoidea (Insecta: Trogidae, Ochodaeidae, Scarabaeidae) from Albania, with two first country records, and taxonomic comments on the genus *Rhyssemus* Mulsant, 1842

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Zusammenfassung

74 Exemplare von 17 Arten der Blatthornkäfer (Scarabaeoidea) aus Albanien von einer Exkursion im Mai 2018 werden mitgeteilt. *Ochodaeus integriceps* Semenov, 1891 und *Rhyssemus meridionalis* Reitter, 1890 sind Erstnachweise für Albanien. Die Taxonomie der *Rhyssemus*-Arten wird kommentiert und morphologisch ähnliche Arten werden verglichen. *Rhyssemus germanus* (Linnaeus, 1767) weist in Deutschland eine variable Struktur des Pronotum auf. Demzufolge sind *Rhyssemus vinodolensis* Petrovitz, 1963 und die spanische Art *Rhyssemus cantabricus* Balthasar, 1961 vermutlich Synonyme von *R. germanus*. Weitere Untersuchungen, insbesondere der Typusexemplare, sind hinsichtlich der Struktur des Pronotum erforderlich. Unsere Verbreitungskarte zeigt, *R. vinodolensis* ist im westlichen Teil der Balkan-Halbinsel von Südwest-Ungarn und Kroatien bis Griechenland verbreitet, und *R. meridionalis* kommt in Albanien, Griechenland und in der Türkei vor.

Summary

74 specimens of 17 species of scarabaeoid beetles (Scarabaeoidea) are reported from Albania from a field trip in May 2018. *Ochodaeus integriceps* Semenov, 1891 and *Rhyssemus meridionalis* Reitter, 1890 are first records for Albania. The taxonomy of the *Rhyssemus* species is discussed and morphologically similar species are compared. *Rhyssemus germanus* (Linnaeus, 1767) shows a variable structure of the pronotum in Germany. Accordingly, *Rhyssemus vinodolensis* Petrovitz, 1963 and the Spanish species *Rhyssemus cantabricus* Balthasar, 1961 are probably synonyms of *R. germanus*. Further studies, especially of the type specimens, are required with regard to the structure of the pronotum. Our distribution map shows *R. vinodolensis* is distributed in the western part of the Balkan Peninsula from southwest Hungary and Croatia to Greece, and *R. meridionalis* occurs in Albania, Greece and Turkey.

Key words: Coleoptera, faunistics, presumed synonymy, pronotum structure

Introduction

The fauna of the Scarabaeoidea of Albania is currently well-known, at least in comparison with other families of Coleoptera. Important publications from the second half of the 20th century include works by MIKŠIĆ (1956a, 1956b, 1959, 1971), SCHULZE (1963) and PETROVITZ (1969). At the beginning of the 21st century, only smaller faunistic papers were published for Albania, often with first records (e. g., MÜHLFEIT 2017, KRÁL et al. 2021). Reviews by LÖBL & LÖBL (2016) and BYK et al. (2019) reflect the current state of knowledge of the Scarabaeoidea fauna of Albania.

Nonetheless, there are various gaps in knowledge. For example, the identification and differentiation of the species of the genus *Rhyssemus* is difficult.

For this reason, the aim of our study is threefold. Firstly, scarabaeoid species reported for Albania for the first time and new records are documented. These beetles are from a car net trip in southern Albania in 2018 (KLEEGERG & BRACHAT 2021). Secondly, the determination of two specimens of *Rhyssemus vinodolensis* Petrovitz, 1963 from Albania is used to study its identity and difficult differentiation from *R. germanus* (Linnaeus, 1767). Thirdly, based on recent records, the distribution of *R. vinodolensis* and *R. meridionalis* is presented.

Material and Methods

The beetles were examined with a Zeiss GSM stereomicroscope. The images of the habitus and of the pronotum were taken with the SLR camera Canon EOS 760D connected via an LMscope 1X–42 mm photo tube attached to an Olympus SZX10 stereomicroscope. The camera was controlled by EOS Utility v. 3.0 software. Between 40 and 65 single shots of the beetles

were stacked into one image using Combine ZM v. 1.0. Distribution maps were created using MapCreator 3.0 free edition. The terms used to characterise the pronotum of *Rhyssemus* Mulsant, 1842 correspond to RA-KOVIĆ, KRÁL & MENCL (2016: 88). According to this, the counting of the furrows is from the anterior margin to the posterior margin of the pronotum.

In the present study, material from the following collections (coll.) of private individuals and institutions was used:

- cEHV – coll. Eckart Heise (Vastorf, Germany)
- cERS – coll. Eckehard Rößner (Schwerin, Germany)
- cMLN – coll. Michael Langer (Niederwiesa, Lichtenwalde, Germany)
- MHNG – Muséum d'Histoire Naturelle, Genf (Switzerland)
- MNVD – Museum of Natural History and Prehistory Dessau (Germany)
- NME – Museum of Natural History Erfurt (Germany)

Species list Scarabaeoidea

Material from leg. A. Kleeberg, det. and coll. E. Rößner. Species marked with an asterisk (*) are annotated following the species list.

Përmet, Alipostivan, car net, ca. 700 m, 22. May 2018:

Scarabaeoidea

Trogidae

Trox niger Rossi, 1792, 1 ♂,

Ochodaeidae

Ochodaeus integriceps Semenov, 1891, 1 ♂. – New for Albania,

Scarabaeidae: Aphodiinae

Aphodiini

Acanthobodilus immundus (Creutzer, 1799), 1 ind.,

Eudolus quadriguttatus (Herbst, 1783), 1 ind.,

Subrinus sturmi (Harold, 1870), 1 ind.,

Psammodiini

Pleurophorus caesus (Panzer, 1796), 50 ind.,

Psammodius laevipennis A. Costa, 1844, 3 ind.,

Rhyssemus meridionalis Reitter, 1890, 1 ind. (Fig. VI/1). – New for Albania,*

Rhyssemus vinodolensis Petrovitz, 1963, 2 ind. (Fig. II/3),*

Scarabaeidae: Melolonthinae

Rhizotrogini

Haplidia transversa transversa (Fabricius, 1801), 1 ♂, 2 ♀,

Scarabaeidae: Rutelinae

Maladera (Macroserica) apfelbecki Petrovitz, 1969, 1 ♀.

Field trip to Southern Albania, 20.–23. May 2018:

Scarabaeoidea

Scarabaeidae: Glaphyridae

Eulasia (Trichopleurus) pareyssei (Brullé, 1832): S-Albanien, Këlcyrë, Kodër, Drinos Ufer, 23.05.2018, 1 ind.,

Scarabaeidae: Geotrupidae

Typhoeus lateridens (Guerin, 1838): S-Albanien, Les-covice, 22.05.2018, 1 ♂,

Scarabaeidae: Melolonthinae

Hopliini

Hoplia (Hoplia) argentea (Poda, 1761): S-Albanien, Përmet, Ogduman, Fagia Tabori, 21.05.2018, 1 ind.,

Scarabaeidae: Sericinae

Omaloplia (Omaloplia) corcyrae (Baraud, 1965): S-Albanien, Përmet, Alipostivan, 600–900 m, 20.05.2018, 1 ♂, 1 ♀,

Scarabaeidae: Rutelinae

Anomala vitis (Fabricius, 1775): S-Albanien, Përmet, Ogduman, Fagia Tabori, 21.05.2018, 1 ind.,

Anisoplia (Anisoplia) flavipennis Brullé, 1832: S-Albanien, Përmet, Ogduman, Fagia Tabori, 21.05.2018, 3 ind.

***Rhyssemus vinodolensis* Petrovitz, 1963 and *Rhyssemus germanus* (Linnaeus, 1767)**

The identification of the two specimens of *Rhyssemus vinodolensis* Petrovitz, 1963 from Albania, listed in the species list, led to more intensive investigations, as its identity to or delimitation from *R. germanus* (Linnaeus, 1767) remain insufficiently known. The findings obtained in this context are discussed here.

Rhyssesus germanus (Linnaeus, 1767):

– Type material: The species was described as *Ptinus germanus* Linnaeus, 1767. Although a type specimen (Fig. I/2–4) exists in the Carl von Linné Collection of the Linnean Society of London, it was never examined in the context of redescription. LINNÉ (1767) gives "Germania" [Germany; in the understanding of the time: in the early modern period as a state entity "Roman Empire of the German Nation"] as patria (Fig. I/1). For the description of the species, Linné had material from Daniel Gottfried Schreber; he lived and worked mainly in Bützow (Mecklenburg) and Central Germany (Halle, Leipzig), so that it is apparent that the type material comes from the eastern part of today's Germany. Consequently, the populations from Germany have a special significance for the characterisation of the morphology of *R. germanus*.

– A very important taxonomic feature is the structure of the furrows of the pronotum. The identification keys are also predominantly oriented according to this. All keys identify *R. germanus* as a species with the pronotal furrows granulated to wrinkled-granulated (Tab. 1). According to our investigations, the sculpture of the furrows of the pronotum of *R. germanus* is subject to considerable variability, both in Germany and in Central Europe as a whole (see 1.).

- a) Furrows I+II: with short, irregular, raised transverse folds; furrows III-V + posterior longitudinal furrow: with short, irregular transverse folds, also with a few simple dots. Example: Germany, Meissen (Fig. III/1). This sculpture is the most common

in *R. germanus* and is largely reflected in the characterisation of BALTHASAR (1964: 562). Compare also MINKINA & KRÁL (2018: Fig. 23).

- b) All furrows dotted, the dots irregularly transverse and without granules in their centre. Example: Germany, Meissen (Fig. III/2). Such specimens together with specimens as mentioned under a).
- c) All furrows roundly punctate, in the centre of each point with a small granule surrounded by a large areola. Example: Germany, Wyhl (Fig. IV/1). The tendency of the punctuation of the pronotum described here apparently continues from the north (Wyhl in Baden-Württemberg) southwards through Switzerland (Geneva), Italy (Rome) to Calabria in southern Italy (Nicotera), but also westwards in France (Dordogne). The specimens are very similar in this character to the species *Rhyssesus puncticollis* Brown, 1929, which also occurs in Germany. However, the two species differ, among other things, in the body shape, the structure of the elytra and the punctuation of the femora (cf. RÖSSNER 2012, 2021; BYK & MINKINA 2014).

This form of punctuation of the pronotum is identical with the expression of the punctuation of *Rhyssesus cantabricus* Balthasar, 1961, as comparison with a specimen from Spain, Ponferrada (= locus typicus) shows. The original description of *R. cantabricus* by BALTHASAR (1961) also confirms this feature: "The posterior transverse furrows densely but not particularly strongly punctate, the anterior transverse furrows punctate." This suggests a synonymy of *R. cantabricus* with *R. germanus*.

Tab. 1: Citations from literature containing identification tables *Rhyssesus* with the placement of *Rhyssesus germanus* (L.).

Authors	Citations for the placement of <i>Rhyssesus germanus</i> (L.) in the determination keys
REITTER (1893: 27)	4" Alle Furchen des Halsschildes am Grunde erloschen granuliert oder gerunzelt.
BEDEL (1911: 90)	3. Intervalles des bourrelets du pronotum rugueux ou rapeux, non ponctués.
SCHMIDT (1922: 500)	30 Thorax in den Furchen granuliert, diese sind breiter als die Wülste.
BALTHASAR (1964: 561)	46 (19) Die Querfurchen des Halsschildes sind deutlich granuliert oder die vorderen dicht quergerunzelt, die hinteren sehr selten mit einigen beigemischten, unscharfen Punkten.
PAULIAN & BARAUD (1982: 216)	4. Au moins les sillons transversaux du pronotum nettement granulés ou ridés.
BARAUD (1977: 139)	5- Les sillons transversaux du pronotum sont nettement granulés ou bien les antérieurs à pontuation ridée en travers, les postérieurs très rarement avec quelques points non marqués mélangés.
BARAUD (1985: 228)	6- Sillons transversaux du pronotum nettement granuleux, ou bien les antérieurs densément ridés, les postérieurs très rarement avec un mélange de points bien marqués.
BARAUD (1992: 297)	5. Au moins le sillon transversal postérieur et le sillon longitudinal du pronotum avec pontuation très nette, simple ou ocellée.
DELLACASA (2004: 131)	2 (1) Pronoto ..., solchi con punteggiatura granulosa.

Conclusion: The furrows of the pronotum of *R. germanus* are mostly irregularly granulate in the form of short transverse folds and wrinkles. However, they are also very often partially or completely irregularly punctate, with or without reduced granules. The dots may be partially or completely small-granulate in the middle (often referred to as ocellate or umbilicate in the literature).

Rhyssesus vinodolensis Petrovitz, 1963:

- The species was described from a specimen from Vinodol [Adriatic hinterland in the northwest of Croatia] (PETROVITZ 1963). Type specimen in the MHNG (DELLACASA 1988: 307); two specimens from Vinodol are present in the Petrovitz MNHG collection (PIEROTTI 1982). The species is one of the little known *Rhyssesus* species in Europe.
- In his original description PETROVITZ (1963) compares the species with *Rhyssesus macedonicus* Bénard, 1923. The species *R. macedonicus* was described from Vertékop [= Skhidra] south-east of Vodéna [= Edessa in Greece, Macedonia] and occurs eastwards via Turkey to Iran. The reason for the comparison is the matching feature of the granulated transverse ridges and the structure of the transverse furrows: "... the transverse furrows together with the sides are densely, finely and evenly granulated ...".
- Comparison with *R. macedonicus*: According to the original description, in *R. macedonicus* the intervals of the elytra are approximately single row granulated, as the inner row of each interval, with the usual small granules, is very much rudimentary and hardly visible (Fig. V/2). According to our investigations, this feature is not constantly pronounced, because the inner row of small granules is present and more or less visible depending on the condition of each specimen (Fig. II/4). In *R. germanus* and *R. vinodolensis* the intervals of the elytra are somewhat more distinctly granulated in two rows, the granules being more flat, scale-like. The males of *R. macedonicus* have a more curved terminal spine of the protibiae (Fig. V/3, 4) and differ in this feature from all other European *Rhyssesus*. Finally, in *R. macedonicus* the furrows of the pronotum have a largely

uniformly large, round granulation. The individual granules are each well demarcated from one another by an areola surrounding them (Fig. V/1).

- PIEROTTI (1982) examined specimens of *R. vinodolensis* from the Petrovitz collection of the MHNG and other specimens from northern Macedonia and Greece, which he assigned to this species. In contrast to PETROVITZ (1963), he noted the great morphological similarity to *R. germanus* and compared the two species. As an essential character for the distinction he mentions:
R. vinodolensis – at least the fourth transverse furrow of the pronotum with distinct, roundish granules.
R. germanus – also the fourth transverse furrow of the pronotum with transverse folds, at most mixed with irregular granules or more or less distinct dots. As a result, Pierotti concludes that *R. germanus* and *R. vinodolensis* are vicariants and does not exclude that *vinodolensis* is a subspecies of *R. germanus*. Probably BYK et al. (2019) follow this account for their first record of *R. vinodolensis* for Albania.

Conclusion:

Following the results of PIEROTTI (1982), we noted specimens from Hungary, Albania and Bosnia-Herzegovina (see below for actual records), in which the furrows of the pronotum predominantly to exclusively show larger roundish granules (Fig. IV/2); furrow I+II: with roundish to transverse oval granules; furrow III–V + posterior longitudinal furrow: with larger, roundish to transverse oval granules, these surrounded by a flat areola; without raised transverse folds. Thus, these specimens correspond to *R. vinodolensis*.

Specimens from two studied populations from Albania (Akerni and Baks-Rjollë) demonstrate the range of variation in the sculpture of the pronotum: furrows I+II: with rounded to transverse oval granules or with transverse folds (as mentioned under *R. germanus* a); furrows III–V: with small granules (as mentioned under *R. germanus* c) or with larger granules (as described for *R. vinodolensis*); posterior longitudinal furrow: with irregular, simple, flat dots or with longitudinal wrinkled granules. We assign these specimens to *R. vinodolensis*, but see in several specimens a position between *R. germanus* and *R. vinodolensis*.

We cannot confirm the differences in body size and shape between *R. vinodolensis* and *R. germanus* as reported by PIEROTTI (1982).

It remains open whether *R. germanus* and *R. vinodolensis* are conspecific. We consider it very probable that the name *vinodolensis* is to be placed as a synonym of *Rhyssenus germanus*. The reasons for this lie in the great variation in the structure of the pronotum of *R. germanus* – it ranges from completely punctate to completely granulate. German or Central European specimens of *R. germanus* also often have rounded granules in the posterior furrows of the pronotum. However, this is more regular and larger in the populations of the western and southern Balkan Peninsula (Fig. VII/1). Further studies, especially of the type specimens, and complementary methods such as genetic analyses could help to answer these taxonomic questions.

Material examined (label citations):

R. germanus: Germany: Sachsen, Meißen, Steinbruch, 18.IV.2009, leg. Ingo Brunk (10 ind., cERS). Sachsen-Anhalt, Umg. Salziger See, Lkr. Mans[felder]. Land, 03.V.[19]94, Barberfallen, LAU SA (1 ind., cERS); dto. nur: 16.V.[19]94 (1 ind., cERS). Germ. c. Thüringen, MTB 4633/I, KG 6, Udersleben, NE Hämling, 26.IV.2006, BF, leg. J. Weipert (1 ind., cERS). Thüringen, Sondershausen. Hasenholz, BF, 4631/II, 29.V.1994, fc. Weigel (1 ind., cERS). Baden-Württemberg, D, 2005, Kaiserstuhl, Wyhl, Rheinaue, Auwald, KF Auto, leg. Renner, 29.V. (1 ind., cERS). France: FRA – Nouvelle Aquitaine, Bergerac, Sors, Dordogne, Kiesstrand, 13.–25.VI.2021, HF [hand catch], leg. J. Gebert (1 ind., cERS). FRA – Nouvelle Aquitaine, Les Eyzies, Forêt Dominale Barade (Dordogne), 13.–25.VI.2021, HF, leg. J. Gebert, 44,9444N, 1,01442E (1 ind., cMLN). Italy: Piemonte (AL), F. Bormida a Cassine, XI.1977, leg. R. Pittino (1 ind., cERS; det. Riccardo Pittino). Rom Umg[ebung], Italia (1 ind., cERS). I., Kalabrien 2007, Provinz Vibo Val[entia], Nicotera, 5 km SE, Flußaue, 120 m, leg. W. Apfel 27.V. (1 ind., cERS). Poland: Polonia, UTM DA57, 50°20'33"N / 20°26'6" E, Grodzonowice, 07.VI.2013, leg. I. Minikina (5 ind., cERS). Switzerland: CH: Genf, La Laiterie, 04.VII.1990, Ufer, Zercher leg. (2 ind., cERS). Hungary: Ungarn, Balatonakali, M.[id]VI.1987, leg. M. Sieber (4 ind., cERS).

R. cantabricus [= *R. germanus*]: Spain: Ponferrada, Paganetti (1 ind., cERS).

R. vinodolensis [= *R. germanus*]: Albania: Albania (Shkodër), Baks-Rjollë env., 41°51'14"N 19°29'50"E, ca. sea level, 11.–12.IV.2015, O. Hillert leg. (10 ind., cERS). Albania, Akerni env., 40°34'53"N 19°23'20"E, ca. sea level, 13.–14.IV.2015, leg. O. Hillert (5 ind., cERS). Süd-Albanien, Përmet, Alipostivan, Autok[escher], ~ 700 m, 22.V.2018, leg. Kleeberg (2 ind., cERS). Bosnia-Herzegovina: Herzegovina, Trebinje 1903, O. Leonhard (4 ind., cERS). Hungary: H – Süd-Ungarn, Dravaszabolcs/Drau, 27.IV.[19]92, K. Renner (1 ind., cERS).

R. macedonicus: Greece: Echiori, Xanthi, 25.VII.2009, Gr, leg. M. Eifler (1 ind., cERS). 120 m, Epirus GR, leg. M. Eifler, Krioneri/Vrosina, 4.VI.2012, N 39°38' E 20°31' (1 ind., cERS). Griechenland, Peloponnes, V. Kalivios Tethoeus, 23.VI.2007, leg. Arndt (1 ind., NME). Turkey: Türkei, Anatolien, Umg. Isparta, 13.III.1979, leg. E. Heise (2 ind., det. R. Pittino 2006, cEHV). Tr, M-Taurus, Akseki, Cevizli, 21.VII.1992, leg. Kuff & Szallies (1 ind., cERS). S-Türkei, Antalya, 5 km nördl. Sagirin, Köprü Cayi, 17.III.2002, leg. A. Bellmann (1 ind., det. Riccardo Pittino 2005, cERS). S-Türkei, Prov. Antalya, Gazipasa, ca. 50 km NW Anamur, leg. A. Bellmann, 18.IV.2004 (1 ind., det. Riccardo Pittino 2005, cERS).

***Rhyssenus meridionalis* Reitter, 1890**

History:

Rhyssenus meridionalis REITTER 1890: 391 (original description; loc. typ.: Morea near Cumani). [Localisation of the locality Cumani (= Kumani): According to REUTER (1891: 17) the locality Kumani is situated in the historical landscape of Elis (about 37°42' N, 21°34' E, in the northwest of the Peloponnese peninsula, near Archea Olympia). RITTER (1864: 822) describes Kumani as being situated on a tributary of the Peneus River].

Rhyssenus meridionalis Reitter: REITTER 1893: 28 (key; as synonym of *R. algericus*); ORBIGNY 1896: 252 (key; as synonym of *R. algericus*); SCHMIDT 1910: 86 (catalogue; as synonym of *R. algericus*), 1922: 507

(characters; as synonym of *R. algiricus*); BALTHASAR 1961: 136 (key; as synonym of *R. algiricus*), 1964: 572 (characters; as synonym of *R. algiricus*); DELLACASA 1988: 423 (catalogue); SHOKHIN 2007: 132 (faunistics); RAKOVIČ & KRÁL 2015: 127 (faunistics); RAKOVIČ, KRÁL & LÖBL 2006: 149 (catalogue); RAKOVIČ, KRÁL & BEZDĚK 2016: 164 (catalogue).

Rhyssenus algiricus meridionalis Reitter: PIEROTTI 1982: 295 (characters, faunistics); BARAUD 1992: 299 (characters); ROZNER & ROZNER 2009: 78 (faunistics).

Rhyssenus algiricus var. *caucasicus* CLOUËT DES PESRUCHES 1901: 91 (original description; loc. typ.: "Caucase" [Caucasus]).

Rhyssenus caucasicus Clouët des Pesruches: PETROVITZ 1962: 111 (characters); DELLACASA 1988: 423 (catalogue; as synonym of *R. meridionalis*); RAKOVIČ, KRÁL & LÖBL 2006: 149 (catalogue; as synonym of *R. meridionalis*); RAKOVIČ, KRÁL & BEZDĚK 2016: 164 (catalogue; as synonym of *R. meridionalis*).

At the time of the original description of *R. meridionalis* (REITTER 1890) it was still not recognised that it is actually a complex of several, very similar species. Although the type locality was given as "Morea near Cumani", the distribution information was supplemented "in Algiers, Morocco frequently ... also in Andalusia". Until the end of the 20th century, the currently accepted species *R. meridionalis*, *R. algiricus* P. H.

Lucas, 1846 (Fig. VI/2) and *R. marqueti* Reiche, 1863 (Fig. VI/3) were still mixed or considered subspecies of *R. algiricus* (REITTER 1893, CLOUËT DES PESRUCHES 1901, BALTHASAR 1961, 1964, PIEROTTI 1982, BARAUD 1992). The current taxonomic status is reflected in the Palaearctic catalogues (RAKOVIČ et al. 2006, RAKOVIČ, KRÁL & BEZDĚK 2016). According to these, there are three well-differentiated species with the following distribution:

R. algiricus: southern Spain (Andalusia), northern Africa (Algeria, Morocco, Tunisia), Italy (Sardinia).

R. marqueti (= *Rhyssenus pyrenaeus* Balthasar, 1961): Southern France (Pyrenees), Northern Spain.

R. meridionalis: Greece, Turkey, "Caucasus".

Taxonomy:

The *R. meridionalis* species complex, currently consisting of the three aforementioned species, shares the following external morphological features:

- Body relatively large for *Rhyssenus*: 3.8–5.0 mm.
- All intervals of the elytra equally curved.
- All furrows of pronotum (furrows I–V + posterior longitudinal furrow) with large, roundish to weakly transverse oval dots, without granules.
- Intervals of elytra with flat to indistinct granules.
- Shoulder spine distinct.
- Metaventrite with coarse puncture at least on the sides.

Key:

- 1 Elytra narrower, subparallel; length : width ratio 1.57–1.64. Lateral callus of pronotum reaching lateral margins of pronotum without surpassing them. Intervals on disc of elytra with very shallow, barely discernible granules. Clypeus on anterior margin with clearly marked denticles. Body length mostly < 4 mm. *R. meridionalis* Reitter
- Elytra broader, suboval; length : width ratio 1.43–1.67. Lateral callus of pronotum surpassing lateral margins of pronotum. Intervals on disc of elytra with shallow but distinct granules. Clypeus with blunt to faintly marked denticles. Body length mostly > 4 mm, up to 5.0 mm. 2
- 2 Striae of elytra wider, about half as wide as an interval. Humeral tooth small, [in the few specimens examined] apically blunt. *R. marqueti* Reiche
- Striae of elytra narrower, about a third as wide as an interval. Humeral tooth large, apically acute. ... *R. algiricus* Lucas

Material examined (label citations):

R. algiricus: **Portugal**: Algarve, 5 km W Faro b[e]. Vale de Lobo, M[itte]. – E[nde]. – V.2001, am Licht, leg. M. Langer (1 ind., cMLN). **Spain**: E – Prov. Cadiz, San Roque, Z. Recreativa, 19.XII.1990, leg. José L. Torres (5 ind., cMLN). E – Prov. Cadiz, San Roque, Pinar del Rey, Final Zone Recreo, Junto al arroyo, 21.IX.1991, leg. José L. Torres (4 ind., cMLN). **Morocco**: Marokko, Tamerrhout (= Tachenhout) (35 km nw Khenifra), 1000 m, 12.IV.2014, leg. E. Rößner (1 ind., cERS). Marokko, Aguelmouss (35 km nw Khenifra), 33.1333 N, 5.9980 W, 900 m, 12.IV.2014, leg. E. Rößner (1 ind., cERS). **Tunisia**: Tunesien, Ain Draham, 18.III.1984, leg. Meybohm (1 ind., det. R. Pittino 2006, cEHV).

R. marqueti: **France**: Carcassone, coll. Nebel, Dessau (2 ind., MNVD). **Spain**: Spanien, Playa de Aro, E[nde]. V.1971, Dr. Lohse (1 ind., det. Riccardo Pittino 2006, cEHV). Spanien, Toro, SE, Castronuno, Ufer des Rio Duero, 650 m, 42°24'38"N, 5°16'41"W, 19.VII.2002, leg. J. Weipert (1 ind., NME).

R. meridionalis: **Albania**: Süd-Albanien, Përmet, Alipostivan, Autok[escher], ~ 700 m, 22.V.2018, leg. Kleeberg (2 ind., cERS). **Greece**: GR Pelop., Mt. Taigetos, Archontiko Simion, leg. Jantke, 30.IV.2019 (2 ind., cERS).

Distribution:

According to present knowledge, *Rhyssenus meridionalis* is found in the western part of the Balkan Peninsula and is distributed from southern Albania to the southern part of the Peloponnese Peninsula (Fig. VII/2). The absence of records from the entire western and central part of Turkey is conspicuous. The species has only been known from north-eastern Turkey since the report of ROZNER & ROZNER (2009). Although the literature statement for the Caucasus area may refer to these, it can be assumed from the distribution pattern that the statement "Caucasus" refers to the area of the highlands of Armenia, which extends far into the north-east of Turkey. The species tends to occur in the mountains, e.g. up to 1650 m in Turkey according to ROZNER & ROZNER (2009).

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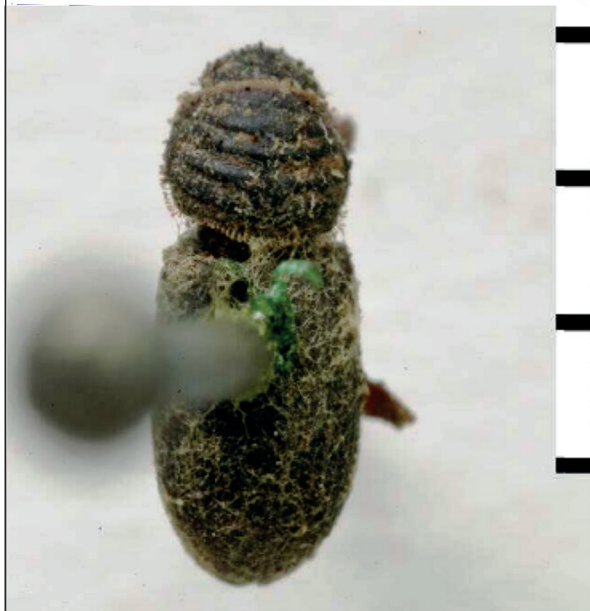
Dr. Andreas Kleeberg
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germa- 6. *P. fuscus*, thorace transversim rugoso, pedibus ferrugi-
nus. neis.

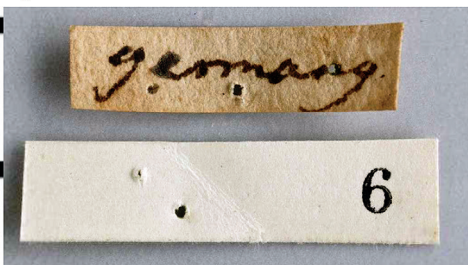
Habitat in Germania. D. Schreber.

Facies P. pertinacis, sed minor. Thorax gibbus, transverse sulcatus. Elytra striata. Pedes subrufi.

1



4

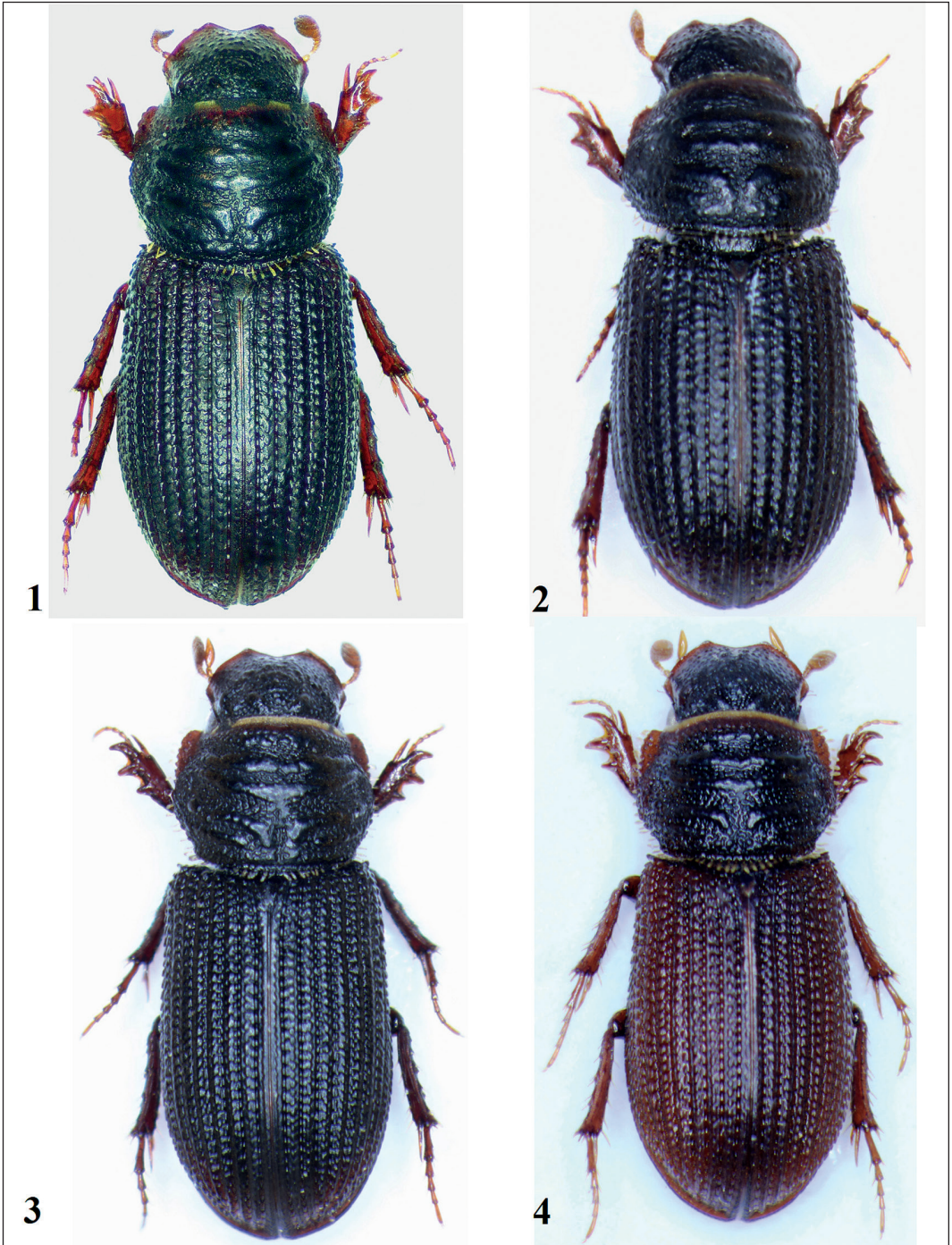


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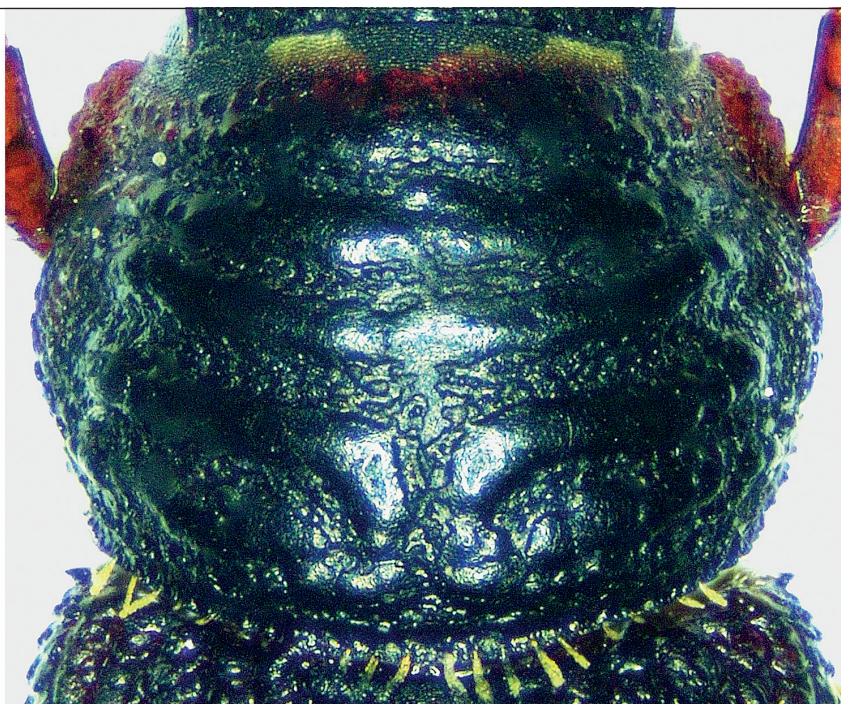


Panel I: *Rhyssalus germanus* (L.). • 1: Original description of *Ptinus germanus* Linnaeus, 1767: 566. • 2–4: Type specimen *Ptinus germanus* Linnaeus, 1767, scale in mm. Photographs: LINN 9208 *Ptinus germanus* (Ins Linn). In: The Linnean Society of London. The Linnean Collections. <https://linnean-online.org> [accessed 18. May 2023]. – 2: from dorsal. – 3: from lateral. – 4: labelling.

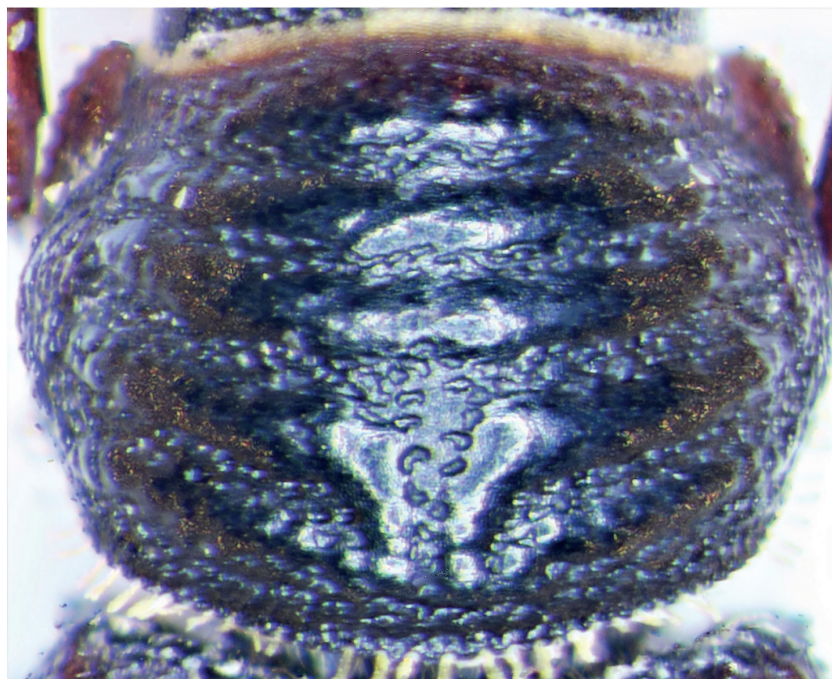


Panel II: Habitus. • **1:** *Rhyssalus germanus* (L.), Germany: Meißen (cERS), same individual as in Fig. III/1. Photograph: O. Hillert. • **2:** *Rhyssalus germanus* (L.), Germany: Meißen (cERS), same individual as in Fig. III/2. • **3:** *Rhyssalus vinodolensis* Petr., Albania: Përmet, Alipostivan (cERS), same individual as in Fig. IV/2. • **4:** *Rhyssalus macedonicus* Bénard, Turkey: Akseki, Cevizli (cERS), same individual as in Fig. V/1.

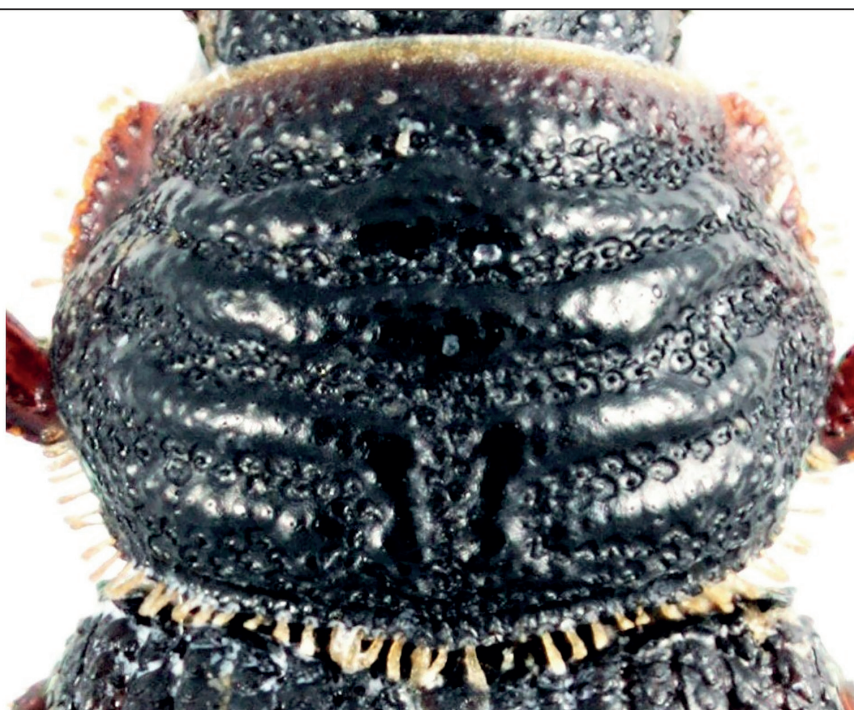
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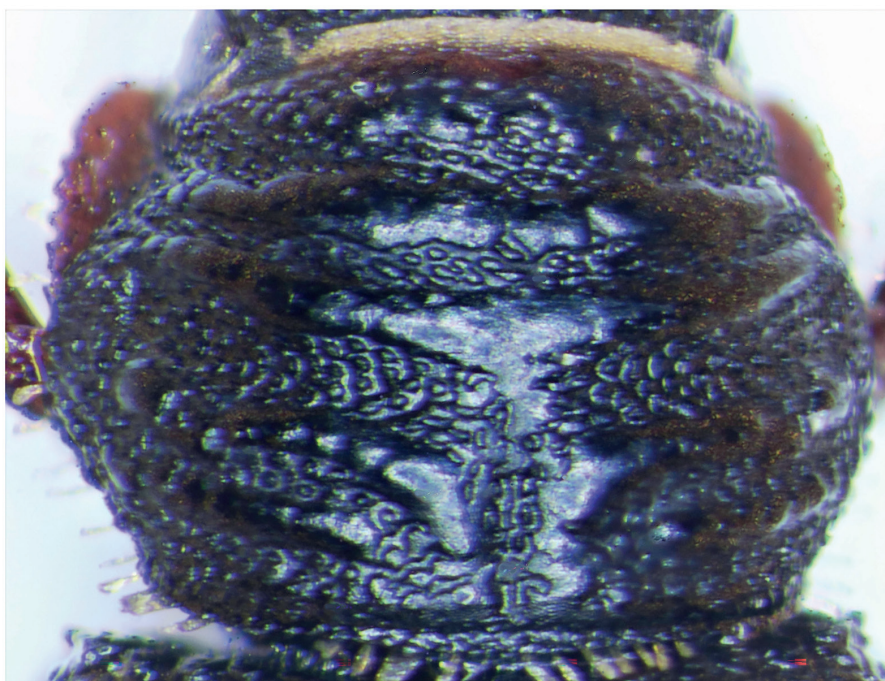
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Panel III: 1, 2: *Pronotum rhyssalus germanus* (L.), Germany: Meißen (cERS). Photograph 1: O. Hillert.

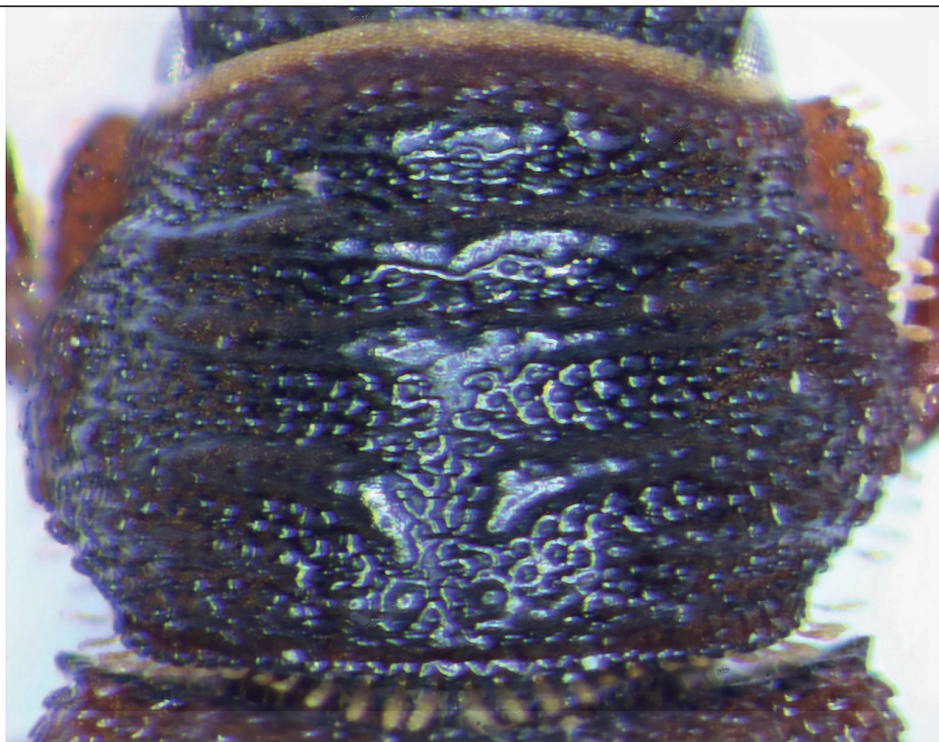


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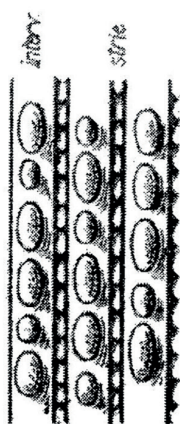


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Panel IV: Pronotum. • 1: *Rhyssesus germanus* (L.), Germany: Wyhl. Photograph: G. Brunne. • 2: *Rhyssesus vinodolensis* Petr., Albania: Përmet, Alipostivan (cERS).

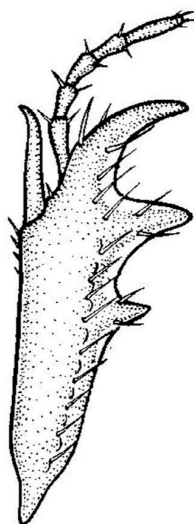


1



Rhyssalus macedonicus. Schéma
de la sculpture
élytrale.

2

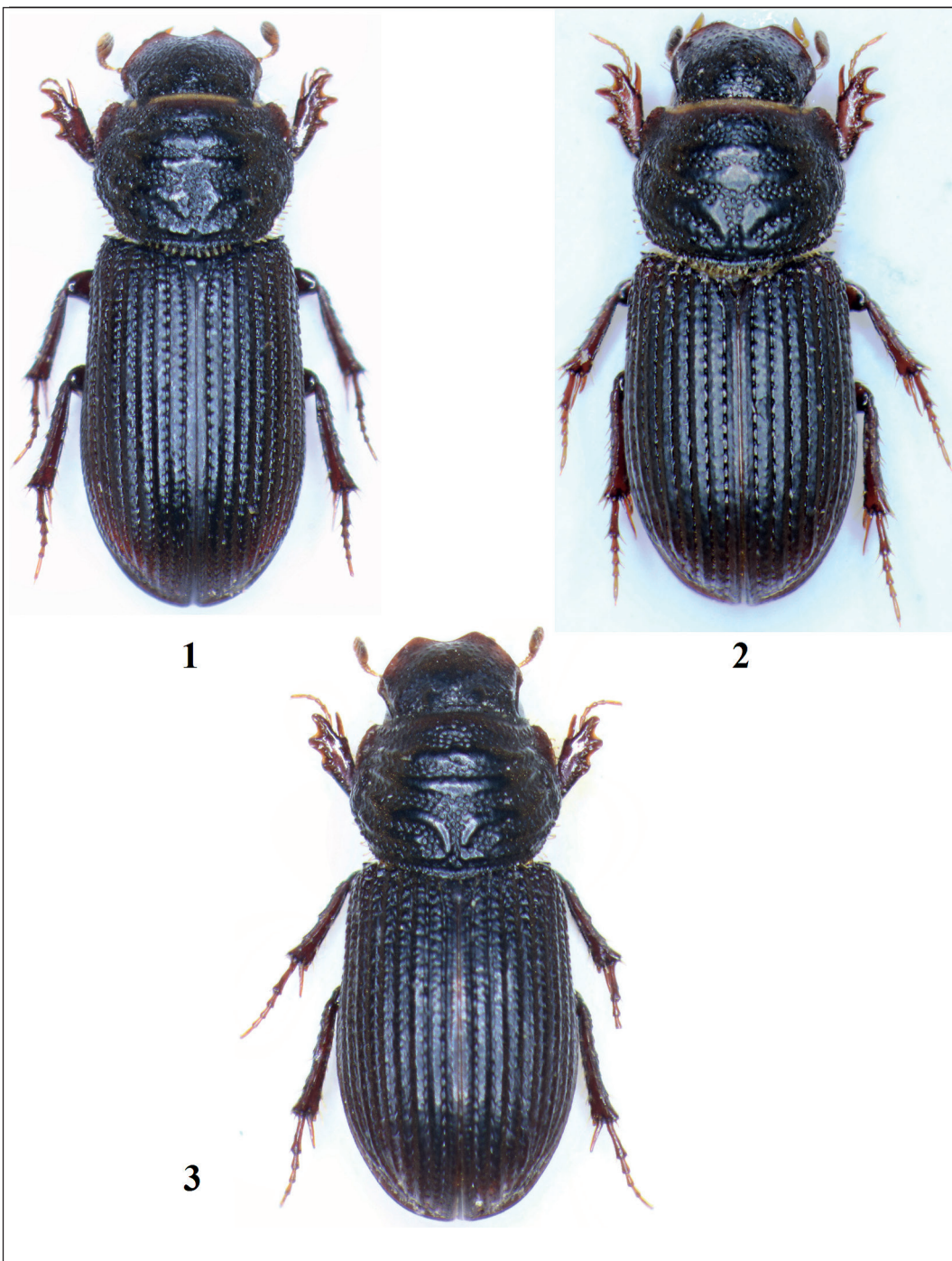


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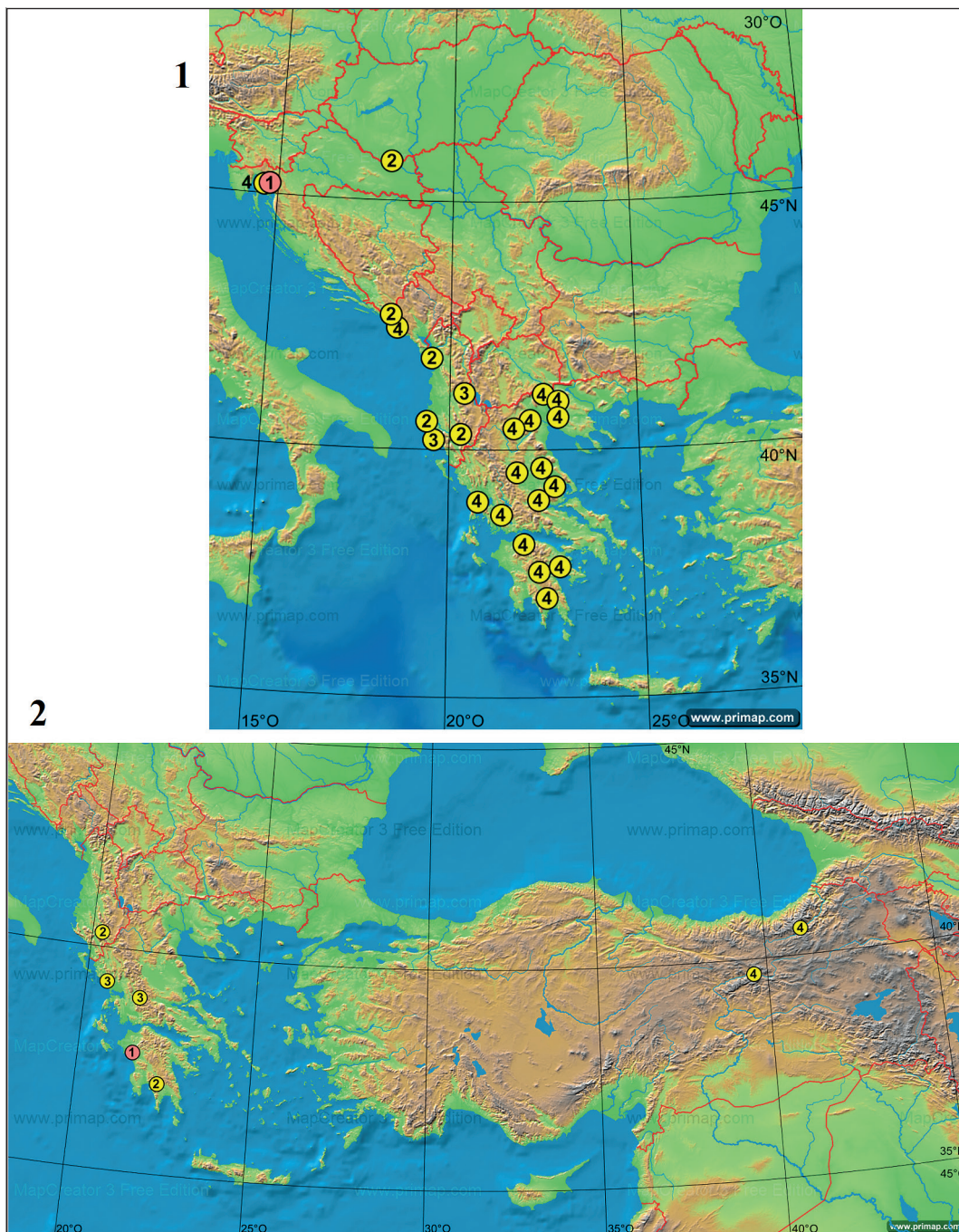


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Panel V: *Rhyssalus macedonicus* Bénard. • 1: Pronotum, Turkey: Akseki, Cevizli (cERS). • 2: Intervals of elytra, from original description by BÉNARD (1923: 244). • 3, 4: Right protibia, male, by PITTINO (1983: 111). – 3: from dorsal. – 4: tip, from lateral.



Panel VI: Habitus. • 1: *Rhyssemus meridionalis* Reitt., Albania: Përmet, Alipostivan (cERS). • 2: *Rhyssemus algiricus* Lucas, Morocco: Aguelmous (cERS). • 3: *Rhyssemus marqueti* Reiche, Spain: Playa de Aro (cERS).



Panel VII: Map of distribution, according to literature references and our own investigations. • **1: *Rhyssesmus vinodolensis* Petr.** – 1: loc. typ. according to PETROVITZ (1963). – 2: RÖSSNER & KLEEGERG (present study). – 3: BYK et al. (2019). – 4: PIEROTTI (1982; for Greece, regional districts of the country with records are marked). • **2: *Rhyssesmus meridionalis* Reitt.** – 1: loc. typ. according to REITTER (1890). – 2: RÖSSNER & KLEEGERG (present study). – 3: PIEROTTI (1982). – 4: ROZNER & ROZNER (2009).

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