

## The cylindrical bark beetles of Malta (Insecta: Coleoptera: Zopheridae, Colydiinae)

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### Abstract

Four species of Colydiinae (Zopheridae) are recorded from Malta of which *Langelandia niticosta* sp.n. is described as new. *Bitoma rufula* MOTSCHULSKY, 1863 is transferred to *Microprius* FAIRMAIRE, 1868. *Microprius linearis* (WOLLASTON, 1867), *Synchitodes rufa* REITTER, 1877 and *Synchitodes frivaldszkyi* REITTER, 1881 are synonymized with *Microprius rufulus* (MOTSCHULSKY, 1863). *Microprius rufulus* is recorded from Europe (Germany and Malta) for the first time.

**Key words:** Insecta, Coleoptera, Zopheridae, Colydiinae, *Langelandia*, *Microprius*, new species, new combination, new synonymies, taxonomy, first record, Europe (Germany, Malta).

### Zusammenfassung

Vier Arten der Unterfamilie Colydiinae (Zopheridae) werden von Malta gemeldet. *Langelandia niticosta* sp.n. wird beschrieben. *Bitoma rufula* MOTSCHULSKY, 1863 wird in die Gattung *Microprius* FAIRMAIRE, 1868 gestellt. *Microprius linearis* (WOLLASTON, 1867), *Synchitodes rufa* REITTER, 1877 und *Synchitodes frivaldszkyi* REITTER, 1881 werden mit *Microprius rufulus* (MOTSCHULSKY, 1863) synonymisiert. *Microprius rufulus* (MOTSCHULSKY, 1863) wird erstmals für Europa (Deutschland und Malta) gemeldet.

### Introduction

The only comprehensive list of Coleoptera occurring in the Maltese Islands is that of CAMERON & CARUANA GATTO (1907). In this list two species were included under "Colydiidae", *Bitoma crenata* (FABRICIUS, 1775) [as *Ditoma crenata* (F.)] and *Aglenus brunneus* (GYLLENHAL, 1813). The latter appears to be closely related to prostominiines (Salpingidae: Prostominiinae and Agleninae) where it is currently included (LAWRENCE 1980; LAWRENCE & NEWTON 1995). For this reason, *Aglenus brunneus* will not be considered further in this work. The record of *Bitoma crenata* by CAMERON & CARUANA GATTO (1907) was especially noted as "Coll. J. J. Walker" meaning that the material was collected in Malta by J. J. Walker during 1874 - 1876.

The former family Colydiidae has been downgraded to subfamily status within the Zopheridae by ŚLIPIŃSKI & LAWRENCE (1997).

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## Material and Methods

Measurements (in mm) were taken as follows:

Head width (HW): Across maximum width.

Head length (HL): Along mid-line from anterior margin of clypeus to line connecting posterior margins of eyes; surface of head has to be in a plane perpendicular to optical axis.

Total length (TL): From apical margin of clypeus to apex of elytra.

Pronotal width (PW): Across maximum width (excluding denticulation).

Pronotal length (PL): Along mid line from anterior to posterior margin, surface of pronotum has to be in a plane perpendicular to optical axis.

Elytral width (EW): Across maximum combined width.

Elytral length (EL): Along suture including scutellum.

Material was examined or is cited from the following institutions and private collections:

BMNH	The Natural History Museum, London, UK
CSK	Coll. Schuh, Katzelsdorf, Austria
CMM	Coll. Mifsud, Malta
CHS	Coll. Hermann, Stade, Germany
FSCA	Florida State Collection of Arthropods, Gainesville, USA
MSNG	Museo Civico di Storia Naturale, Genova, Italy
NHMB	Naturhistorisches Museum, Basel, Switzerland
NMW	Naturhistorisches Museum Wien, Austria
TMB	Természettudományi Múzeum, Budapest, Hungary
ZMUM	Zoological Museum of the Moscow State University, Moscow, Russia.

## Catalogue of Maltese Zopheridae

*Bitoma crenata* (FABRICIUS, 1775)

*Microprius rufulus* (MOTSCHULSKY, 1863)

*Langelandia niticosta* sp.n.

*Langelandia* sp. aff. *hummleri* (OBENBERGER, 1918)

### *Bitoma crenata* (FABRICIUS, 1775)

Material examined: 2 exs. (BMNH): Malta, without further locality data.

Distribution: Palaearctic, from the western Mediterranean across Europe and Siberia to the Russian Far East. Introduced into Canada and the northeastern part of the USA. Common in Central and Northern Europe, *B. crenata* is becoming more rare and of scattered distribution in the Mediterranean region where it was recorded from Algeria (PEYERIMHOFF 1919), Sicily (RAGUSA 1883), Italy (PORTA 1929) and Greece (Peloponnese) (VON OERTZEN 1886).

***Microprius rufulus* (MOTSCHULSKY, 1863) (comb. n.)**

- Bitoma rufula* MOTSCHULSKY 1863: 502. REITTER 1881: 131; HETSCHKO 1930: 19; DAJOZ 1977: 61; YABLOKOV-KHNZORYAN 1979: 130.
- Bitoma crenata* ab. *rufipennis* (F.): YABLOKOV-KHNZORYAN 1979: 130 (misidentification).
- Synchitodes frivaldszkyi* REITTER 1877a: 326 (syn.n.).
- Synchitodes rufa* REITTER 1881: 131 (syn.n.).
- Bitoma frivaldszkyi* (REITTER): HETSCHKO 1930: 17; DAJOZ 1977: 62.
- Bitoma rufa* (REITTER): HETSCHKO 1930: 19; DAJOZ 1977: 62.
- Ditoma frivaldszkyi* (REITTER): REITTER 1922: 36.
- Ditoma rufa* (REITTER): REITTER 1922: 36; NORMAND 1936: 93.
- Ditoma rufula* (MOTSCHULSKY): REITTER 1922: 36.
- Bitoma linearis* WOLLASTON 1867: 64. HETSCHKO 1930: 18 (syn.n.).
- Microprius linearis* (WOLLASTON): KOCHER 1956: 83; DAJOZ 1975: 181; DAJOZ 1977: 63; GEISTHARDT & VAN HARTEN 1992: 70.
- Ditoma opaca* GROUVELLE 1892: 296.
- Microprius opacus* (GROUVELLE): GROUVELLE 1908: 154 (nec *Microprius opacus* (SHARP, 1885)).
- Microprius confusus* GROUVELLE 1908: 154 (new name for *Microprius opacus* (GROUVELLE, 1892) nec (SHARP, 1885); HETSCHKO 1930: 23; POPE 1961: 30; ŚLIPIŃSKI 1986: 147; GEISTHARDT & VAN HARTEN 1992: 70.
- Microprius raffrayi* GROUVELLE 1908: 153. HETSCHKO 1930: 23; POPE 1953: 37, 1954: 111, 1955: 244, 1959: 138, 1961: 30; ŚLIPIŃSKI 1982: 621.

The genus *Microprius* was established by FAIRMAIRE (1868) for *M. terrenus* FAIRMAIRE, 1868 from South Africa. According to his generic description, the principal character which distinguishes *Bitoma* and *Microprius* is the long antennal groove beneath the eye in *Microprius*. Another distinctive character of *Microprius* is the structure of ventrites 2 to 4, which have smooth or micropunctate areas or lateral impressions in males. Due to the superficial similarity to *Bitoma*, specimens have been misidentified and misplaced in *Bitoma*.

MOTSCHULSKY (1863) described *Bitoma rufula* from Egypt. Examination of the holotype (ZMUM) led to the conclusion, that this species belongs to *Microprius*. Unfortunately, it was not possible to determine the sex of the specimen as the glue used to mount the specimen was insoluble in standard aqueous or organic solvents. YABLOKOV-KHNZORYAN (1979) has examined the holotype and identified it erroneously as *Bitoma crenata* ab. *rufipennis* FABRICIUS which is not known from northeastern Africa or the Middle East.

Recently, GEISTHARDT & VAN HARTEN (1992) synonymized the Afrotropical *M. confusus* GROUVELLE, 1908 with *M. linearis* (WOLLASTON, 1867). Comparison of the type of *Bitoma rufula* to topotypical specimens of *Microprius linearis* from the Cape Verde Islands proved that the two are conspecific.

REITTER (1877) described *Synchitodes frivaldszkyi* from Syria and later (REITTER 1881) *Synchitodes rufa* from Egypt. *Synchitodes* is a synonym of *Bitoma* and both were subsequently listed under *Bitoma* HERBST, 1793 or *Ditoma* ILLIGER, 1807 (unjustified emendation of *Bitoma*) (REITTER 1920, HETSCHKO 1930, DAJOZ 1977). Examination of the type material of *Synchitodes frivaldszkyi* REITTER showed that it is conspecific with *M. rufulus* and, hence, belongs to the genus *Microprius*.

Type material of *Synchitodes frivaldszkyi* (TMB): The holotype bears the following label data: "Syria 1862 leg. Abdullah Bey \ 167.38. \ Holotypus *Synchitodes frivaldszkyi*

Reitter 1877 \ *Microprius rufulus* (Motsch.) det. Schuh 2000". The single paratype bears the same label data, except for "Paratypus".

Again, examination of the type material of *Synchitodes rufa* showed that it is conspecific with *M. rufulus*.

Type material of *Synchitodes rufa* (TMB): The holotype bears the following label data: "Aegypt. mer. \ Holotypus *Synchitodes rufa* Reitter 1881 \ coll. Reitter \ *Microprius rufulus* (Motsch.) det. Schuh 2000". The single paratype bears the label data: "Aegyptus Reitter \ Paratypus *Synchitodes rufa* Reitter 1881 \ coll. Reitter \ *Microprius rufulus* (Motsch.) det. Schuh 2000".

Thus, the distributional range of *M. rufulus* includes tropical Africa from the Cape Verde Islands to Madagascar and southward to the Republic of South Africa (Natal), northern Africa (Morocco, Algeria, Tunisia, Egypt) and the Middle East (Israel, Lebanon, Syria). *Microprius rufulus* has been introduced into Cuba, the USA (California) (M. Ivie, personal communication), the Cayman Islands (1 ex. (FSCA), Grand Cayman, 21.VII. - 1.VIII.1986 leg. D. Gicca, blacklight trap), India (6 exs. (CSK), Kerala, Alleppey, 8. - 9.X.1991, leg. R. Schuh) and Germany (6 exs. (CHS, CSK), Hamburg, harbor, 1.V. & 7.VIII.1977, at light). Sporadic introductions seem to occur with African timber (USA, India, Germany and at least one specimen from Malta). In some places the species has been established (USA, Cuba).

Material examined: MALTA, 18 exs. (CMM, CSK, MSNG, NHMB): Luqa, 18.X.1989, under bark of *Acacia* trees; 2 exs. (CMM): Zabbar, 8.XII.1993, under unidentified bracket fungus on *Morus alba*; 1 ex. (CMM): Zebbug, 3.V.1994, imported with logs from central Africa; 1 ex. (CMM): Rabat (Tal-Virtu), 16.XI.1996, leg. D. Mifsud, under *Laetiporus sulphureus* on *Ceratonia siliqua*; all leg. D. Mifsud.

Comments: *Microprius rufulus* is new to Europe (Germany and Malta).

### *Langelandia (Fleischerella) niticosta* sp.n. (Fig. 1)

**Holotype** ♂ (NMW): "Malta: Buskett 11.I.1996 leg. D. Mifsud \ HOLOTYPUS *Langelandia niticosta* sp.n. des. Schuh & Mifsud 2000 [red]".

**Paratypes** Malta (13 exs.): 1 ♂, 2 ♀♀ (CMM, CSK): Mtaħleb 7.VIII.1997 leg. D. Mifsud, in soil under *Salix* sp.; 2 ♂♂, 5 ♀♀ (CMM, CSK, MSNG): Buskett 11.I.1996 leg. D. Mifsud, in soil under *Pistacia lentiscus*; 1 ♂ (CMM): Buskett 13.I.1999 leg. D. Mifsud; 1 ♀ (NHMB): Buskett 17.XI.1995 leg. D. Mifsud, in soil under *Quercus ilex* and *Laurus nobilis*; 1 ♀ (CMM): Bidnija 1.I.1996 leg. D. Mifsud, in soil under *Olea europaea*.

Description: TL: 1.85 - 2.30 mm. Elongate, parallel-sided (TL/EW: 3.65 - 3.90), transversely moderately convex, uniformly ferruginous.

Head transverse (HW/HL: 1.30 - 1.50). Lateral margins slightly converging from posterior angle of temple to antennal insertion in straight line, more strongly converging anterad; anterior margin straight. Clypeus transversely slightly convex. Dorsal side of clypeus mat, granulate; granules round, glossy, separate from each other by distance equal to their diameters. Frons slightly gibbous and shining above antennal insertions, transversely convex medio-basally, in some specimens with slightly impressed mid-line from posterior margin of clypeus to occipital line, medio-basal portion densely granulate;

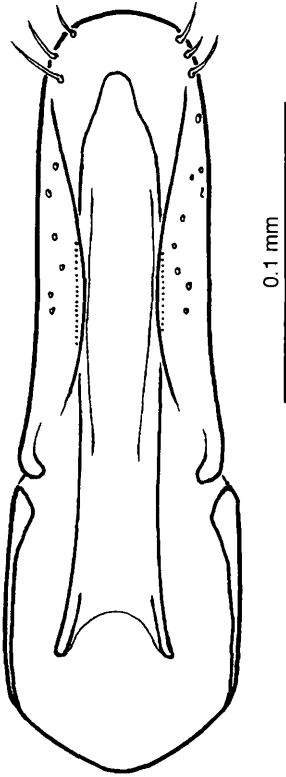


Fig. 1: *Langelandia niticosta* sp.n.: (1) aedeagus, ventral aspect.

granules larger than on clypeus, partly confluent longitudinally, separate by 0.5 or less their diameters. Remaining parts of frons sculptured like clypeus. Lateral part of head (ocular region) setose. Eyes absent. Temples rounded. Basal part of head capsule behind occipital line mat, finely wrinkled.

Antennae 11-segmented. Ratio of antennal length to HW: 0.9 - 1.0. Antennomeres 1 and 2 slightly elongate, of similar shape, 1.3 times as long as wide; antennomere 3 almost as wide as 2, 1.0 - 1.3 times as wide as long; antennomeres 4 to 8 of same width as 3, 1.3 - 1.5 times as wide as long; antennomere 9 wider than preceding ones, 1.8 times as wide as long; antennomeres 10 and 11 forming abrupt club; antennomere 10 almost twice as wide as 9, 2.0 - 2.3 times as wide as long; antennomere 11 subglobular, slightly narrower than 10, 1.2 times as wide as long.

Pronotum elongate (PL/PW: 1.16 - 1.26), widest at 0.25, as wide as elytra (PW/EW: 0.95 - 1.05), transversely convex. Lateral margins slightly to moderately converging anterad, straightly converging posterad. Anterior angles rounded, but produced apicad; posterior angles rectangular. Anterior margin straight; subapical sulcus absent. Pronotal base slightly convex, straight in middle; basal sulcus wide, extending laterad beyond posterior angles to prothoracic hypomera. Disc with 3 costae; median costa indistinct, ill-defined, attenuate anteriorly, glossy; admedian costae narrow, well-defined, almost parallel, slightly sinuate inward at basal third of PL, their crest rounded in cross-section, attenuate anteriorly, glossy; mutual distance of admedian costae at

0.5 PL about 0.5 PW. Anterior sublateral fossa (at 0.3 PL) large, deep; posterior sublateral fossa (at 0.7 PL) absent or slightly accentuated by a shallow depression. Sculpture along anterior margin and on lateral portions (between sublateral costa and lateral margin) granulate on medio-basal part of frons; granules gradually becoming confluent, forming transverse or circular ridges enclosing large, irregular punctures; each of those punctures bearing a very short hair-like seta; setae white, not longer than diameter of puncture. Explanate portions along lateral margins narrow, about as wide as antennomere 3, present in apical half, absent posteriorly. Edge of lateral margin thick (in lateral aspect about as wide as antennomere 3) double, crenulate and set with recumbent short hairs; in posterior half ventral edge absent.

Prosternum granulate; granules as on dorsal side, transverse. Prothoracic hypomera with sharply delimited but shallow pit at 0.3 PL, anteriorly smooth, posteriorly roughly punctured, similar to median portion of dorsal side.

Scutellum small, triangular.

Elytra elongate (EL/EW: 2.00 - 2.15), parallel-sided from 0.2 to 0.7 EL, slightly narrowing basad; basal margin concave; jointly rounded apically. Each elytron with 6 regular striae, one indistinct costa between stria 2 and 3 and broad rounded costa, forming lateral

margin in dorsal aspect, between striae 5 and 6. Striae densely set with moderately large punctures, their longitudinal distance about 0.5 of their diameters, longitudinal interstices between punctures each with round, shining granule. Elytral intervals as wide as diameter of striae punctures, indistinctly microsculptured, irregularly set with flat, shining granules. Sutural interval indistinctly elevate. Costa between striae 2 and 3 indistinctly elevate, narrower than pronotal admedian costa, glossy. Distance between costa and suture 0.23 of EW in basal half, 0.18 of EW on apical declivity. Costa and stria 2 ending on apical declivity before reaching apex. Lateral margins formed by rounded costa extending from humerus to apex; this costa more distinct in apical half, in dorsal aspect appearing like explanate lateral and apical margin. Stria 7 latero-ventrally, regular, not reaching elytral apex. Epipleura absent. Elytral integument hair-like, irregularly distributed; hairs whitish, recumbent, short, separate by twice their length.

Mesosternum and metasternum sculptured as prosternum; metasternum short, twice as wide as long, as long as mesosternum, with shallow transverse impression on posterior half. Length ratio of ventrites: 1: 1.0; 2: 0.5; 3: 0.5; 4: 0.5; 5: 0.6. Sculpture on ventrite 1 as on prosternum, posterior margin elevate, convex in cross-section, shining. Ventrites 2 to 4 of same shape and structure, each with elevate, convex anterior and posterior margins; margins shining, irregularly delimited; area between margins forming irregular, transverse sulcus, mat with few scattered granules. Ventrite 5 with anterior margin of same structure as margins of preceding ventrites, apical margin almost semicircular, subapical sulcus laterally impressed, shallow in middle.

Aedeagus (Fig. 1) elongate, 3.4 times as long as wide; tegmen 1.5 - 1.6 times as long as phallobasis, apex slightly convex; median lobe slightly sclerotized, narrow, parallel-sided, apex pointed. Basal portion of aedeagus with loosely attached, weakly sclerotized plate-like segment with apico-lateral processes.

Male sexual characters: Male submentum on its anterior margin with round pit, bearing erect bristle.

Discussion: Within the subgenus *Fleischerella* REITTER, 1911, *L. niticosta* sp.n. is most similar to *L. hypogea* NORMAND, 1936 from Algeria. In *L. hypogea* the costae are absent in the basal half of the elytra and the sublateral costae on the pronotum are less accentuate and the impunctate area along the mid-line is less developed. In *L. exigua* PERRIS, 1869 from Corsica the pronotal sublateral carinae are weakly developed, the punctures on the pronotum and the elytral striae are more obvious and the nitid granules mostly absent. In *L. leonhardi* REITTER, 1912 and *L. nitidicollis* REITTER, 1910 from Sardinia and Sicily the carinae on the pronotum and the elytra are completely absent. In *L. (s.str.) reitteri* BELON, 1882 (Tunisia, Algeria, Sicily, Sardinia, Italy, southern France) the sublateral pronotal and elytral carinae are more strongly developed and sharply carinate, the antennal cavities on the prothoracic hypomera are large and deep, the lateral portions of the pronotum are set with additional submarginal pits, the ventral side of the body is less strongly sculptured and the transverse sulci on ventrites 2 to 4 are interrupted. The aedeagi of the species of *Fleischerella* are similar to each other and the shape of the apex of the parameral plate is subject to slight individual variation.

Remarks: The setiferous pit on the anterior margin of the submentum is present in all males of *Langelandia* species available for study (*L. (s.str.) anophthalma* AUBÉ, 1842, *L. (s.str.) reitteri*, *L. (Normandella) antennaria* BINAGHI, 1937, *L. (Fleischerella) exigua*,

*L. (Paganettia) reflexipennis* REITTER, 1912, *L. (Agelandia) terricola* REITTER, 1912, *L. (A.) merkliana* REITTER, 1890, *L. (A.) grandis* REITTER, 1877b and 2 undescribed species from the Balcan Peninsula). According to ŚLIPIŃSKI & LAWRENCE (1999) this character was considered until now as restricted to the subfamily Zopherinae (tribes Monommatini, Phellopsini and Pycnomerini).

The loosely attached, weakly sclerotized plate-like segment associated with the basal portion of the aedeagus is present in all species of *Langelandia* and many species of other genera of Colydiinae. The shape and the size of this structure are constant within each genus, but variable within the subfamily. Due to its loose attachment, this segment is often removed together with membranous structures enclosing the basal piece, when dissecting the genitalia. As pointed out by ISRAELSON (1990), the apico-lateral processes of this segment have been misinterpreted by DAJOZ (1977) as parameres, and are not useful as a distinctive character for species separation.

Habitat: Collected in soil (10 - 20 cm depth) under *Olea europea*, *Salix* sp. and *Pistacia lentiscus* in the few high maqui localities still present in Malta.

Etymology: Niticosta, abbreviate derivative of nitidus, -a, -um (Latin) – glossy, shining; costa (Latin) – rib. Named in reference to its glossily keeled surface.

### ***Langelandia (Agelandia) sp. aff. hummleri* (OBENBERGER, 1918)**

Material examined: 1 ex. (CMM): Malta: Buskett, 12.II.2000, leg. D. Mifsud, in soil under *Quercus ilex*.

Comments: The single fragmented specimen at hand consists of the pterothorax including mid- and hind-legs lacking tarsi. A precise identification is, therefore, not possible. It resembles *L. hummleri* OBENBERGER, 1918 from Italy (Calabria) and *L. terricola* from Greece (Island of Corfu). It shares with both species the presence of only two striae between the dorsal elytral costa and the sublateral costa rather than three as in other species of that subgenus. In *L. terricola* the elytral striae are more roughly punctured and the apical part of lateral, rounded carina on elytra is scarcely reflexed. In *L. hummleri* and the specimen from Malta, the elytral punctures are finer and the apical part of lateral carina is reflexed. Moreover, the specimen from Malta differs from the studied syntype (NMW) of *L. hummleri* by slightly broader elytra (EL/EW: 1.88 instead of 2.00 in *L. hummleri*) and by semi-circular shape of elytral apex instead of semi-elliptical shape in *L. hummleri*.

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