

Cryptophagids from the Maltese Islands with description of a new species of *Micrambe* THOMSON (Coleoptera: Cryptophagidae)

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Abstract

The Cryptophagidae (Coleoptera) of the Maltese Islands are reviewed based on material of earlier records and recent collections. A total of twelve species are reported, of which *Micrambe mediterranea* OTERO & JOHNSON sp.n. is described from material collected in Malta, Greece and Jordan.

Key words: Coleoptera, Cryptophagidae, Mediterranean, Malta, *Micrambe*, new species.

Introduction

Cryptophagidae constitute a small family of beetles with 51 genera and over 600 described species worldwide (LESCHEN 1996). Cryptophagids feed on spores and hyphae of moulds and other fungi occurring under bark, in leaf litter or in nests of various kinds. Some species may occur in stored products where conditions are damp enough to permit the growth of moulds. Other species are mainly scavengers living on debris and nest materials. The pollen of flowering plants is also an important food source for some other species.

In 1907, the British staphylinologist Malcolm Cameron, and the Maltese naturalist Alfredo Caruana Gatto, published a list of Coleoptera from the Maltese Islands (CAMERON & CARUANA GATTO 1907). In this list seven species (only five of which are valid) of cryptophagids were reported. Material which was used to compile this list came from two main sources, 1) collections made by Mr. J.J. Walker in 1874-76 and later labelled as G.C. Champion Coll., and 2) collections made by the authors themselves and later labelled as M. Cameron Coll. All the Walker material and at least part of the material collected by Cameron and Caruana Gatto is housed at The Natural History Museum in London. ANDRES (1916) mentioned three species of Cryptophagids from the Maltese Islands without providing any locality data. We examined available material in London, supplemented with collections recently made by one of us (D. Mifsud). A total of twelve species are included and for each global distributional data and ecological notes are provided.

Material is cited from the following collections:

BMNH The Natural History Museum, London, UK

CMM Coll. Mifsud, Malta

COS Coll. Otero, Spain

MMUE The Manchester Museum, University of Manchester, UK

NHMB Naturhistorisches Museum, Basel, Switzerland

NHMW Naturhistorisches Museum, Wien, Austria

Annotated species list

Hypocopus lathridioides MOTSCHULSKY, 1839

MATERIAL EXAMINED:

MALTA: St. Paul's Bay, VI.1902, M. Cameron Coll., 1 ex. (BMNH).

DISTRIBUTION: Eurasia, North America (LESCHEN 1996) and Egypt (HORION 1960).

NOTES: CAMERON & CARUANA GATTO (1907) recorded this species as *Hypocopus quadricollis* REITTER, 1877 under the family 'Cucujidae'. This species is often associated with *Formica* ant nests, leaf litter and large mammal dung (CROWSON 1981).

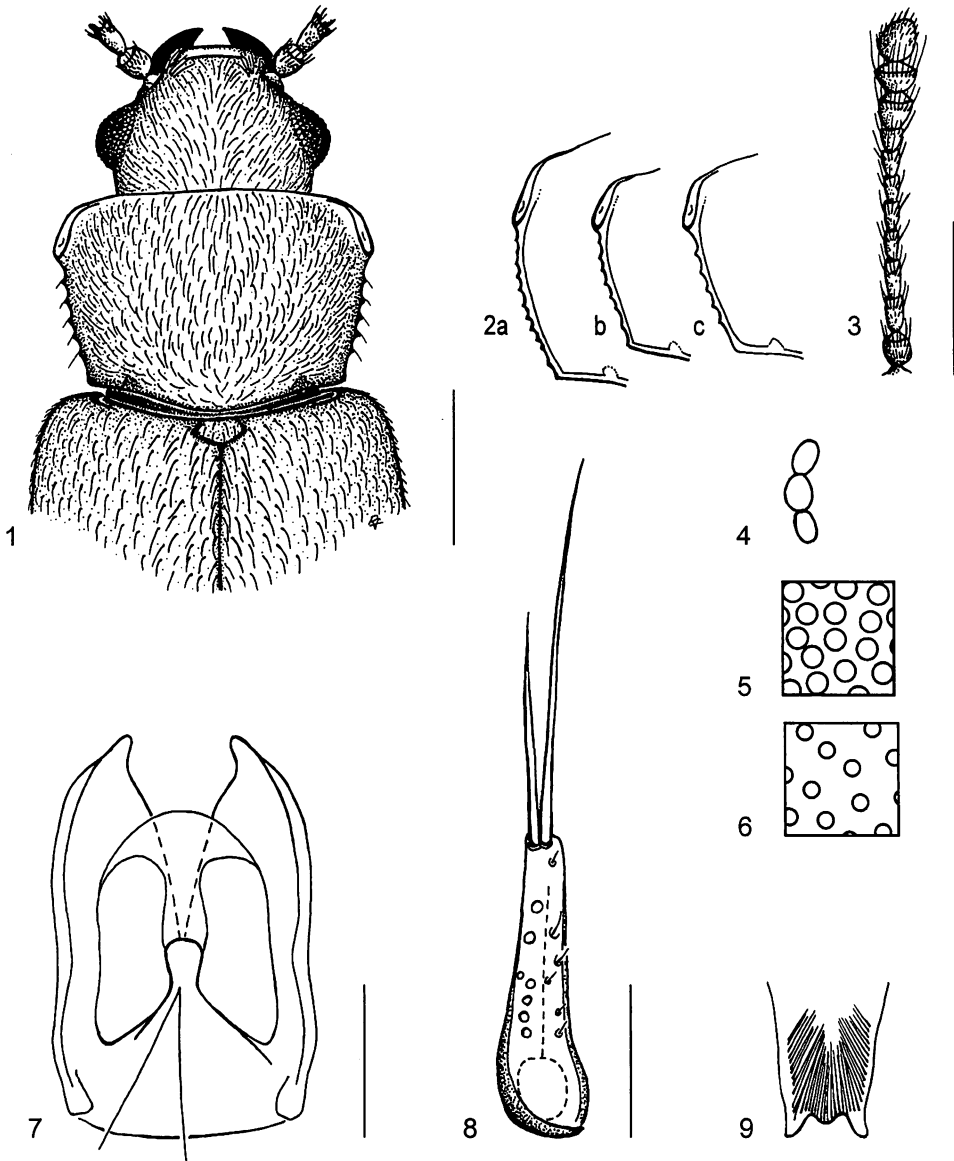
Micrambe mediterranea OTERO & JOHNSON sp.n.

TYPE LOCALITY: Wied Babu, Malta.

TYPE MATERIAL: **Holotype** ♂ (NHMW): Malta, Wied Babu, 7.X.1995, leg. D. Mifsud. **Paratypes**: 1 ♂, 1 ♀: same data as holotype, on *Pistacia lentiscus* (Anacardiaceae) (NHMB); 1 ♂: Marsa (Ghammieri), 5.I.1979, leg. D. Mifsud (CMM), 1 ♀: same locality data but 4.I.1994 (CMM); 1 ♂: Migra Ferha, 30.X.1995, leg. D. Mifsud (NHMB), 1 ♂: same locality data but 25.1.1996 (NHMB), 1 ♀: same locality data but 13.I.1999 (CMM); 1 ♀: Msida, 20.III.1998, leg. D. Mifsud (NHMB); 1 ♀: Buskett, 12.II.2000, in decaying hay and vegetation, leg. D. Mifsud (CMM); 3 ♀ ♀: Wied Has-Sabtán, 8.III.1956, leg. G.V.P. Sewell (BMNH); 1 ♂: Luqa Airfield, 8.VI.1956, leg. G.V.P. Sewell (BMNH). 2 ♂ ♂ and 7 ♀ ♀: Gozo, Ramla, 18.I.1999, leg. D. Mifsud (CMM, NHMB), 3 ♀ ♀: same locality data but 28.I.1997 (NHMB); 1 ♀: Ghasri, 6.I.1995, leg. C. Farrugia (CMM). 3 ♂ ♂, 4 ♀ ♀: Greece, Chios Is., Elata, 15.IV.1999, beating *Acacia cyanophylla* flowers (Fabaceae), leg. C. Johnson (MMUE); 1 ♂, 1 ♀: Avgonima, 15.IV.1999, on *Euphorbia* flowers (Euphorbiaceae), by road, leg. C. Johnson (MMUE); 3 ♂ ♂, 1 ♀: Komi, 19.IV.1999, beating *Tamarix parviflora* flowers (Tamaricaceae), leg. C. Johnson (MMUE). 1 ♂, 1 ♀: Jordan, forest near Jerash, 800 m, 10.IV.1956, leg. J. Klapperich (MMUE); 1 ♂: Zerka Valley, Romana, 700 m, 23.X.1956, leg. J. Klapperich (MMUE), 2 ♂ ♂: same data but 12.IV.1957 (MMUE); 2 ♂ ♂: Wadi Schaib, 500 m, 8.III.1957, leg. J. Klapperich (MMUE), 1 ♀: same data but 100 m, 25.IV.1956 (MMUE), 1 ♀: same data but, 6.IV.1967 (MMUE); 2 ♂ ♂, 2 ♀ ♀: Jordan Valley, Kleat, 200 m, 15.II.1963, leg. J. Klapperich (MMUE); 2 ♀ ♀: Arda road, 700 m, 5.IV.1957, leg. J. Klapperich (MMUE); 1 ♀: Amman, 800 m, 8.IV.1956, leg. J. Klapperich (MMUE); 1 ♀: Amman, Jubeiha, 100 m, 4.V.1964, leg. J. Klapperich (MMUE); 1 ♀: Schaubak, 17.V.1968, leg. J. Klapperich (MMUE).

DESCRIPTION: 1.73 - 2.01 mm long. Body oval, convex. Coloration reddish brown, with simple pubescence (48.83 - 56.67 µm long). Metathoracic wings well developed. Eyes normal, 0.14 mm long, not prominent, with ocular facets (Fig. 4) larger ($\varnothing = 15.02 - 16.06 \mu\text{m}$) than the punctures of the head ($\varnothing = 13.40 - 14.72 \mu\text{m}$). Antennae (Fig. 3) 0.74 mm long, reaching the rear edge of the pronotum; 3rd antennal segment 1.14 times longer than the 2nd; 9th, 10th and 11th transverse. Pronotum transverse (Fig. 1 and 2c) (width/length ratio = 1.65 - 1.7). Pronotal sides converging towards base. Anterior callosities long (1/3 the length of pronotum); angle between the posterior edge of the callosity and the lateral wall of the pronotum obtuse. Surface of the callosity scarcely visible in dorsal view, punctate at its centre and with a well-marked border. Pronotal puncturation (Fig. 5) pronounced; distance between punctures less than puncture diameter ($\varnothing = 13.38 - 15.40 \mu\text{m}$). Elytra three times longer than pronotum. Elytral puncturation (Fig. 6) as pronounced but more dispersed than on pronotum; distance between punctures always greater than puncture diameter ($\varnothing = 13.38 - 14.72 \mu\text{m}$). Hind tarsi of male five-segmented. Aedeagus (Fig. 7) with endophallic orifice and preputial sac visible. Aedeagal apodeme with small spines. Sclerotised rods as in Fig. 9. Parameres (Fig. 8), with one or two apical setae. Parameres with infrequent pores, either with or without bristles.

DISTRIBUTION: Malta, Greece and Jordan, but probably widespread and much overlooked in the Mediterranean region.



Figs. 1 - 9: *Micrambe mediterranea* sp. n. 1) General view (scale = 0.33 mm); 2) Pronotum (a: *abietis*; b: *vini*; c: *mediterranea* sp.n.); 3) Antenna (scale = 0.33 mm); 4) Size and shape of ocular facets; 5 - 6) Comparison of puncturation between pronotum and elytra; 7 - 8) Dorsal view of aedeagus and paramere (scale = 0.036 mm); 9) Sclerotised rods.

HABITAT: Associated especially with flowers of trees - *Pistacia lentiscus*, *Acacia cyanophylla* and *Tamarix parviflora*; also on *Euphorbia* flowers.

ETYMOLOGY: Named after the region from which the type material was collected.

NOTES: The record of *Cryptophagus vini* from Girgenti by CAMERON & CARUANA GATTO (1907) has to refer to *Micrambe mediterranea* sp.n.

DIFFERENTIAL DIAGNOSIS: *Micrambe mediterranea* sp.n. can only be confused with *M. vini* (PANZER) (general aspect) and *M. abietis* (PAYKULL) (hind tarsi of male five-segmented). It is likely to be mixed in collections under *M. vini* since identification of that species in the past would have assumed specimens with five-segmented hind tarsi to be females and dissection unnecessary. These three species may be distinguished as outlined in Table 1.

	<i>M. mediterranea</i> sp.n.	<i>M. vini</i>	<i>M. abietis</i>
Length	1.73 - 2.01 mm	1.80 - 2.20 mm	2.00 - 2.40 mm
Pubescence	long and dense	shorter and more scattered than in <i>mediterranea</i> sp.n.	shorter and more scattered than in <i>mediterranea</i> sp.n.
Face of callosity	standing out from lateral pronotal margin	standing out from lateral pronotal margin	more or less in line with lateral pronotal margin
Pronotal sides	converging towards base (Fig. 2c)	converging towards base (Fig. 2b)	very evenly rounded (Fig. 2a)
Hind tarsi of male	five-segmented	four-segmented	five-segmented
Aedeagus	without bodies at base of apodeme	without bodies at base of apodeme	with two large, elongate bodies lying obliquely at extreme base of apodeme
Associated with	<i>Pistacia lentiscus</i> , <i>Acacia cyanophylla</i> , <i>Tamarix parviflora</i> ; and flowers of <i>Euphorbia</i>	<i>Ulex</i> spp., <i>Sarothamnus</i> spp. and <i>Cytisus</i> spp. (all Fabaceae)	coniferous trees, especially <i>Abies</i> spp. and <i>Picea</i> spp. (all Pinaceae)

Tab. 1: Differences between *M. mediterranea* sp.n., *M. vini* and *M. abietis*

Cryptophagus cellaris (SCOPOLI, 1763)

MATERIAL EXAMINED:

MALTA: Wied Babu, 12.XI.1995, leg. D. Mifsud, 1 ex., sifting leaf litter at the base of *Ceratonia siliqua* (Fabaceae) (CMM).

DISTRIBUTION: Europe, Syria and eastern Siberia, North and Central Africa, North and South America and Australia (JOHNSON 1989).

NOTES: *C. cellaris* is a new record for the Maltese Islands. The species is closely associated with man, especially occurring amongst stored produce in mills, granaries and warehouses (HINTON 1945).

***Cryptophagus fasciatus* KRAATZ, 1852**

MATERIAL EXAMINED:

GOZO: Ramla, 15.IV.1994, 18.I.1999 and 21.II.2000, leg. D. Mifsud, 74 exs., at base of sand dune plants (CMM, COS, MMUE, NHMB).

DISTRIBUTION: Mediterranean (DAJOZ 1959).

NOTES: *C. fasciatus* is a new record for the Maltese Islands. It is a coastal species, often associated with dead *Fucus* spp. (Fucaceae) and *Zostera* spp. (Zosteraceae) (DAJOZ 1959).

***Cryptophagus immixtus* REY, 1889**

MATERIAL EXAMINED:

MALTA: Gnejna, XI.1901, M. Cameron Coll., 2 exs. (BMNH); no locality data, V.1904, M. Cameron Coll., 3 exs. (BMNH); Ta Baldu, VI.1902, M. Cameron Coll., 1 ex. (BMNH); Zejtun, 23 and 27.IV.1989, 16.XII.1989 and 30.XI.1999, leg. D. Mifsud, 4 exs. (CMM, MMUE); Buskett, 25.I.1996, leg. D. Mifsud, 1 ex. (CMM); Birzebbuga (Wied Has-Sabtan), 3.II.1996, leg. D. Mifsud, 1 ex. (CMM). GOZO: Victoria, 30.XI.1994, leg. C. Farrugia, 1 ex. (CMM).

DISTRIBUTION: Europe, North Africa (DAJOZ 1959), Turkey (OTERO 1997) and Uzbekistan (LYUBARSKY 1997a).

NOTES: *C. immixtus* was not previously recorded from the Maltese Islands, however, the records of *Cryptophagus scanicus* (L.) and *C. thomsoni* (REITTER) by CAMERON & CARUANA GATTO (1907) have to refer to this species. Until recently this species was known as *C. postpositus* J. SAHLBERG, 1903 (DAJOZ 1959).

***Cryptophagus laticollis* LUCAS, 1849**

MATERIAL EXAMINED:

MALTA: Zejtun, 4.XII.1989, leg. D. Mifsud, 1 ex. (CMM); Msida (Tal-Qroqq), 26.X.1994, leg. C. Farrugia, 1 ex. (MMUE).

DISTRIBUTION: Europe, Asia Minor, North Africa, Caucasus, Central Asia, Afghanistan, Iran, Russia, North America (LYUBARSKY 1997b), Canary Islands (OTERO 1990), Lebanon, Israel, Turkey (OTERO 1997) and Australia (HINTON 1945).

NOTES: *C. laticollis* is a new record for the Maltese Islands. The species is closely associated with man, occurring mostly in haystack and vegetable refuse, sometimes in stored products (HINTON 1945).

***Atomaria (Anchicera) atricapilla* STEPHENS, 1830**

MATERIAL EXAMINED:

MALTA: Mtaheb, M. Cameron Coll., 1 ex. (BMNH), same locality but 7.VIII.1997, 1 ex., leg. D. Mifsud, 1 ex. (CMM); Fomm ir-Rih, 26.III.1995, leg. D. Mifsud, 1 ex. (CMM); Buskett, 7.XI.1995, 3.XII.1997, 13.I.1999 and

12.II.2000, leg. D. Mifsud, 7 exs., some in decaying hay and vegetation (CMM, MMUE); Wied Babu, 12. and 30.XI.1995, leg. D. Mifsud, 6 exs., sifting leaf litter at the base of *Ceratonia siliqua* (CMM); M'Xlokk (Balluta), 18.II.1996, leg. D. Mifsud, 1 ex. (CMM); Bidnija, 30.IX.1997, leg. D. Mifsud, 2 exs. (CMM); Zejtun, 25.IV.1998, leg. D. Mifsud, 1 ex. (CMM); St. Thomas Bay, 19.II.1998, leg. D. Mifsud, 1 ex. (CMM); Siggiewi, 10.V.1998, leg. D. Mifsud, 2 exs. (CMM); Migra Ferha, 13.I.1999, leg. D. Mifsud, 1 ex. (CMM). GOZO: Ramla, 15.IV.1994, leg. D. Mifsud, 1 ex., sifting at base of sand dune plants, (CMM); Ghasri, 6.I.1995, leg. C. Farrugia, 1 ex. (CMM).

DISTRIBUTION: *A. atricapilla* is widely distributed throughout much of Europe apart from the extreme north, possibly introduced in Spitzbergen; also known from Turkey, Cyprus, Syria, Israel and Jordan (JOHNSON 1993).

NOTES: *A. atricapilla* was not previously recorded from the Maltese Islands (see note under *A. scutellaris*). In Britain the species is found around farms and gardens; in man-made heaps of refuse, cut vegetation, grass, compost heaps, also flood refuse and is attracted to light (JOHNSON 1993).

Atomaria (Anchicera) munda ERICHSON, 1845

MATERIAL EXAMINED:

MALTA: no other data, G.C. Champion Coll., 1 ex. (BMNH).

DISTRIBUTION: Most of Europe apart from the extreme north, Turkey, Israel, Afghanistan, Central Asia, Atlantic Islands and North Africa (JOHNSON 1993).

NOTES: *A. munda* was not previously recorded from the Maltese Islands (see note under *A. scutellaris*). In Britain, it is found around farms, often indoors in barns; in heaps of mouldy and decaying hay and straw, haystack bottoms and old dung heaps (JOHNSON 1993).

Atomaria (Anchicera) scutellaris (MOTSCHULSKY, 1849)

MATERIAL EXAMINED:

MALTA: no other data, G.C. Champion Coll., 2 exs. (MMUE); Gnejna, XI.1901, M. Cameron Coll., 2 exs. (BMNH); (?) Gnien il-Kbir, X./XI.1901, M. Cameron Coll., 2 exs. (BMNH); Mellieha, XI.1901, M. Cameron Coll., 2 exs. (BMNH); Chadwick lakes, 8.V.1975, leg. J. Cilia, 1 ex. (CMM); Marsaskala, 11.X.1989, leg. D. Mifsud, 1 ex. (CMM); Zejtun, 16.III.1990, 30.XI. and 29.XII.1997, leg. D. Mifsud, 4 exs. (CMM); M'Xlokk (Balluta), 18.II.1996, leg. D. Mifsud, 1 ex. (CMM); St. Thomas Bay, 11.XI.1996, leg. D. Mifsud, 1 ex. (CMM); Bidnija, 13.I.1999, leg. D. Mifsud, 1 ex. (CMM). GOZO: Ghasri, 30.X.1994 and 6.I.1995, leg. C. Farrugia, 2 exs. (CMM); Ramla, 28.I.1997, leg. D. Mifsud, 5 exs. (CMM, MMUE).

DISTRIBUTION: This is a Mediterranean species, occurring in Southern Europe, Turkey, Israel, North Africa and the Atlantic islands (JOHNSON 1993).

NOTES: *A. scutellaris* occurs in a range of habitats, especially saltmarsh and grasslands, but also in broadleaved woodland, usually on or near the coast (JOHNSON 1993). *A. scutellaris* was previously recorded from Malta by CAMERON & CARUANA GATTO (1907) and ANDRES (1916). Besides *A. scutellaris*, CAMERON & CARUANA GATTO (1907) recorded also *A. unifasciata* ERICHSON from Valletta. No material attributed to this species from Malta was found in the BMNH. *Atomaria unifasciata* is a Central European species which until recently was confused with *A. fasciata* KOLENATI (JOHNSON 1971b). *Atomaria fasciata* is a Mediterranean species which could potentially occur in Malta. However, based on the following reasons, we are of the opinion that this species was never collected from Malta: 1) in the past, material of *A. unifasciata* and *A. fasciata* was often misinterpreted for other *Atomaria* spp. and 2) material of *A. atricapilla* and *A. munda* was available to Cameron and Caruana Gatto but was not included as such in their Coleoptera list.

Curelius exiguus* (ERICHSON, 1846)*MATERIAL EXAMINED:**

MALTA: Ramla tat-Torri, 28.XI.1993, leg. D. Mifsud, 1 ex. (CMM); Marsa (Ghammieri), 8.XI.1996, leg. D. Mifsud, 1 ex. (CMM); Buskett, 12.II.2000, leg. D. Mifsud, 6 exs. in decaying hay and vegetation (CMM, MMUE).

DISTRIBUTION: Central and southern Europe, eastwards to Turkey and Caucasus and North Africa (LYUBARSKY, 1997a).

NOTES: *C. exiguus* is a new record for the Maltese Islands. It is mainly found in decaying vegetation, sometimes heaped.

Curelius japonicus* (REITTER, 1877)*MATERIAL EXAMINED:**

MALTA: Bahrija, 20.VII.1997, leg. D. Mifsud, 12 exs., at edge of cultivated field, under decaying *Daucus carota* (Apiaceae) (CMM, MMUE); Buskett, 12.II.2000, leg. D. Mifsud, 2 exs., in decaying hay and vegetation (CMM, MMUE).

DISTRIBUTION: Pantropical and known only from Tenerife and Spain within the western Palaearctic (JOHNSON 1989).

NOTES: *C. japonicus* is a new record for the Maltese Islands. The Palaearctic species of *Curelius* CASEY were keyed by JOHNSON (1971a).

Ephistemus reitteri* CASEY, 1900*MATERIAL EXAMINED:**

MALTA: Gnejna, 11.IX.1902, M. Cameron Coll., 4 exs., at roots of grass (BMNH); 4 exs., no other data, G.C. Champion Coll. (BMNH); Bahrija, 20.VII.1997, leg. D. Mifsud, 7 exs. (CMM); Buskett, 2.II.2000, leg. D. Mifsud, 8 exs., in decaying hay and vegetation (CMM, MMUE).

DISTRIBUTION: Europe except west and north, east to Caucasus and Iran.

NOTES: The record of *E. globulus* (PAYKULL) by CAMERON & CARUANA GATTO (1907) has to refer to *E. reitteri*. The two species can be identified with certainty by examination of the male genitalia which were figured for both by JOHNSON (1971a).

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