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THE TENEBRIONIDAE (COLEOPTERA)
OF THE MALTESE ISLANDS
(CENTRAL MEDITERRANEAN)

INTRODUCTION – The Maltese archipelago consists of the islands of Malta, Gozo and Comino, together with some minor islands, such as Filfla, Cominotto and St. Paul's Islands. The islands are aligned in a NW-SE direction and are located in the centre of the Mediterranean basin, 93 km south of Sicily, 353 km due north of Tripoli and about 288 km east of Tunisia. Malta, Gozo and Comino are the three inhabited islands. Malta is the largest island, with a total land area of 245.7 km². Geologically, the islands are composed almost entirely of marine sedimentary rocks, mainly limestones of the Oligo-Miocene age.

The climate of the Maltese Islands is typically Mediterranean with a characteristic biseasonality. A recent analysis of the climate of the Maltese Islands is provided by CHETCUTI *et al.* (1992). The average annual precipitation is approximately 530 mm.

Human influence is a key feature of the islands' ecology. The first settlers on the islands cleared off most of the indigenous trees for agricultural practices introducing grazing animals, which continued the process of deforestation. This has left the islands with very few wooded areas, most of which have been planted by man in recent years. At present, the overall population density of Malta is 1095 inhabitants per km² (1985 census). A number of special habitats such as sandy beaches and saltmarshes are in danger of being completely converted to recreational use by both the local population and the tourist industry.

The aim of the present study is threefold. First, to summarize the previous literature dealing with tenebrionids from the Maltese Islands, evaluating all earlier citations and verifying material cited at the beginning of this century. Secondly, to point out areas where further investigations are needed, so that particular problems may be resolved. Finally, to provide a detailed zoogeographical analysis of the tenebrionids occurring in the Maltese Islands.

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HISTORICAL REVIEW – The tenebrionids of the Maltese Islands have been studied quite extensively even in recent years. In 1849, Küster described *Opatrum melitense* from Malta; this was probably the first publication to mention tenebrionid material collected from Malta. Approximately ten years later, GULIA (1858) mentioned four species of tenebrionids occurring in the Maltese Islands: *Blaps gages* Fab. (= *Blaps gigas*), *Blaps fandica* (possibly referring to *Blaps mucronata*), *Pimelia bipunctata* (= *Pimelia rugulosa melitana*) and *Tenebrio molitor*. BAUDI (1874, 1876) examined tenebrionid material deposited at the Natural History Museums of Genova and Torino, Italy and described two new species: *Tentyria leachi* (= *Tentyria laevigata leachi*) and *Phylax melitensis* (= *Allophylax picipes melitensis*). In 1882, Allard described *Blaps (Leptocolena) foveicollis* (= n. syn. of *Blaps mucronata*) on the basis of a specimen deposited at the Natural History Museum in Paris, France.

CARUANA GATTO (1894) mentioned 14 species of tenebrionids as commonly found in the Maltese Islands. Thirteen years later, CAMERON & CARUANA GATTO (1907) produced a catalogue listing 41 tenebrionids one of which included in the Endomychidae. Of these, three species included in the genera *Gonodera* and *Omoplus* are not considered in this work as forming part of the Tenebrionidae and are referred to the Alleculidae (even though in recent years authors are considering them as a subfamily of the Tenebrionidae, for example, WATT, 1974). Moreover, CAMERON & CARUANA GATTO (1907) indicated the presence of *Blaps foveicollis* in parenthesis, indicating that they did not collect this species. Therefore, the actual number of tenebrionids examined was 37. This work (CAMERON & CARUANA GATTO, 1907) still remains as the most important compilation on beetles occurring in the Maltese Islands. In this catalogue, Cameron and Caruana Gatto based their records on material they had collected and on material collected by James John Walker in 1874-1876. This material was specially noted in their catalogue (CAMERON & CARUANA GATTO, 1907). Most probably, the material (or at least part of it) collected by Walker was later handed to Mr G.C. Champion (R. BOOTH, *pers. comm.*, 1995) and deposited at The Natural History Museum, London, UK. Some material that Cameron and Caruana Gatto collected was also placed in the same institution. Most probably, a number of tenebrionid species were examined by Dr. E. Reitter prior to the compilation of Cameron and Caruana Gatto's catalogue. In fact, Reitter described or recorded material from Malta in a number of publications (REITTER, 1894; 1904; 1914a;

1915; 1916). LUIGIONI (1929) and PORTA (1934) referred to earlier Coleoptera citations (mainly Cameron and Caruana Gatto's catalogue) for the Maltese Islands in order to include them in their Italian catalogues.

In a list of rare beetles from Malta, TONNA-BARTHET (1931) listed 10 species of tenebrionids. In this list, he mentioned '*Pimelia* 4. *punctata* Barthet' *Cat. Col. Mel. 1930. 138* and '*Tentyria bipunctata* Barthet' *Cat. Col. Mel. 1930. 145*, the descriptions of which were unavailable.

ESPAÑOL (1949), in a revisionary work of the *pruinus* group of the genus *Crypticus* and of the subgenus *Pseudoseriscius*, examined the type material of *Pseudoseriscius cameroni*, validating this species and providing notes on closely related species.

LANFRANCO (1964) listed three species of tenebrionids collected from the off-shore islet of Filfla in September, 1963. The identifications were confirmed by Britton (LANFRANCO, 1964). Five years later, FOCARILE (1969), based on previous literature and on material deposited at the Natural History Museum of Milan, Italy (Coll. Schatzmayr-Tasso-1926; Coll. De Luca-1945), listed 33 species of tenebrionids as occurring in the Maltese Islands. MARCUZZI (1970a), in a contribution on the tenebrionid fauna of Sicily, listed five species collected from Malta by Dr. G. Burlini and Dr. A. Varagnolo. Some years later, CANZONERI (1979), listed 9 tenebrionids from the Maltese archipelago submitted to him for study by Mr. Stephen P. Schembri. Of these, CANZONERI (1979) described a new species *Stenosis schembrii* from the islands of Malta and Comino. Other tenebrionids in which Maltese material was examined include: *Akis subterranea* (CANZONERI, 1968) and *Stenosis melitana* (CANZONERI, 1970b).

KWIETON (1980) recorded *Sepidium tricuspidatum tomentosum* from Malta on the basis of five specimens deposited at the Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.

GRIMM (1986) recently produced an important work on the tenebrionid fauna of the Maltese islands. He based his study (represented by 31 species) on material that he and Rachinsky collected between the 19th April and 9th May, 1985. He also listed five new records (actually four new records; refer to note given under *Phtora crenata* Germar, 1836, in present contribution) from Malta. In this same year, RATTI (1986), in a contribution on the tenebrionid fauna of Pantelleria, examined some specimens attributed to *Alphasida grossa melitana* (from Malta and Comino) and synonymised this species with *A. grossa sicula*.

More recently, CILIA (1989) produced a list of Coleoptera in the first *Red Data Book* ever compiled for the Maltese Islands (SCHEMBRI & SULTANA, 1989). CILIA (1989), based mainly on published records, placed all recorded endemic taxa together with species having a restricted distribution locally and/or globally and species of zoogeographical or other scientific interest. He listed 20 species of tenebrionids, including a new record.

MATERIALS AND METHODS – The main source of material examined during this study comes from extensive collections made by David Mifsud (D.M.) in the Maltese Islands. However, other collections were kindly submitted for study including:

BMNH	Natural History Museum, London, UK,
MNHP	Muséum National d'Histoire Naturelle, Paris, France,
C.F.	Mr. Charles Farrugia (private collection),
G.L.	Mr. Guido Lanfranco (private collection),
M.J.E.	Dr. Martin J. Ebejer (private collection).

Any relevant information attached to specimens found at the BMNH is specifically noted. Some material was also collected by Mr. Mark Psaila and Mr. Frank Caruana. A representative collection of the material examined during this study has been deposited at the Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italy.

This catalogue provides the following details for each species:

1. currently accepted name, authority and date of publication;
2. names used by earlier authors that examined Maltese material, indicating reference to such citations;
3. where available, collecting data and ecological data of material collected from the Maltese Islands;
4. global distribution and notes, where appropriate.

If any of the above details were altered, this is specially noted.

The classification and sequence of species in the following systematic list follow that of GEBIEN (1937-1944), with modifications to the subfamilies Opatrinae (ESPAÑOL, 1958) and Helopinae (ARDOIN, 1958; ESPAÑOL, 1961).

SYSTEMATIC LIST

Erodius siculus melitensis Reitter, 1914

Erodius neapolitanus Sol.; Cameron & Caruana Gatto, 1907

Erodius siculus var. *dalmatinus*; Reitter, 1914a; Porta, 1934

Erodius emondi ssp. *peyroleri* Sol.; Porta, 1934

Erodius siculus Sol.; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Ghadira, 11.VI.1971, 2 exs., (M.J.E.); Ramla tat-Torri, 23.V.1990, 5 exs., 28.XI.1993, 1ex., (D.M.). GOZO. Ramla, 16.VII.1989, 1 ex., 15.IV.1994, 3 exs., (D.M.). Found under stones in sand-dune habitats.

D i s t r i b u t i o n. Endemic to the Maltese Islands. The nominal form occurs on the Egadi Is. (Favignana) (CANZONERI, 1970a), central and southern Italy, Sicily, Dalmatia, Albania, Corfù (MÜLLER, 1921; GRIDELLI, 1950), Aeolian Is. (MARCUSZI, 1970b) and Greece (Ionian coast) (REITTER, 1914a; KÜHNELT, 1965).

N o t e. REITTER (1914a) based the separation of the various *Erodius* spp. on the variability of their elytral striae. GRIMM (1986) considered the Maltese *Erodius* to belong to the nominal form of *E. siculus* Sol. because the variability encountered on the elytral striae fall within the spectrum of variation of *E. siculus*. However, we have retained Reitter's race as still valid, until published results on morphological variations found in the Sicilian populations (GRIDELLI, 1950) are compared with abundant Maltese material. Both the citations of CAMERON & CARUANA GATTO (1907) and PORTA (1934) have to refer to this species.

Tentyria grossa Besser, 1832

Tentyria sardoa Sol.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907

Tentyria grossa Besser; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. X.1901, 2 exs., (Dr M. Cameron-BMNH); IV.1903, 1 ex., (BMNH); Pietà (Bastions), 18.VIII.1975, 2 exs., (M.J.E.); Hagar Qim, 25.II.1990, 1 ex., (D.M.). Often encountered under stones in garigue habitats.

D i s t r i b u t i o n. The species (s.l.) is known from central and southern Italy, Crete (KOCH, 1948), Aeolian Is., Lipari Is., Pantelleria, Linosa, Sardinia, Tunisia, Morocco (GRIDELLI, 1950), Balearic Is. (ESPAÑOL, 1954), Egadi Is. and Ustica (CANZONERI, 1970b).

N o t e. A number of races are known for this species and their

taxonomy is still not well studied. CAMERON & CARUANA GATTO (1907) record this species as *Tentyria sardoa* Sol. This citation should refer to *T. grossa* Bess. (ARDOIN, 1973; KOCH, 1937; GRIMM, 1986).

Tentyria laevigata leachi Baudi, 1874

Tentyria laevigata Stev. var. *leachi* Baudi; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907

Tentyria laevigata Stev.; Lanfranco, 1964; Marcuzzi, 1970b

Tentyria laevigata leachi Baudi; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 2 exs., (Dr M. Cameron-BMNH); 12 exs., (BMNH); Tal-Qroqq, VII.1974, 1 ex., (M.J.E.); Balzan, 29.IX.1974, 1 ex., (M.J.E.); St. Thomas Bay, 22.VI.1989, 1 ex., (D.M.). GOZO. Victoria, 24.IX.1994, 1 ex., (C.F.); Ghajnsielem, 5.XI.1994, 1 ex., (C.F.). Found under stones in garigue habitats and observed under bark of dead trees such as *Ceratonia siliqua*.

D i s t r i b u t i o n. Endemic to the Maltese Islands. The nominal form occurs in Sicily, Calabria, Egadi Is., Ustica (CANZONERI, 1970b), Aeolian Is. (CANZONERI, 1977), Ischia, Campania and Capri (PORTA, 1934; CANZONERI, 1972).

N o t e. FOCARILE (1969), in further unpublished studies, wrote that *Tentyria leachi* Baudi should refer to *T. italica* Sol. CANZONERI (1970b) regarded *T. laevigata* var. *leachi* as valid, being more closely related to *T. laevigata* (CANZONERI, 1977). *T. laevigata* (including *leachi*) and *T. italica* seem to exclude one another in their distribution. *T. italica* is a northern Mediterranean species while *T. laevigata* occurs in the southern Mediterranean region. It is not known whether both species overlap in distribution in Calabria (GRIMM, 1986). GRIMM (1986) also illustrated the paramers of *T. italica*, *T. laevigata leachi* and *T. laevigata*, indicating that using this character the Maltese material falls between both species.

Stenosis elongata (Solier, 1838) ?

Stenosis hispana var. *elongata* Sol.; Tonna-Barthet, 1931

N o t e. This citation is in reference to another species, probably *S. freyi* Koch. GEBIEN (1937-44), considered *S. elongata* simply a synonym of *S. hispanica*. ANTOINE (1949) argues that *S. elongata* was described one page before *S. hispanica* and therefore, if both species are to refer to the same entity, *S. elongata* will have priority. However,

Antoine confirms the possibility that the two entities are different (*S. elongata* was described from Egypt). Examination of Tonna-Barthet's material would be necessary in order to correctly identify this species. Until its presence can be confirmed, we are not considering this entity as a member of the Maltese fauna.

Stenosis freyi Koch, 1944

Stenosis freyi Koch; Grimm, 1986

D i s t r i b u t i o n. Malta (GRIMM, 1986), single records from Southern Sicily (GRIDELLI, 1949) and Lipari Is. (MARCUIZZI, 1970b).

N o t e. The species was not found during the present study. It was recently reported for Malta (Migra Ferha) by GRIMM (1986), who illustrated and compared the parameres of this species with those of *S. melitana* and *S. schembrii*.

Stenosis melitana Reitter, 1894

Stenosis melitana Rtrr.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907; Tonna-Barthet, 1931; Canzoneri, 1970b; Grimm, 1986

Stenosis brentoides Rossi; Antoine, 1949

M a t e r i a l e x a m i n e d. MALTA. 6 exs., (Dr M. Cameron-BMNH); St. Thomas Bay, 22.VI.1989, 3 exs.; Salina, 19.VII.1989, 2 exs.; Marsaxlokk, 15.IX.1989, 1 ex.; Zejtun, 4.X.1989, 1 ex., 9.X.1994, 18 exs.; Wied tal-Isqof, 11.IV.1990, 1 ex.; Wied tal-Bahrija, 11.V.1990, 1 ex.; Gnejna, 9.V.1990, 1 ex.; Golden Bay, 14.VIII.1993, 8 exs.; Marsa (Ghammieri), 7.XII.1993, 12 exs., 9.XII.1993, 5 exs., 26.XI.1993, 2 exs.; Xorb il-Ghagin, 27.XI.1993, 16 exs.; Golden Bay, 14.XII.1993, 5 exs.; Paradise Bay, 28.XI.1993, 1 ex.; Migra Ferha, 31.III.1995, 1 ex., 22.X.1996, 6 exs.; (all Coll. D.M.). GOZO. Ramla, 18.IV.1990, 2 exs., 23.X.1996, 3 exs., (D.M.); Marsalforn Valley, 20.IV.1990, 2 exs., 6.VI.1990, 1 ex., (D.M.); Ghasri, 6.IX.1994, 2 exs., 13.X.1994, 1 ex., 28.VI.1995, 1 ex., (C.F.); Dwejra, 23.X.1996, 3 exs., (D.M.); Sara Valley, 3.XI.1996, 1 ex., (D.M.); Ta' Cenc, 3.XI.1996, 27 exs., (D.M.). MANOEL ISLAND. 2.V.1990, 1 ex., (D.M.). Often encountered under stones in a variety of habitats such as garigue and near sand-dunes; also found under bark of dead trees.

D i s t r i b u t i o n. Malta and a few Sicilian localities (GRIDELLI, 1949).

N o t e. ANTOINE (1949) considered *Stenosis brentoides* synonymous with *Stenosis melitana*. On examination of the type material, however, CANZONERI (1970b) considered *S. melitana* as a valid species,

thus removing the synonymy earlier proposed by ANTOINE (1949). It is worth noting that CANZONERI (1970b) mentioned some variation between the type material of *S. melitana* collected from Malta, and material collected from southern Sicily. Further studies are needed in order to verify whether or not the two populations are distinct.

Stenosis sardoa sardoa (Küster, 1848)

Stenosis angustata v. *brenthoides* Rossi; Reitter, 1916; Porta, 1934

Stenosis brenthoides s.l.; Focarile, 1969

D i s t r i b u t i o n. Southern France, Liguria, Italian Tyrrhenian coasts, Tuscan Is., Corsica, Sardinia, Sicily and circumsicilian Islands (excluding Pelagic Is.) and La Galitè in Tunisia (RATTI, 1986).

N o t e s. We include *S. sardoa* sensu ANTOINE (1949), CANZONERI (1970b) and RATTI (1986). *S. angustata* var. *brenthoides* Rossi cited by REITTER (1916) and by PORTA (1934), *S. brenthoides* var. *angustata* Hbst. recorded by MÜLLER (1921), *S. brenthoides* ssp. *solieri* reported by KOCH (1940) and *S. brenthoides* s.l. mentioned by GRIDELLI (1949) are all referred to the above entity. FOCARILE (1969) cited *Stenosis brenthoides* s.l. sensu GRIDELLI (1949), giving no mention of *Stenosis sardoa* Küster. RATTI (1986) arrived at similar conclusions for the citation of *Stenosis brenthoides* of Pantelleria (i.e. *S. sardoa* Küster). It is possible that FOCARILE (1969) based this record on material present at the Natural History Museum, Milan, Italy. However, we found no material ascribed to this species from Malta in this museum. FOCARILE (1969) may have copied the record for Malta from PORTA (1934), the latter basing his citation after REITTER (1916). Therefore, the actual presence of this species in the Maltese Islands needs to be confirmed. We are including it on the basis of its general distribution which should also include the Maltese Islands.

Stenosis schembrii Canzoneri, 1979

Stenosis schembrii Canz.; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Marsa (Ghammieri), 7.XII.1993, 2 exs., 9.XII.1993, 2 exs., 14.XII.1993, 2 exs., 28.XII.1993, 2 exs., (D.M.); St. Thomas Bay, 6.IX.1996, 2 exs., (D.M.); Bidnija, 8.IX.1996, 1 exs., (D.M.). Specimens at Marsa were found under bark of *Eucalyptus* trees; other material was found under stones in garigue and disturbed habitats.

D i s t r i b u t i o n. *S. schembrii* is endemic to the Maltese Islands.

N o t e. *S. schembrii* was described from Malta and Comino (CANZONERI, 1979). Male aedeagus of *S. schembrii* is very similar to that of *S. intermedia* (Solier), a southern European form. In external morphology, *S. schembrii* shows strong affinities to *S. melitana*; the former has a more developed chaetotaxis and there is a difference in maximum width of the head at eye level (in *S. schembrii* it is wider - Fig. 1, 2).

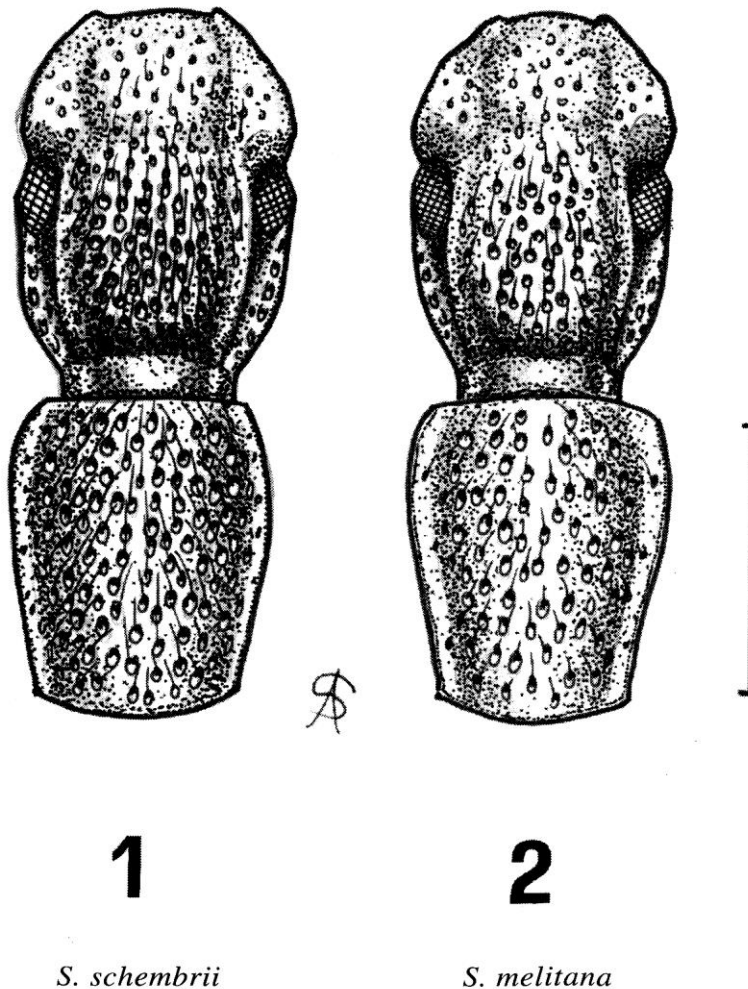


Fig. 1 - Head and pronotum of *Stenois schembrii*.

Fig. 2 - *idem* of *S. melitana*. Scale bar: 1 mm.

Dichillus pertusus Kiesenwetter, 1861

Dichillus pertusus Kies.; Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. 3 exs., (BMNH).

D i s t r i b u t i o n. Asia Minor, Greece, Southern Italy, Sicily, Egadi Is. and Pantelleria (RATTI, 1986).

N o t e. The species was not found during the present study but material deposited in the BMNH was examined. In their catalogue, CAMERON & CARUANA GATTO (1907) recorded this species as 'very rare' and the only Maltese locality given was 'Porto Reale'. In other countries, *D. pertusus* is usually found under large stones, associated with *Stenosis* spp.

Elenophorus collaris (Linneaus, 1767)

Helenophorus collaris L.; Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. 1 ex., (BMNH); Zebbug, 23.IV.1974, 1 ex., (M.J.E.). Specimen from Zebbug was probably found in a private garden (Ebejer, M. J. pers. comm., 1995).

D i s t r i b u t i o n. Spain, Balearic Is., Southern France, Central Southern Italy and Dalmatia (CANZONERI, 1977).

N o t e. Rare being often encountered under stones at the base of demolished buildings, in association with *Blaps* and *Akis* spp. (ESPAÑOL, 1954).

Alphasida grossa melitana Reitter, 1894

Asida melitana Rtrr.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907

Alphasida (Asida) melitana Reitt.; Tonna-Barthet, 1931

Alphasida grossa melitana Reitt.; Canzoneri, 1979; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. X.1901, 2 exs., (Dr M. Cameron-BMNH); 3 exs., (Sharp Coll.-BMNH); 3 exs., (F. Bates-BMNH); 8 exs., (BMNH); Bahrija, 15.IV.1971, 1 ex., (M.J.E.); Qannotta Valley, 21.XII.1986, 1 ex., (M.J.E.); St. Thomas Bay, 10.II.1989, 1 ex., 23.III.1989, 1 ex., 3.II.1990, 1 ex., 26.II.1990, 1 ex. (D.M.); Wied id-Dis, 3.III.1990, 2 exs., (D.M.). FILFLA. 16.VIII.1975, 1 ex., (M.J.E.). Found along road-sides and under stones in a variety of habitats.

D i s t r i b u t i o n. Endemic to the Maltese Islands.

N o t e. *A. grossa melitana* is closely related to *A. grossa sicula* occurring in Sicily. The former is characterized by its denser pubescence and larger, brighter markings. RATTI (1986) has recently synonymised this species with *A. grossa sicula* Sol. Ratti based this synonymy only on the type character (markings) utilized for the taxonomic sepa-

ration, which according to him was not sufficient to separate the two races. A more detailed study on variability of morphological characters encountered between the Maltese and Sicilian populations is needed. At this time, we cannot confirm or deny this synonymy and on the basis of geographic isolation, we still consider this a valid subspecies.

Sepidium tricuspidadatum tomentosum Erichson, 1841

Sepidium tricuspidadum tomentosum Er.; Kwieton, 1980

D i s t r i b u t i o n. Tunisia and Malta (KWIETON, 1980).

N o t e. Not found during the present study. The citation of KWIETON (1980) is based on five specimens collected from Malta and deposited at the Museum für Naturkunde der Humboldt-Universität, Berlin, Germany. It is necessary to reconfirm the presence of this species in the Maltese archipelago. It may be worth mentioning the presence of the only other Italian *Sepidium*, *S. siculum* Sol. known from Sicily and recently recorded from Pantelleria (ALICQUÒ, 1993).

Akis subterranea Solier, 1836

Akis bacarozzo Schrk.; Caruana Gatto, 1894

Akis melitana Rtrr.; Cameron & Caruana Gatto, 1907; Tonna-Barthet, 1931; Lanfranco 1964

Akis subterranea ssp. *melitana* Reitt., Canzoneri, 1968

Akis subterranea Sol.; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 1 ex., (BMNH); Vittoriosa, 28.IX.1963, 1 ex., (G.L.). FILFLA. 25.VIII.1963, 2 exs., (G.L.); 16.VIII.1975, 1 ex., (M.J.E.).

D i s t r i b u t i o n. Sicily, Ustica, Lipari Is., Egadi Is., Malta and Calabria (GRIMM, 1986).

N o t e. Anthropophilic species. REITTER (1904), in the description of *Akis melitana* pointed out that this species could simply be a race of *A. subterranea* Sol. SCHUSTER (1921) considered *A. melitana* as a variety of *A. subterranea*. On the basis of only a few specimens, CANZONERI (1968) was of the opinion that the Maltese *Akis* were attributed to *A. subterranea*, of which *A. melitana* may be considered synonymous, however he left the solution for future work. GRIMM (1986), on the basis of more abundant material, also proposed that the Maltese *Akis*

are, in fact, *A. subterranea*. Actually, *A. subterranea* is quite a variable species (CANZONERI, 1968; 1970a).

Scaurus aegyptiacus giganteus Küster, 1848

M a t e r i a l e x a m i n e d. GOZO. Sara Valley, 7.VI.1990, 1 ex., (D.M.). Specimen collected under stone on dry sediment.

D i s t r i b u t i o n. Algeria, Tunisia, Fezzan, Sardinia, Sicily, Egadi Is., Linosa (?) (CANZONERI, 1968) and Aeolian Is. (MARCUIZZI, 1970b).

N o t e. The species is a new record for the Maltese Islands. CANZONERI (1968) only found this tenebrionid in stables.

Scaurus striatus Fabricius, 1792

Scaurus vicinus Sol.; Caruana Gatto, 1894

Scaurus striatus Fab.; Cameron & Caruana Gatto, 1907; Reitter, 1914b; Lanfranco, 1964; Marcuzzi, 1970a; Canzoneri, 1979; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 5 exs., (BMNH); 1 ex., (Wellwitch Coll.-BMNH); 1 ex., (BMNH-G. Lewis); 2 exs., (D.H. Heppell-BMNH); Rinella point, 24.V.1953, 1 ex., (D.H. Heppell-BMNH); Luqa, 5.III.1956, 2 exs., (G.V.P. Sewell-BMNH); San Anton Gardens, 10.IV.1971, 1 ex., (M.J.E.); Tal-Qroqq, VII.1974, 1 ex., (M.J.E.); Balzan, 29.IX.1974, 1 ex., (M.J.E.); Sliema, 18.IX.1976, 2 exs., (M.J.E.); St. Thomas Bay, 9.IV.1989, 1 ex., 22.VI.1989, 1 ex., 22.X.1996, 1 ex., (D.M.); Siggiewi, 27.VIII.1993, 2 exs., (D.M.); Wardija, 3.X.1993, 1 ex., (D.M.); Balluta (M'Xlokk), 27.X.1996, 1 ex., (D.M.). GOZO. Ghasri, 13.X.1994, 1 ex., (C.F.); Dwejra, 23.X.1996, 1 ex., (D.M.); Ramla, 23.X.1996, 6 exs., (D.M.); Ta' Cenc, 3.XI.1996, 6 exs., (D.M.). Often encountered under stones in garigue habitats.

D i s t r i b u t i o n. Catalonia, Balearic Is., Southern France, Corsica, Sardinia, Sicily and surrounding islands, Linosa, Tuscany, Pontine Is., Capri and peninsular Italy (CANZONERI, 1968).

N o t e. CARUANA GATTO (1894) listed for Malta *Scaurus vicinus*, which is a prevalent Spanish species, quite similar to *S. tristis* (ESPAÑOL, 1960); the citation was probably due to a misidentification, because only *S. striatus* was later quoted in CAMERON & CARUANA GATTO's catalogue in 1907.

Scaurus tristis Olivier, 1795

Scaurus tristis Ol.; Canzoneri 1979; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Zejtun, 8.IX.1989, 1 ex., (D.M.). GOZO. Victoria, 25.VIII.1994, 1 ex., (C.F.). Specimen from Malta found under a stone in a disturbed habitat.

D i s t r i b u t i o n. Morocco, Algeria, Tunisia, Southern France, Corsica, Sardinia, Southern Italy, Sicily, Lipari, Ustica and Balearic Is. (CANZONERI, 1968).

Trachyderma lima (Petagna, 1819)

Ocnere angustata Sol.; Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. Wied id-Dis, 9.VI.1952, 1 ex., (G.L.); Zejtun, 26.X.1991, 1 ex., (D.M.); Marsa (Ghammieri), 1.VIII.1994, 1 ex., (D.M.). Always found near human habitation.

D i s t r i b u t i o n. Turkey, Cyprus, Greece, Santorini Is., Syria, Milos, Sicily, Pantelleria, Algeria, Tunisia, Libya, Egypt and Palestine (GRIMM, 1981).

N o t e. A very rare species, at least on the islands of Sicily's channel. CAMERON & CARUANA GATTO (1907) recorded this species as occurring 'here and there'. On the nearby island of Pantelleria, the species has not been recorded since 1926 (RATTI, 1986). It is apparently anthropophilic and possibly lives in ecological niches which still need to be identified; this may explain its rarity.

Pimelia rugulosa melitana Reitter, 1915

Pimelia sardoa Sol. var. *subscabra* Sol.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907

Pimelia rugulosa var. *subscabra* Senac; Tonna-Barthet, 1931

Pimelia rugulosa Germ.; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 1 ex., (Fry Coll.-BMNH); 4 exs., (Wellwitch Coll.-BMNH); 1 ex., (T.B. Fletcher-BMNH); 1 ex., (H.C. Harford-BMNH); 6 exs., (J. Ritchia-BMNH); 1 ex., (S.L. Vella-BMNH); Attard, 21.III.1953, 2 exs., (D.H. Heppell-BMNH); Ricasoli, 27.III.1953, 1 ex., 3.IV.1953, 5 exs., (D.H. Heppell-BMNH); Luqa, 7.IV.1956, 1 ex., (G.V.P. Sewell-BMNH); B'Bugia (Has-Sabtana), 10.IV.1956, 2 exs., (G.V.P. Sewell-BMNH); Hagar Qim, 14.IV.1963, 2 exs., (O.W. Richards-BMNH); Tarxien, 15.IV.1963, 1 ex., (O.W. Richards-BMNH); Zebbug, 10.X.1976, 1 ex., (M.J.E.); St. Thomas Bay, 29.IX.1989, 1 ex., (D.M.); Mellieha, 27.I.1990, 2 exs., (D.M.). GOZO. Dwejra, 23.X.1996, 1 ex., (D.M.). Habitats similar to that of *Alphasida grossa melitana*.

D i s t r i b u t i o n. Endemic to the Maltese Islands.

N o t e. This species is very similar to *P. rugulosa* of Eastern Sicily (GRIDELLI, 1950). GRIMM (1986) does not consider this a valid subspecies and reports it to the nominal form. This is probably correct, but we feel that more material from Sicily and the circumsicilian islands has to be examined and compared before making any conclusions.

Blaps gigas (Linnaeus, 1767)

Blaps gigas L.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907; Canzoneri, 1979; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Santi Valley (Victoria Lines), 15.IX.1974, 1 ex., (M.J.E.); San Gwann, 19.VII.1989, 1 ex., (D.M.); Tal-Munxar, 19.VIII.1989, 1 ex., (D.M.); St. Thomas Bay, 29.IX.1989, 1 ex., (D.M.); Migra Ferha, 3.VI.1990, 3 exs., (D.M.); M'Xlokk, 9.X.1994, 1 ex., (D.M.). GOZO. Ramla, 16.VII.1989, 1 ex., 18.IV.1990, 2 exs., (D.M.); Sara Valley, 18.IV.1990, 1 ex., (D.M.). Encountered in cellars, farm houses, garigue and steppe habitats.

D i s t r i b u t i o n. Mediterranean basin, Azores, Canary Is., (GEBIEN, 1937-44) and Madeira (ARDOIN, 1960).

Blaps mucronata Latreille, 1804

Blaps foveicollis Allard, 1882 syn. n.

Blaps mucronata Latr.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 1 ex., (MNHP), 2 exs., (BMNH); Buskett, 8.IX.1971, 3 exs., (M.J.E.). Specimens from Buskett were found under stones (Ebejer, M. J. *pers. comm.*, 1995)

D i s t r i b u t i o n. Central Southern Europe, Western Asia and North America (Imported) (CANZONERI, 1977).

N o t e. *Blaps foveicollis* Allard was described from a single specimen taken from Malta (ALLARD, 1882); the species has not been found since. We examined the Holotype deposited at the Museum of Paris, France. The specimen is very large, with the sides of the pronotum heavily sinusoidal at the base (lateral view). This character is also found in Italian *B. mucronata*, though to a lesser extent. Based on our examination, this lone entity is probably only an aberrant form of *B. mucronata*.

Allophylax picipes melitensis (Baudi, 1876)

Phylax melitensis Baudi; Caruana Gatto, 1894

Phylax littoralis Muls., v. *melitensis* Baudi; Cameron & Caruana Gatto, 1907

Allophylax picipes v. *melitensis* Baudi; Tonna-Barthet, 1931; Marcuzzi, 1970a; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 10 exs., (BMNH); Ta' Qali, 24.VII.1974, 1 ex., (M.J.E.); Buskett, 20.XII.1986, 1 ex., (M.J.E.); St. Thomas Bay, 23.III.1989, 1 ex., 22.VI.1989, 4 exs., 3.II.1990, 1 ex., (D.M.); Gudja, 20.VII.1989, 2 exs., (D.M.); Munxar, 15.VIII.1989, 1 ex., (D.M.); Golden Bay, 14.VIII.1993, 2 exs., (D.M.); Ghar Lapsi, 8.IX.1993, 4 exs., (D.M.); Xorb il-Ghagin, 27.XI.1993, 1 ex., (D.M.); Migra Ferha, 22.X.1996, 1 ex., (D.M.). GOZO. Ghasri, 15.X.1994, 1 ex., (C.F.); Dwejra, 23.X.1996, 3 exs., (D.M.); Ramla, 23.X.1996, 1 ex., (D.M.). COMINO. St. Maria, 13.VII.1976, 1 ex., (M.J.E). COMINOTTO. 5.V.1990, 2 exs., (D.M.). Habitat similar to that of *Dendarus lugens*.

D i s t r i b u t i o n. The nominal form occurs in Tunisia, Sicily and surrounding islands, Calabria, Puglia, Tremiti, Dalmatia, Southern France (CANZONERI, 1970b), Corsica, Sardinia and Algeria (GARDINI, 1974).

N o t e. Endemic subspecies to the Maltese Islands. On the nearby island of Lampedusa another species, *A. costatipennis* (Lucas), is found (CANZONERI, 1970b; 1972; ALIQUÒ, 1995).

Cnemeplatia atropos Costa, 1847

M a t e r i a l e x a m i n e d. MALTA. Marsa (Ghammieri), 16.XII.1993, 1 ex., (leg. M. Psaila); Wied Babù (Zurrieq), 12.XI.1995, 1 ex., (D.M.). The Marsa specimen was found under bark of *Eucalyptus* tree, while the specimen at Wied Babù was found in soil under *Ceratonia siliqua* L.

D i s t r i b u t i o n. Italy, Banat (Hungary), Pentelikon, Cephalonia, Peloponnese, Turkey, Nubia, Iraq, Yemen and Afghanistan (CANZONERI & VIENNA, 1987).

N o t e. The species is a new record for the Maltese Islands. It represents an extremely rare taxon.

Cheirodes brevicollis (Wollaston, 1864)

Anemia brevicollis Woll.; Grimm, 1986

D i s t r i b u t i o n. From the Canary Is. to Western Pakistan (GRIMM, 1986).

N o t e. The species was not found during the present study. GRIMM (1986) found a single specimen at Armier Bay (Malta). For the generic name refer to SPILMAN (1973).

Dendarus lugens (Mulsant & Rey, 1854)

Dendarus carinatus, Muls.; Cameron & Caruana Gatto, 1907

Dendarus dalmatinus Germ.; Focarile, 1969

Dendarus lugens (Muls. & Rey); Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Buskett, 1.VIII.1971, 1 ex., (M.J.E.); Ghadira, 19.VII.1977, 1 ex., (M.J.E.); Wied Babu`, 24.VI.1989, 1 ex., (D.M.); Mgiebah, 11.III.1990, 1 ex., (D.M.); Golden Bay, 14.VIII.1993, 3 exs., (D.M.); Wardija, 3.X.1993, 1 ex., (D.M.); Paradise Bay, 28.XI.1993, 1 ex., (D.M.). Very often found under stones in a variety of habitats such as garigue, steppe and near sand dunes.

D i s t r i b u t i o n. Tuscan archipelago, Thyrrenian Central Southern Italy, Sicily and Malta (GARDINI, 1974).

N o t e. FOCARILE (1969) recorded *D. dalmatinus* for Malta. This was probably in error since Focarile gave no mention of *D. lugens*, already cited by CAMERON & CARUANA GATTO (1907), and may have considered such a record referable to *D. dalmatinus*.

Heliopathes avarus Mulsant & Rey, 1854

M a t e r i a l e x a m i n e d. GOZO. Dwejra, 15.X.1996, 1 ex., 23.X.1996, 9 exs., (D.M.). Found under small stones in coastal area.

D i s t r i b u t i o n. The species is known from Algeria, Pelagic Is., Pantelleria, Sicily, Egadi Is. The citations for Calabria and Sardinia need confirmation (CANZONERI, 1970b).

N o t e. *Heliopathes avarus* is a new record for the Maltese Islands. The various populations of *H. avarus* were recently revised by RATTI (1986). The Maltese material is closely related to the subspecies *donatellae* described by CANZONERI (1970b) from Pantelleria. This subspecies was reduced to a simple form in view of the great morphological variability encountered in the typical form. In view of this, we are of the opinion of studying more abundant Maltese material and compare this with material from Lampedusa, Pantelleria and Sicily before making any further conclusions.

Gonocephalum rusticum (Olivier, 1811)

Gonocephalum rusticum Oliv.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907; Marcuzzi, 1970a

M a t e r i a l e x a m i n e d. MALTA. Marsaskala, 11.X.1989, 2 exs., (D.M.); Mellieha, 30.I.1990, 1 ex., (D.M.); Tal-Munxar, 20.V.1990, 1 ex., (D.M.); Marsa (Ghammieri), 14.IX.1993, 2 exs., 7.XII.1993, 3 exs., 9.XII.1993, 1 ex., 24.XII.1993, 1 ex., (D.M.); M'Xlokk (Balluta), 9.X.1994, 7 exs., (D.M.); Chadwick Lakes, 26.XII.1994, 1 ex., (D.M.). GOZO. Ghasri, 9.X.1994, 2 exs., (C.F.). Often found under stones near sand dunes and saltmarshes; however specimens from Marsa were found under bark of *Eucalyptus* trees.

D i s t r i b u t i o n. Canary Is. (Gomera), Madeira, Mediterranean basin, Caucasus, Caspian Sea, Iran, Central Asia, Western Mongolia, Saudi Arabia and Oman (KASZAB, 1982).

Gonocephalum setulosum Faldermann, 1837

Gonocephalum setulosum Fald.; Cameron & Gatto, 1907; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 3 exs., (Sharp Coll.-BMNH); St. Thomas Bay, 9.VI.1995, 5 exs., 11.XI.1996, 1 ex., (D.M.). GOZO. Qolla l-Bajda (Qbajjar), 9.VI.1990, 1 ex., 3.XI.1996, 1 ex., (D.M.). The specimen from Gozo was found under stone in very dry sediment.

D i s t r i b u t i o n. Sardinia, Sicily, Greece, Turkey, Iraq, Iran, Southern Russia, Transcaspia, Sinai, Arabia, North Africa, Sahara, Mauritania, Tibesti, Hoggar and Tassili (GRIDELLI, 1952; KASZAB, 1982), Pantelleria and Linosa (FOCARILE, 1969).

Opatrum emarginatum Lucas, 1849

Opatrum melitense Küst.; Cameron & Caruana Gatto, 1907

Opatrum emarginatum Luc.; Canzoneri, 1979; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. XI.1901, 2 exs., (Dr M. Cameron Coll.-BMNH); Kennedy Grove (Salina), 11.IV.1976, 1 ex., (M.J.E.); Mosta, 4.VII.1989, 1 ex., (D.M.); Ghajn Rihana, 3.III.1990, 1 ex., (D.M.); Bugibba, 11.IV.1994, 2 exs., (D.M.); Bidnija, 23.II.1997, 2 exs., (D.M.). Found under stones in a variety of habitats.

D i s t r i b u t i o n. Algeria, Tunisia (GEBIEN, 1937) and Sardinia (ARDOIN, 1973).

N o t e. African species which according to CANZONERI (1979) was a recent introduction into the Maltese Islands by passive transport.

This entity however, was already present on Malta at the beginning of this century. We have examined the *Opatrum* material that was used in CAMERON & CARUANA GATTO's catalogue (1907). In the catalogue reference is only made to *O. melitense* which should refer to *O. emarginatum*. It is worth mentioning that no morphological differences were found between the Maltese *Opatrum* collected recently and the Maltese *Opatrum* collected by Cameron in 1901. However, we noted some morphological variations when comparing *Opatrum emarginatum* collected from its type locality (Algeria) with Maltese material. It could be possible that the Maltese *Opatrum* is a different species from *O. emarginatum*. However, this genus is in need of revision and for the time being we are not in a position to give any proposals.

Opatrum melitense Küster, 1849

Opatrum verrucosum Germar; Focarile, 1969

D i s t r i b u t i o n. Possibly endemic to the Maltese Islands.

N o t e. PORTA (1934) and GEBIEN (1937-44) regarded this species as a subspecies of *O. sabulosum*. Based of the original description of *O. melitense*, ESPAÑOL (1958) confirms that this taxon cannot be attributed to *O. sabulosum* occurring in Italy (but not known from Sicily), and that most probably this has to refer to another species. Our opinion is that the original description of *O. melitense* does not even refer to *O. emarginatum*, but probably a species similar to *O. verrucosum*. In fact, Küster, writes "Steht zwischen *O. verrucosum* und *alternatum*". Not having the type material available for study, which most probably was destroyed during the second world war (BAEHR, *pers. comm.*, 1995), we are not in a position to verify the validity of this presumed endemic species.

The citation of *O. verrucosum* (FOCARILE, 1969) for Malta, was probably due to the fact that FOCARILE (1969) considered this species identical to *O. melitense*. In fact, FOCARILE (1969) only mentioned *O. verrucosum* for Malta and we are thus excluding its occurrence from the Maltese archipelago.

Opatroides punctulatus Brullé, 1832

Penthicus punctulatus Brull.; Cameron & Caruana Gatto, 1907

Opatroides punctulatus Brull.; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Ta' Qali, 24.VII.1974, 1 ex., (M.J.E.); St. Thomas Bay, 23.III.1989, 1 ex., 3.II.1990, 1 ex., 7.IV.1990, 1 ex., (D.M.); Zejtun, 4.X.1989, 1 ex., (D.M.); Buskett, 29.I.1990, 1 ex., (D.M.); Pellegrin, 4.II.1990, 1 ex., (D.M.); M'Xlokk (Balluta), 14.IX.1993, 2 exs., (D.M.); Xorb il-Ghagin, 27.XI.1993, 2 exs., (D.M.). GOZO. Ghasri, 6.X.1994, 1 ex., (C.F.). Under stones in a variety of habitats.

D i s t r i b u t i o n. Central and Western Asia, North Africa, Malta, Linosa, Pantelleria, Egadi Is., Sicily, Calabria, Sardinia, Sudan, Eritrea, Arabia, Somalia (CANZONERI, 1977) and Siberia (GRIMM, 1986).

Ammobius rufus Lucas, 1849

Ammobius rufus Luc.; Cameron & Caruana Gatto, 1907; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Ghadira, 23.V.1990, 2 exs., 21.IX.1993, 1 ex., (D.M.); Ramla tat-Torri, 23.V.1990, 1 ex., (D.M.); Golden Bay, 14.VIII.1993, 2 exs., (D.M.). GOZO. Ramla, 18.IV.1990, 6 exs., 6.IV.1990, 3 exs., 15.IV.1994, 3 exs., 1.X.1995, 48 exs., (D.M.). Found under stones in sand dune habitats.

D i s t r i b u t i o n. Mediterranean to Black Sea (KASZAB, 1967), Morocco (KOCHER, 1958), Thyrrenic Italy, Ionian and Adriatic Italy, Corsica, Sardinia, Sicily and circumsicilian islands (GARDINI, 1974), Santorini Is. (GRIMM, 1981), and Cyprus (GRIMM, 1991).

N o t e. This psammohalobiont species is frequently found together with *Trachyscelis aphodioides*. According to CILIA (1989), the species was thought to be restricted to Ramla, in Gozo. During this study, however, it was found in most of Malta's few remaining sand dune habitats.

Clitobius ovatus (Erichson, 1843)

Clitobius ovatus Er.; Cameron & Caruana Gatto, 1907; Tonna-Barthet, 1931; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 2 exs., (Sharp Coll.-BMNH); Marsaskala, 7.V.1990, 1 ex., 20.IV.1991, 1 ex., 14.XI.1993, 1 ex., (D.M.); M'Xlokk (Balluta), 21.XI.1993, 1 ex., 18.II.1996, 1 ex., (D.M.). GOZO. Qolla l-Bajda, 9.VI.1990, 2 exs., (D.M.); Qbajjar, 15.VI.1991, 1 ex., 3.XI.1996, 4 exs., (D.M.). Found under stones near saltmarsh vegetation.

D i s t r i b u t i o n. Cape Verde Is. (ESPAÑOL & LINDBERG, 1963), Senegal and Angola, North Africa and Sahara, Turkey, Sicily, Malta (ESPAÑOL, 1943) and Lampedusa (FOCARILE, 1969).

Scleron multistriatum Forskål, 1775

Scleron abbreviatum Reiche; Cameron & Caruana Gatto, 1907

D i s t r i b u t i o n. South Russia, Turkey, Asia Minor, Crete, Syria, Egypt, Cyrenaica, Sicily, Xanthos, Greece (GRIDELLI, 1930) and Santorini Is. (GRIMM, 1981).

N o t e. The species was not found during the present study and not recorded since the beginning of this century. We found no material attributed to this species from Malta in the BMNH.

Trachyscelis aphodioides Latreille, 1809

Trachyscelis aphodioides Lat.; Cameron & Caruana Gatto, 1907; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Ramla tat-Torri, 23.V.1990, 2 exs., 28.XI.1993, 1 ex., (D.M.). GOZO. Ramla, 18.IV.1990, 7 exs., 8.VI.1990, 2 exs., 15.IV.1994, 14 exs., 1.X.1995, 9 exs., (D.M.). Found under stones in sand dunes and under dead *Posidonia oceanica* Delile.

D i s t r i b u t i o n. Mediterranean, Black Sea, North Africa, Canary Is., and Cape Verde Is. (GRIMM, 1986).

N o t e. On the nearby island of Lampedusa, the subspecies *lopadusae* has been described on the basis of its larger dimensions (KOCH, 1935).

Phaleria acuminata Küster, 1852

Phaleria acuminata Küst.; Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. Ghajn Tuffieha, 9.V.1990, 1 ex., (D.M.). GOZO. Ramla, 16.VIII.1989, 1 ex., 18.IV.1990, 1 ex., 15.IV.1994, 1 ex., (D.M.). Found under stones in sand dune habitats.

D i s t r i b u t i o n. Southern Spain, Balearic Is., Corsica, Sardinia, Italy, Sicily, Dalmatia, Turkey, Lebanon, Palestine, Egypt, Tripolitania, Tunisia, Algeria (CANZONERI, 1968) and Mediterranean Morocco (KOCHER, 1958).

Phaleria bimaculata (Linnaeus, 1767)

Phaleria bimaculata L.; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Dragonara, 3.IX.1989, 6 exs., (D.M.); Gnejna, 9.V.1990, 5 exs., (D.M.); 20.VIII.1993, 1 ex., (D.M.); Ghadira, 21.IX.1993, 2 exs., (D.M.); M'Xlokk (Balluta), 9.X.1994, 10 exs., (D.M.). GOZO. Ramla, 23.X.1996, 4 exs., (D.M.). Comino. St. Maria Bay, 3.VIII.1975, 1 ex., (M.J.E.). COMINOTTO. 5.V.1990, 3 exs., (D.M.). Found under stone in sand dunes and under dead *Posidonia oceanica*.

D i s t r i b u t i o n. Southern Spain and France, Italy, Elba, Sardinia, Sicily, Lampedusa, Yugoslavia, Albania, Greece, Bulgaria, Rumania, Crimea, Rhodes, Crete, Egypt, Tripolitania, Tunisia (CANZONERI, 1968), Tangier and Alboran (KOCHER, 1958).

Crypticus gibbulus (Quensel, 1806)

M a t e r i a l e x a m i n e d. MALTA. Gudja, 20.VII.1989, 7 exs., (D.M.). Under stones near farm house in a very disturbed area.

D i s t r i b u t i o n. Morocco, Algeria, Tunisia, Iberian peninsula, Balearic Is., Corsica, Sardinia, Sicily, Syria (ESPAÑOL, 1954) Lazio, Giglio, Ustica, Egadi Is. and Pantelleria (CANZONERI, 1977).

N o t e. *Crypticus gibbulus* is a new record for the Maltese Islands.

Pseudoseriscius cameroni (Reitter, 1902)

Crypticus cameroni Rtrr.; Cameron & Caruana Gatto, 1907

Seriscius cameroni Reitt.; Tonna-Barthet, 1931

Crypticus (Pseudoseriscius) cameroni Reitt.; Español, 1949

M a t e r i a l e x a m i n e d. MALTA. XI.1901, 5 exs., (Dr M. Cameron Coll.-BMNH). GOZO. Ramla, 16.VII.1989, 1 ex., 1.X.1995, 22 exs., 23.X.1996, 3 exs., (D.M.). In sand dunes under dead *Posidonia oceanica* and near base of *Pancretium maritimum*.

D i s t r i b u t i o n. *Pseudoseriscius cameroni* is an endemic species to the Maltese Islands.

N o t e. On examination of the holotype, ESPAÑOL (1949) verified the validity of this species, concluding that *P. cameroni* was closely related to three other species namely: *P. olivieri* Desbr. (found in Algeria and Tunisia), *P. helvolus* Kust. (occurring in Sicily, Calabria, Puglia and Albania) and *P. normandi* Españ. (found in Tunisia). *P. cameroni*

(Fig. 3) is a rare and extremely threatened species in the Maltese Islands, due to destruction of its habitat, sand dunes. The findings reported during this study are the first since the beginning of this century. CAMERON & CARUANA GATTO (1907) record the species from Mellieha, where it now appears to be extinct.

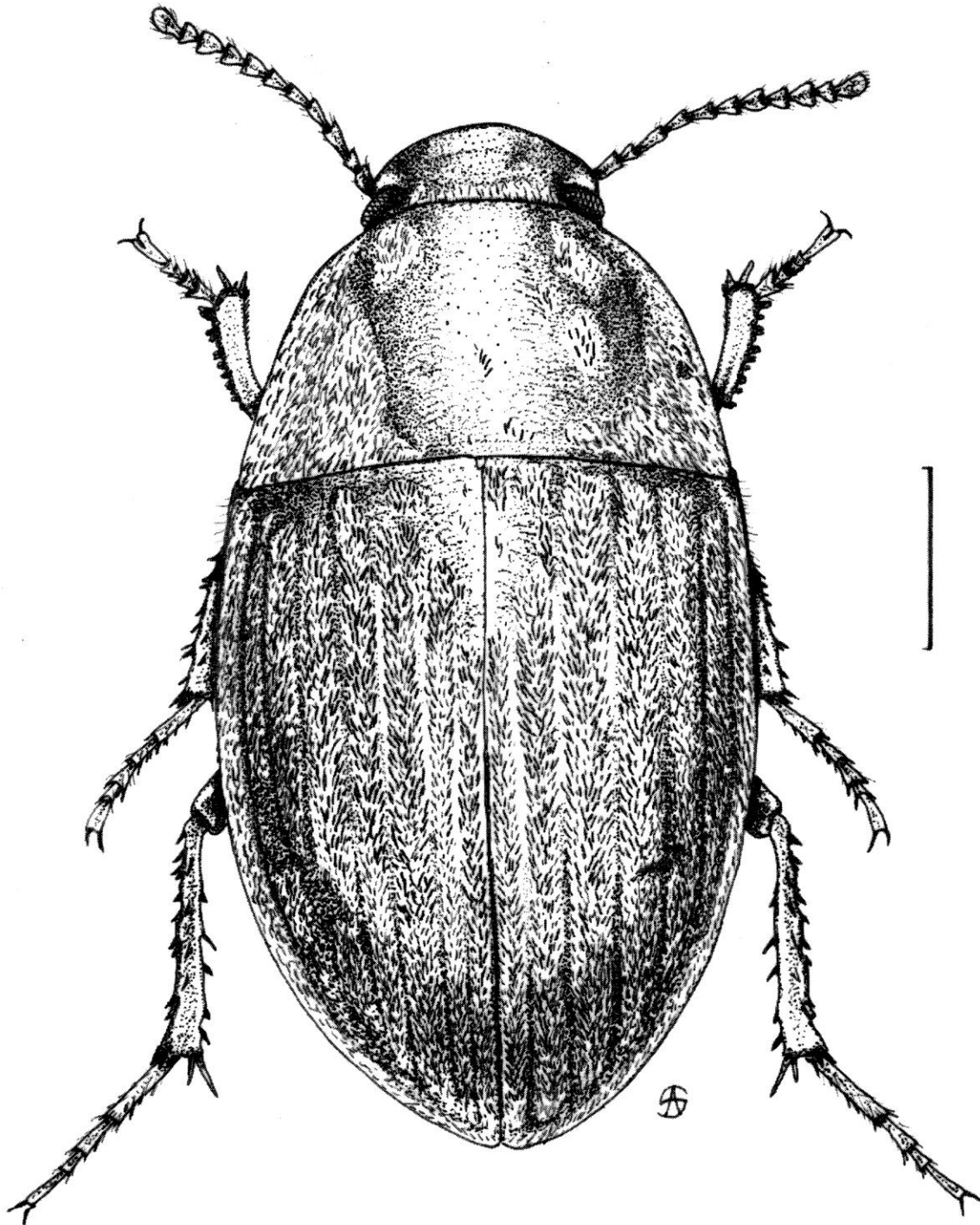


Fig. 3 - Habitus - *Pseudoseriscius cameroni* Reitter.

Eledona agaricola (Herbst, 1783)

M a t e r i a l e x a m i n e d. MALTA. Rabat (Tal-Virtu), 16.XI.1996, 28 exs., (D.M.). Specimens were found in the bracket fungus *Laeteporus sulphureus* var. *ceratoniae* grown on *Ceratonia siliqua* L.

D i s t r i b u t i o n. Continental Europe and North America (ESPAÑOL, 1954).

N o t e. *Eledona agaricola* is a new record for the Maltese Islands.

Pentaphyllus testaceus (Hellwig, 1792)

Pentaphyllus testaceus Hellw.; Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. 3 exs., (Sharp Coll.-BMNH); 10 exs., (G.C.Champion-BMNH); Rabat (Tal-Virtu), 16.XI.1996, 42 exs., (D.M.). Specimens from Rabat were found in the bracket fungus *Laeteporus sulphureus* var. *ceratoniae* grown on *Ceratonia siliqua* L.

D i s t r i b u t i o n. Typical European species, present from Scandinavia to North Africa (ESPAÑOL, 1954).

Gnatocerus cornutus (Fabricius, 1798)

Echocerus cornutus F.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. Salina, 19.VII.1989, 1 ex., (D.M.); Luqa, 18.X.1989, 1 ex., (D.M.). Often observed near animal feeds; specimen from Luqa was found under bark of *Acacia*.

D i s t r i b u t i o n. Cosmopolitan (GARDINI, 1974).

N o t e. For the generic name (*Gnathocerus* Thunb. = *Gnatocerus* Thunb.) refer to SPILMAN (1972) and ICZN Opinion No. 1039 (1975).

Tribolium castaneum (Herbst, 1797)

Tribolium ferrugineum F.; Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. Zejtun, 21.IX.1989, 2 exs., (D.M.); Marsa (Ghammieri), 9.XII.1993, 1 ex., 28.XII.1993, 2 exs., 30.XII.1993, 4 exs., (D.M.). Found near animal feeds; specimens from Marsa found under bark of *Eucalyptus* trees.

D i s t r i b u t i o n. Cosmopolitan (KASZAB, 1982).

N o t e. Species often associated with stored grains and dried fruit.

Palorus subdepressus Wollaston, 1864

M a t e r i a l e x a m i n e d. MALTA. Salina, 19.VII.1989, 2 exs., (D.M.); Zejtun, 21.IX.1989, 5 exs., (D.M.); Luqa, 18.X.1989, 1 ex., (D.M.); Marsa (Ghammieri), 7.XII.1993, 2 exs., 16.XII.1993, 2 exs., 28.XII.1993, 2 exs., 2.I.1994, 1 ex., (D.M.). Often found near animal feeds; specimens from Marsa found under bark of *Eucalyptus* trees.

D i s t r i b u t i o n. Cosmopolitan. Frequent in Italy, Corsica, Sardinia and Morocco (ESPAÑOL, 1954).

N o t e. *Palorus subdepressus* is a new record for the Maltese Islands.

Alphitobius diaperinus (Panzer, 1797)

Alphitobius diaperinus Panz.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. Zejtun, 7.V.1989, 1 ex., 15.V.1989, 2 exs., 21.IX.1989, 1 ex., (D.M.); Gudja, 20.VII.1989, 1 ex., (D.M.); Salina, 19.VII.1989, 3 exs., (D.M.); Marsa (Ghammieri), 9.XII.1993, 1 ex., 24.XII.1993, 2 exs., 28.XII.1993, 1 ex., (D.M.). Found under stones near animal feeds; specimens from Marsa found under bark of *Eucalyptus* trees.

D i s t r i b u t i o n. Considered as a cosmopolitan species (ESPAÑOL, 1954; GARDINI, 1974) but according to RATTI (1986), it is more appropriate to be considered as a subcosmopolitan distribution.

Alphitobius laevigatus (Fabricius, 1781)

M a t e r i a l e x a m i n e d. MALTA. Delimara (Tas-Silg), 20.VII.1989, 1 ex., (D.M.); Marsa (Ghammieri), 28.XII.1993, 1 ex., (D.M.). Delimara specimen found under stone in garigue habitats and Marsa specimen found under bark of *Eucalyptus* tree.

D i s t r i b u t i o n. Considered cosmopolitan (ESPAÑOL, 1954) but more appropriate considered as a subcosmopolitan distribution.

N o t e. *A. laevigatus* is a new record for the Maltese Islands.

Phthora crenata Germar, 1836

Phthora crenata Germ.; Cameron & Caruana Gatto, 1907

Phthora crenata Muls.; Porta, 1934

Cataphronetis crenata (Germ.); Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. 1901, 3 exs., (Dr M. Cameron Coll.-BMNH); 2 exs., (G.C. Champion-BMNH); 4 exs., (Sharp Coll.-BMNH); M'Xlokk (Balluta), 22.VIII.1989, 1 ex., 26.I.1990, 1 ex., 22.IV.1990, 2 exs., 28.IV.1990, 3 exs., 14.IX.1993, 21 exs., 21.XI.1993, 6 exs., 9.X.1994, 6 exs., 18.II.1996, 2 exs., 27.X.1996, 7 exs., (D.M.); St. Thomas Bay, 9.VI.1995, 8 exs., (D.M.). GOZO. Qolla l-Bajda, 9.VI.1990, 1 ex., Qbajjar, 15.VI.1991, 2 exs., 3.XI.1996, 3 exs., (D.M.). Found under stones near salt-marshes and brackish water pools.

D i s t r i b u t i o n. Western Mediterranean (GRIMM, 1986).

N o t e. For the synonymy of the generic name *Phtora* Seidl. (= *Cataphronetis* Luc.) refer to SPILMANN (1966). *Phtora crenata* Muls. (the generic name of which has changed considerably-Spilmann, 1966) is a different species from *Phtora crenata* Germ. The former was erroneously cited for Malta (PORTA, 1934). In their catalogue, CAMERON & CARUANA GATTO (1907) used *Phthora crenata* Germ., to indicate *Cataphronetis crenata* (Germ.). Wrongly, PORTA (1934) thought that this was referring to *Phtora crenata* (= *Clamoris crenata*) described by Mulsant in 1854. In fact, in this same work (PORTA, 1934), there is no indication of *Cataphronetis* for Malta. For this reason, *Phtora crenata* Muls. should be removed from the Maltese tenebrionid fauna. Also GRIMM (1986), not evaluating the above inaccuracy, wrongly listed *Cataphronetis crenata* (Germ.) as a new record for the Maltese archipelago.

Corticeus unicolor Piller & Mitterpacher, 1783

Corticeus castaneus F., Cameron & Caruana Gatto, 1907

M a t e r i a l e x a m i n e d. MALTA. 1 ex., (BMNH).

D i s t r i b u t i o n. Europe and Caucasus (MÜLLER, 1921; KASZAB, 1967).

N o t e. The species was not found during the present study. However, we examined a specimen collected on Malta (Coll. J.J. Walker) and deposited at the BMNH.

Corticeus bicolor (Olivier, 1790)

Corticeus bicolor Ol.; Cameron & Caruana Gatto, 1907

D i s t r i b u t i o n. Europe and Siberia (HORION, 1956).

Note. The species was not found during the present study and no material collected from Malta was found at the BMNH.

Cossyphus moniliferus Chevrolat, 1829

Cossyphus insularis Lap.; Cameron & Caruana Gatto, 1907

Cossyphus moniliferus Chev.; Grimm, 1986

Material examined. MALTA. 2 exs., (BMNH-Dr M. Cameron); Ghajn Tuffieha, 27.XII.1975, 2 exs., (M.J.E.); Pellegrin, 31.XII.1988, 2 exs., 4.II.1990, 4 exs., (D.M.); Bidnija, 23.II.1997, 1 ex., (D.M.). Usually found under stones in coastal areas.

Distribution. Canary Is., Eastern and Western Africa, Egypt, Greece, South Italy, Sicily, Sardinia, Malta and Balearic Is. (Scupola - unpublished data).

Tenebrio molitor Linnaeus, 1758

Tenebrio molitor L.; Caruana Gatto, 1894; Cameron & Caruana Gatto, 1907; Marcuzzi, 1970a

Material examined. MALTA. Swieqi, 4.VIII.1989, 1 ex., (D.M.); Marsa (Ghammieri), 2.VIII.1993, 3 exs., (D.M.). Found near animal feeds; specimens from Marsa were found inside a laboratory, probably purchased from a petshop (larvae used as aquarium fish food) and were being reared in a small container.

Distribution. Cosmopolitan (GARDINI, 1974).

Tenebrio obscurus Fabricius, 1792

Material examined. MALTA. Zejtun, 15.V.1989, 5 exs., (D.M.). Found near pigeon feeds.

Distribution. Cosmopolitan (GARDINI, 1974).

Note. *T. obscurus* is a new record for the Maltese Islands.

Belopus elongatus ecalcaratus (Seidlitz, 1898)

Calcar elongatum Hbst.; Cameron & Caruana Gatto, 1907

Belopus elongatus ecalcaratus (Seidl.); Grimm, 1986

Material examined. MALTA. Ghajn Tuffieha, 27.XII.1975, 2 exs., (M.J.E.); Pellegrin, 4.II.1990, 6 exs., (D.M.); Paradise Bay, 28.XI.1993, 4 exs., (D.M.);

Gnejna (towards Karaba), 25.X.1996, 4 exs., (D.M.). GOZO. Ramla, 18.IV.1990, 1 ex., 1.X.1995, 3 exs., (D.M.). Found under stones in coastal areas.

D i s t r i b u t i o n. Algeria, Tunisia, (KOCH, 1935), Sicily, Malta and Ustica (CANZONERI, 1977).

N o t e. KOCH (1935) considered *Belopus elongatus* var. *ecalcaratus* Seidl. as a distinct geographical race. GRIMM (1986) agreed with this hypothesis and also included *B. elongatus* of Sicily. CANZONERI (1977) misinterpreted the species and created a new subspecies, *B. elongatus* spp. *siculus* for the populations of Sicily, Malta, Ustica and Tunisia, concluding that *B. elongatus ecalcaratus* described by Seidlitz, was simply a variation of the typical form. We examined material of *B. elongatus* from Algeria, Spain, Sicily and Sardinia. Aedeagus morphology of Algerian specimens was similar to Sicilian material but well separated from those of Spain and Sardinia. The typical form is known to occur in Morocco, Portugal, Spain, Southern France and Sardinia (GRIMM, 1986).

Helops rossii Germar, 1817

Helops rossii Serv.; Cilia, 1989

M a t e r i a l e x a m i n e d. MALTA. Has-Sabtan (Birzebbuga), 14.IV.1990, 1 ex., (D.M.); M'Xlokk, 10.III.1994, 8 exs., (leg. F. Caruana); 21.III.1995, 2 exs., (D.M.). Specimen from Birzebbuga was found under bark of dead *Ceratonia siliqua* L. while specimens from M'Xlokk were collected on braches of *Eucalyptus* sheltered under a piece of cloth.

D i s t r i b u t i o n. Southern France, Northeastern and Central southern Italy, Sicily, Lipari Is., Yugoslavia, Albania, Greece, Romania and Turkey (GRIMM, 1986).

N o t e. CILIA (1989), wrongly thought that *Helops rossii* Germ. was identical to *Helops pygmaeus* Küst. (= *Catomus rotundicollis* Guer.) cited by CAMERON & CARUANA GATTO (1907). However, CILIA's record (1989) of *Helops rossii* collected at Wied il-Qliegħa (Chadwick Lakes), was actually a new record for the Maltese Islands. GRIMM (1985) collected the species from Gargano and Aspromonte on *Quercus* and *Castanea*, while one of the present authors (A.S.) always observed this entity on olive trunks, in Salento (Italy) at dawn.

Gunarus parvulus (Lucas, 1849)

Gunarus parvulus (Luc.); Grimm, 1986

D i s t r i b u t i o n. Morocco, Southern Spain, Balearic Is., Sardinia, Sicily, Adriatic Italy and Aeolian Is. (GRIMM, 1986).

N o t e. The species was not found during the present study. GRIMM (1986) recorded the species from a single specimen found at Mellieha Bay (Malta) on *Acacia*.

Catomus rotundicollis (Guérin-Meneville, 1825)

Helops pygmaeus Küst.; Cameron & Caruana Gatto, 1907

Catomus rotundicollis Guer.; Grimm, 1986

M a t e r i a l e x a m i n e d. MALTA. X.1901, 2 exs., (Dr M.Cameron-BMNH); 3 exs., (BMNH); Delimara, 29.III.1989, 2 exs., (D.M.); Buskett, 29.I.1990, 1 ex., (D.M.); Girgenti Valley, 17.III.1990, 1 ex., (D.M.); M'Xlokk (Balluta), 21.XI.1993, 4 exs., (D.M.); Xorb il-Ghagin, 27.XI.1993, 2 exs., (D.M.); Marsa (Ghammieri), 7.XII.1993, 5 exs., 14.XII.1993, 1 ex., (D.M.); St. Thomas Bay, 23.V.1994, 2 exs., (D.M.); Bahrija, 12.V.1996, 1 ex., (D.M.). GOZO. Marsalforn Valley, 20.IV.1990, 1 ex., (D.M.); Ramla, 23.X.1996, 1 ex. (D.M.). Often found under bark of trees such as *Ceratonia siliqua*, *Eucalyptus* and *Acacia*.

D i s t r i b u t i o n. Eastern Spain, Balearic Is., Northern France, Thyrrenian Italy, Corsica, Sardinia, San Pietro Is., Sicily, Egadi, Pantelleria, Malta (RATTI, 1986) and Tunisia (NORMAND, 1936).

N o t e. According to RATTI (1986) the citation for North Africa might refer to another species.

Odocnemis exaratus (Germar, 1817)

M a t e r i a l e x a m i n e d. MALTA. Zurrieq, 12.XII.1994, 2 exs., (D.M.). Attracted to light.

D i s t r i b u t i o n. Albania, Jugoslavia, North Eastern Italy, Gargano, Sicily (CANZONERI, 1960).

N o t e. *O. exaratus* is a new record for the Maltese Islands. A number of different morphological details were found when this material was compared with other specimens attributed to *O. exaratus*. Due to lack of Maltese material, we are currently leaving the identity of this material as such, until further investigations are carried out.

Myrmecoxenus picinus Aubé, 1850

Myrmecoxenus picinus, Aub.; Cameron & Caruana Gatto, 1907

D i s t r i b u t i o n. European Mediterranean, Madeira Is., Balcania, Caucasus, Algeria, Egypt (DAJOZ, 1977) Cirenaica (GRIDELLI, 1930).

N o t e. Not found during the present study. CAMERON & CARUANA GATTO (1907) recorded the species from St. Paul's Bay as common. It was listed under the Endomychidae even though until recently it was always considered a Colydiidae and transferred in *incerta sedis* to the Tenebrionidae (DOYEN & LAWRENCE, 1979).

*Nomina nuda**Tentyria bipunctata* Barthet, 1930

Tentyria bipunctata Barth.; Tonna-Barthet, 1931

N o t e. We are of the opinion that this species is synonymous with *T. grossa* Besser. No trace of material attributed to this entity or of its description was found. It was not reported in Gebien's catalogue (1937-44). Most probably, TONNA-BARTHET (1931) included this entity using a catalogue name which he may have established in 1930, the description of which was never published. Further, all *Tentyria* species collected in the Maltese Islands have always been identified. For these reasons, in particular because such a name was published (TONNA-BARTHET, 1931) without any description and is therefore not available according to the *International Code of Zoological Nomenclature*, we consider this entity as a *nomen nudum*.

Pimelia quadripunctata Barthet, 1930

Pimelia 4. punctata Barth.; Tonna-Barthet, 1931

N o t e. This entity probably refers to *P. rugulosa melitana*. For the same reasons given earlier for *Tentyria bipunctata*, we also consider this species name as a *nomen nudum*.

DISCUSSION

The present catalogue lists 56 species which should be included as forming part of the Maltese tenebrionid fauna. We could not verify the validity of *Opatrum melitense* since the type material was probably destroyed and the genus is in need of extensive revision. Some recently collected species (refer to present work & GRIMM, 1986) namely *Stenosis freyi*, *Elenophorus collaris*, *Scaurus aegyptiacus giganteus*, *Trachyderma lima*, *Cnemeplatia atropos*, *Cheirodes brevicollis*, *Gunarus parvulus* and *Odocnemis exaratus* seem to be rare in the Maltese Islands, found occasionally, or even known from single captures. Other species recorded at the beginning of this century: *Stenosis sardoa sardoa*, *Dichillus pertusus*, *Scleron multistriatum*, *Corticeus unicolor*, *C. bicolor* and *Myrmechixenus picinus* have not been found recently and there is a possibility that some of these species are now extinct from the Maltese Islands. The datum for *Sepidium tricuspdatum tomentosum*, previously known only from Tunisia and recently recorded from Malta (KWIETON, 1980), needs confirmation.

The number of tenebrionid species found in the Maltese Islands was compared with data from the islands of Sicily's channel (ALIHUÒ, 1993; 1995). The species distribution is: Pantelleria, 24 species; Linoisa, 17 species; Lampione, 3 species; Lampedusa, 28 species. The species distribution for the Maltese Islands (CAMERON & CARUANA GATTO, 1907; REITTER, 1916; LANFRANCO, 1974; KWIETON, 1980; GRIMM, 1986 and present work) is subdivided as follows: Malta, 53 species; Gozo, 25 species; Comino, 10 species; Cominotto, 2 species; Filfla, 4 species. The data presented for the Maltese Islands is quite extensive. This, however, does not mean that further species cannot be found. On the contrary, we believe that other species will be found, especially those associated with grain handling.

Most of the native tree flora of the Maltese Islands has disappeared due to clearance for agricultural practices, tourism and other activities. This process of deforestation has resulted in the decimation of native stands; most of the remaining wooded areas having been planted in recent times. Thus, particularly vulnerable, are those species either directly associated with trees such as *Helops rossii* and *Palorus subdepressus*, or those indirectly associated with this habitat. The latter category comprises four species, *Corticeus unicolor* and *C. bicolor*, both predatory on scolytids, *Tenebrio obscurus* and *Cnemeplatia atropos*.

Other extremely vulnerable species are those associated with sand

dunes. Sandy beaches constitute only 2.4% of the islands' coastline and are under high pressure for recreational and touristic development. The most important sand dune system still 'surviving' in the Maltese Islands is Ramla in Gozo. Tenebrionids frequently occurring in disturbed sand dune systems within the Maltese Islands include: *Erodius siculus melitensis*, *Ammobius rufus*, *Trachyscelis aphodiodes*, *Phaleria acuminata* and *P. bimaculata*. In the near future, such species will become rare or will become even extinct. Of particular importance is *Pseudoseriscius cameroni*, an endemic species occurring only in this habitat. In the early 1900's *P. cameroni* occurred at Ghadira (Mellieha) in Malta (CAMERON & CARUANA GATTO, 1907). This important sand dune system was severely degraded in recent years with the result that *P. cameroni* now appears to be extinct at this location. During this study, *P. cameroni* was found only at Ramla (Gozo), the only locality from where this species has been collected since the beginning of this century.

From a zoogeographical point of view, the tenebrionids of the Maltese Islands can be grouped in certain chorological categories. Table 1 indicates such chorological categories (VIGNA TAGLIANTI *et al.*, 1993) for each species, and Fig. 4 provides such data in percentage form.

Table 1

	Chorological data	Code	Notes
	(after Vigna Taglianti <i>et alii</i> , 1993)		
<i>Erodius siculus melitensis</i>	W-Mediterranean	WME	E*
<i>Tentyria grossa</i>	Mediterranean	MED	
<i>Tentyria laevigata leachi</i>	W-Mediterranean	WME	E
<i>Stenosis freyi</i>	W-Mediterranean	WME	
<i>Stenosis melitana</i>	W-Mediterranean	WME	E?S
<i>Stenosis sardoa sardoa</i>	W-Mediterranean	WME	
<i>Stenosis schembrii</i>	Endemic	E	
<i>Dichillus pertusus</i>	Turanic-European	TUE	
<i>Elenophorus collaris</i>	W-Mediterranean	WME	
<i>Alphasida grossa melitana</i>	W-Mediterranean	WME	E*
<i>Sepidium tricuspidatum tomentosum</i>	N-African	NAF	
<i>Akis subterranea</i>	W-Mediterranean	WME	
<i>Scaurus aegytiacus giganteus</i>	W-Mediterranean	WME	
<i>Scaurus striatus</i>	W-Mediterranean	WME	

	Chorological data	Code	Notes
	(after Vigna Taglianti <i>et alii</i> , 1993)		
<i>Scaurus tristis</i>	W-Mediterranean	WME	
<i>Trachyderma lima</i>	Turanic-Mediterranean	TUM	
<i>Pimelia rugulosa melitana</i>	W-Mediterranean	WME	E*
<i>Blaps gigas</i>	Mediterranean	MED	
<i>Blaps mucronata</i>	Turanic-European	TUE	
<i>Allophylax picipes melitensis</i>	W-Mediterranean	WME	E
<i>Cnemeplatia atropos</i>	Turanic-Mediterranean	TUM	
<i>Cheroides brevicollis</i>	Turanic-Mediterranean	TUM	
<i>Dendarus lugens</i>	W-Mediterranean	WME	
<i>Heliopathes avarus</i>	W-Mediterranean	WME	E?S
<i>Gonocephalum rusticum</i>	Centralasiatic-Mediterranean	CAM	
<i>Gonocephalum setulosum</i>	Centralasiatic-Mediterranean	CAM	
<i>Opatrum emarginatum</i>	N-African	NAF	
<i>Opatrum melitense</i>	Endemic	E	E?
<i>Opatroides punctulatus</i>	Palaeartic	PAL	
<i>Ammobius rufus</i>	Mediterranean	MED	
<i>Clitobius ovatus</i>	Afrotropical-Mediterranean	AFM	
<i>Scleron multistriatum</i>	Turanic-European	TUE	
<i>Trachyscelis aphodioides</i>	Mediterranean	MED	
<i>Phaleria acuminata</i>	Mediterranean	MED	
<i>Phaleria bimaculata</i>	Mediterranean	MED	
<i>Crypticus gibbulus</i>	Mediterranean	MED	
<i>Pseudoseriscius cameroni</i>	Endemic	E	
<i>Eledona agaricola</i>	Holarctic	OLA	
<i>Pentaphyllus testaceus</i>	W-Palaeartic	WPA	
<i>Gnatocerus cornutus</i>	Cosmopolitan	COS	
<i>Tribolium castaneum</i>	Cosmopolitan	COS	
<i>Palorus subdepressus</i>	Cosmopolitan	COS	
<i>Alphitobius diaperinus</i>	Cosmopolitan	COS	
<i>Alphitobius laevigatus</i>	Cosmopolitan	COS	
<i>Phtora crenata</i>	W-Mediterranean	WME	
<i>Corticeus unicolor</i>	European	EUR	
<i>Corticeus bicolor</i>	Palaeartic	PAL	
<i>Cossyphus moniliferus</i>	Afrotropical-Mediterranean	AFM	
<i>Tenebrio molitor</i>	Cosmopolitan	COS	

		Code	Notes
	(after Vigna Taglianti <i>et alii</i> , 1993)		
<i>Tenebrio obscurus</i>	Cosmopolitan	COS	
<i>Belopus elongatus ecalcaratus</i>	W-Mediterranean	WME	
<i>Helops rossii</i>	Turanic-European	TUE	
<i>Gunarus parvulus</i>	W-Mediterranean	WME	
<i>Catomus rotundicollis</i>	W-Mediterranean	WME	
<i>Odocnemis exaratus</i>	E-Mediterranean	EME	E [?] S
<i>Myrmexixenus picinus</i>	Turanic-European-Mediterranean	TEM	

E = Endemic taxon; E* = Supposedly endemic but further investigations could refer them to the nominal forms; E[?] = Possibly endemic but in need of taxonomic evaluation; E[?]S = Taxon possibly different from that found in Sicily. Endemic subspecies were referred to the distribution of their nominal forms.

The data can be summarised (Table 2) in three separate chorological classes:

- I. Cosmopolitan, represented by 7 species,
- II. Wide distribution (Holarctic, Palearctic, Turanic/European-Mediterranean and Centralasiatic-Mediterranean, Afrotropical-Mediterranean), represented by 17 species,
- III. Mediterranean (N-African, E & W-Mediterranean and Olomediterranean), represented by 32 species.

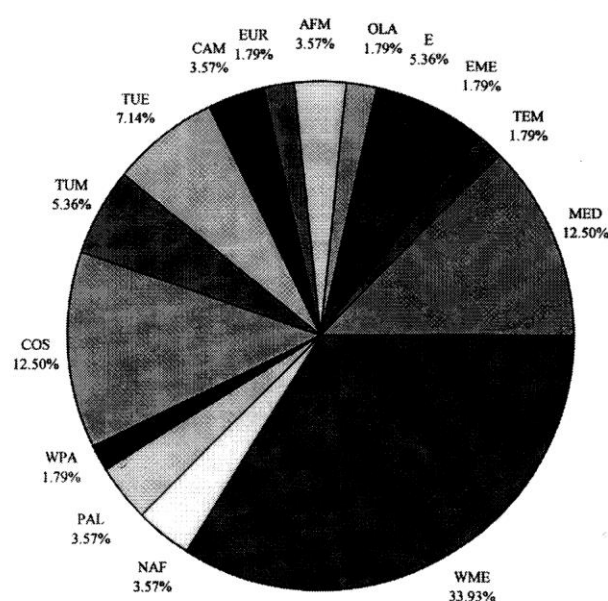


Fig. 4 - Percentages of chorological data found in the tenebrionids of the Maltese Islands.

Codes as in Table 1.

As expected for the Maltese Islands the Mediterranean component is the highest (57.14%), due to the central position of the Maltese Islands in the Mediterranean. Cosmopolitan species are of little zoogeographical interest and most species represent entities associated with human activities which most probably have been introduced into the Maltese Islands by commerce. The species with a wide distribution also represent a relatively high percentage (30.36%).

Of particular interest are the endemic tenebrionids - a total of eight species and subspecies (14.29% of the taxa). Of these, *Opatrum melitense* needs taxonomic validity. Future research may reduce certain presumably endemic subspecies to the nominal forms. *Stenosis melitana*, formerly thought to be endemic but relatively recently found also in southern Sicily, could still represent a distinct form. *Heliopathes avarus* could also represent a new subspecies in the Maltese Islands.

Table 2

Chorological class	No. of species	% Chorotype
Cosmopolitan	7	12.5%
Wide distribution	17	30.36%
Mediterranean	32	57.14%

Thus the Maltese tenebrionid fauna is characterised by a relatively high percentage of endemic forms. On the whole the fauna has strong affinities with that of Sicily. So far, there is no data available on certain exclusively African genera such as *Himatismus* and *Machlopsis* from the Maltese Islands, these being present on some islands of Sicily's channel.

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ABSTRACT

The tenebrionid fauna of the Maltese Islands was reviewed, based on published records and material collected, for the most part, in recent years. Of the previously recorded tenebrionids, 36 are supported by material collected during this study and 2 other species are supported by material collected at the beginning of this century. Eight species refer to probably correct identifications but no specimens were available. The validity of one possibly endemic species (*Opatrum melitense*), the type material of which was probably destroyed, could not be verified. *Stenosis elongata* most probable refers to a wrong citation and has been removed from the local tenebrionid fauna. One species, thought to be endemic, *Blaps foveicollis*, was synonymised with *Blaps mucronata* and two species, *Tentyria bipunctata* nec Solier and *Pimelia quadripunctata*, are considered as *nomina nuda*. Recorded tenebrionids that refer to other citations are discussed as they occur throughout the text. The collected material also included 9 previously unrecorded species. This revision of the Maltese tenebrionid fauna contains 56 species. The zoogeographical aspects of the tenebrionid fauna of the Maltese Islands also indicates that it is closely related to that found in Sicily.

RIASSUNTO

I Tenebrionidae (Coleoptera) delle isole Maltesi (Mediterraneo centrale).

Basandoci principalmente sui dati in letteratura e sul materiale recentemente raccolto, abbiamo riveduto tutte le specie di tenebrionidi delle isole Maltesi. Dalle entità già conosciute, 36 sono state confermate dal materiale raccolto durante questo studio ed altre 2 da materiale che fu raccolto all'inizio di questo secolo. Di 8 specie invece non è stato possibile reperire esemplari; tuttavia esse risultano facilmente identificabili e quindi riteniamo siano state correttamente determinate. Non si è potuto verificare la validità di una specie probabilmente endemica (*Opatrum melitense*), il cui materiale tipico è andato distrutto. *Stenosis elongata* molto probabilmente si riferisce ad una citazione sbagliata ed è stata esclusa dal presente elenco. Una specie considerata endemica, *Blaps foveicollis*, è stata ritenuta sinonimo di *Blaps mucronata* e due specie: *Tentyria bipunctata* nec Solier e *Pimelia quadripunctata* sono considerate come *nomina nuda*. Altre specie citate in letteratura devono riferirsi ad altre entità e sono discusse nel presente lavoro. Nel materiale studiato abbiamo reperito 9 specie nuove per l'arcipelago Maltese; in totale 56 specie di Tenebrionidi sono segnalate per queste isole. Abbiamo infine evidenziato alcuni aspetti zoogeografici della tenebrionidofauna maltese, concludendo che detta fauna è molto simile a quella della vicina Sicilia.