

A pictorial guide for the identification of the jewel beetle (Coleoptera: Buprestidae) fauna of Malta

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ABSTRACT. An updated and annotated list of jewel beetles from the Maltese Islands is provided. One species, *Acmaeodera pilosellae pilosellae* (Bonelli, 1812), represents a new record for this territory. In order to aid identification, colour photographs of all species are included, and for each species relevant notes are provided.

KEY WORDS. Mediterranean, new record, Maltese Islands.

INTRODUCTION

About 15,000 species have been described worldwide in the family Buprestidae, of which 1,500 are found in the Palaearctic, and about 200 represent the European fauna. Commonly referred to as jewel beetles due to the bright metallic colouration of some species, especially those of the tropics, they are generally ovoid or elongate in shape, with rigid and heavily sclerotized bodies. Adults feed on pollen, leaf tissue or bark. The larvae are elongated, dorsoventrally flattened grubs with a posteriorly tapered body and usually widened prothorax; legs are absent, if exceptionally present they are vestigial. Jewel beetle larvae feed on plant tissues; typically inside the wood or under the bark of dead or dying trees and shrubs, or occasionally inside the tissues of living plants as leaf miners. Despite their diversity and phytophagous or xylophagous nature, few jewel beetle species are in fact economically important.

The buprestid fauna of the Maltese Islands has been relatively well-studied. Historically the jewel beetles of Malta were first mentioned by CAMERON & CARUANA GATTO (1907), who reported four species, with the record of an additional species made by ANDRES (1916). SALIBA (1963) mentions another species due to its economic significance. LEVEY (1985) described a new species from material collected in the Maltese Islands and Italy. The works of CILIA (1989) and CURLETTI (1994) added a further eight species. MIFSUD & BÍLÝ (2002) reviewed the buprestid fauna of the Maltese Islands, recording a total of seventeen species, at the time of which seven were new additions. MIFSUD & BORG BARTHET (2005) recorded an additional species. In the present work, the jewel beetle *Acmaeodera pilosellae pilosellae* (Bonelli, 1812) is recorded from the Maltese Islands for the first time, bringing the total known species to 19, and a pictorial guide illustrates an annotated species list.

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ANNOTATED SPECIES LIST

Agrilus (Agrilus) derasofasciatus Lacordaire, 1835

(Fig. 1)

Chorotype. Originally Mediterranean but now widespread in the Palaearctic and introduced in USA.

Length. 4.0–5.5 mm.

Local distribution. MIFSUD & BÍLÝ (2002) record material from Buskett and Dingli.

Notes. Larval development takes place in the branches of *Vitis vinifera* and *V. sylvestris*. It differs from the following species by the slender and smaller body, white elytral pubescence which is interrupted at the elytral midlength and by the dark, black-green frons in both sexes.

Agrilus (Agrilus) roscidus Kiesenwetter, 1857

(Fig. 2)

Chorotype. Central Asiatic-European-Mediterranean.

Local distribution. MIFSUD & BÍLÝ (2002) record this species from Dingli, Mtaħleb, Kalkara, Birżebbuga (in Malta) and Ghasri, Wied il-Lunzjata and Victoria (in Gozo).

Length. 4.5–6.5 mm.

Notes. This is an extremely polyphagous species whose larvae develop in branches of *Ceratonia siliqua*, *Crataegus oxyacantha*, *Cydonia oblonga*, *Crataegus* spp., *Euonymus europaeus*, *Malus domestica*, *Mespilus germanica*, *Prunus armeniaca*, *Prunus avium*, *Prunus domestica*, *Prunus dulcis*, *Prunus mahaleb*, *Prunus persica*, *Prunus vulgaris*, *Populus* spp., *Pyrus amygdaliformis*, *Pyrus communis*, *Salix* spp., *Sorbus aria* and *Ulmus* spp. Adults are usually found on these host plants. It differs from *A. derasofasciatus* by the larger and stouter body, yellow-brown elytral pubescence covering entire elytra and by the bright green frons of the male.

Aphanisticus pygmaeus Lucas, 1846

(Fig. 3)

Chorotype. Central Asiatic Mediterranean.

Length. 2.2–2.7 mm.

Local distribution. MIFSUD & BÍLÝ (2002) mention material of this species from Ghajn Rihana. MIFSUD & BORG BARTHET (2005) record it from Żejtun. It has since been collected from Saqqajja (Rabat).

Material examined. MALTA: Rabat (Saqqajja), 18.viii.2020, 4 exs., sweeping *Cynodon dactylon*, leg. T. Cassar.

Notes. Though the host plants of *Aphanisticus pygmaeus* are unknown, multiple specimens have been swept from *Cynodon dactylon* in Malta. It is possible that *A. pygmaeus* is a leaf-miner of *Cynodon dactylon*, as is another congeneric species on turfgrasses (KANG *et al.*, 2016).

***Trachys troglodytiformis* Obenberger, 1918**

(Fig. 4)

Chorotype. West Palaearctic.

Length. 2.5–3.5 mm.

Local distribution. MIFSUD & BÍLÝ (2002) record material from Marsa, Qrendi (Maqluba) and Mosta (Wied il-Ghasel).

Notes. Larvae (leaf-miners) develop in various Malvaceae such as *Althea officinalis*, *Althea rosea*, *Hibiscus roseus*, *Lavatera olbia*, *Malva alcea*, *Malva narbonensis*, *Malva officinalis*, *Malva rotundifolia* and *Malva sylvestris*. Adults are usually found on the mentioned host plants.

***Anthaxia (Anthaxia) lucens* Küster, 1852**

(Fig. 5)

Chorotype. Turranic-European.

Length. 7.0–12.0 mm.

Local distribution. CURLETTI (1994) records this species from Hamrun and Mosta (Wied il-Ghasel). MIFSUD & BÍLÝ (2002) mention additional material from Qrendi (Maqluba).

Notes. Larvae develop inside the branches of *Prunus*, *Cerasus* and *Amygdalus*. Adults are flower-visitors.

***Anthaxia (Anthaxia) manca* (Linnaeus, 1767)**

(Fig. 6)

Chorotype. Central Asiatic-European-Mediterranean.

Length. 6.9–11.0 mm.

Local distribution. CILIA (1989) recorded this species from Buskett.

Notes. Larval development occurs mostly in *Ulmus* species but other host plants include *Castanea sativa*, *Populus tremula*, *Prunus mahaleb*, *Pyrus communis*, *Rhamnus alaternus*, *Robinia pseudoacacia* and *Tilia cordata*. Adults can be found on host plants' leaves, and occasionally on flowers.

***Anthaxia (Haplanthaxia) millefolii polychloros* Abeille de Perrin, 1894**

(Fig. 7)

Chorotype. Western Mediterranean.

Length. 4.5–7.1 mm.

Local distribution. CURLETTI (1994) mentions material from Buskett, Chadwick Lakes and Wied Incita. MIFSUD & BÍLÝ (2002) record this species from Fiddien.

Notes. A highly polyphagous species, larval development occurs in *Acer obtusatum*, *Castanea sativa*, *Ceratonia siliqua*, *Nerium oleander*, *Pistacia lentiscus*, *Prunus avium*, *Prunus domestica*, *Prunus dulcis*, *Pyrus amygdaliformis*, *Quercus cerris*, *Quercus coccifera*, *Quercus ilex*, *Quercus pubescens*, *Quercus robur* and *Sorbus*. Adults are flower-visitors. It differs from the similar, *Anthaxia scylla* by the larger, stouter, less lustrous body, long antennae (reaching midlength of lateral, pronotal margins

when laid alongside) and first by the form of the rounded anal ventrite which is deeply depressed along the posterior margin with two small tubercles at the middle of the depression.

Anthaxia (Haplanthaxia) scylla Levey, 1985

(Figs. 8-9)

Chorotype. Sub-endemic: Italian peninsula, Sicily, Maltese Islands.

Length. 4.8–6.1 mm.

Local distribution. The original description of this species by LEVEY (1985) includes type material from Birzebbugia and Gozo. CURLETTI (1994) records it from Chadwick Lakes, Wied il-Ghasel and Wied Qirda. MIFSUD & BILÝ (2002) include material taken from Ghajn Rihana, Mtaħleb, Wied id-Dis, Wied Qannotta, Buskett, Wied Faħam (in Malta), as well as Ghasri and Victoria (in Gozo). It has since also been found in Mellieħa (Marfa).

Notes. Larvae are known to develop inside the branches of *Castanea sativa*, and *Pistacia* species are also likely suitable hosts. The adults are commonly found on flowers of Apiaceae such as *Foeniculum vulgare* and *Daucus carota*. This species was restored from synonymy with *A. aprutiana* by BAIOCCHI (2015). It differs from *A. millefolii polychloros* by the slender, more lustrous body, much shorter antennae (reaching anterior quarter of the lateral, pronotal margins when laid alongside) and by the form of the anal ventrite which is weakly S-shaped laterally and only very weakly notched apically.

Anthaxia (Anthaxia) thalassophila thalassophila Abeille de Perrin, 1900

(Fig. 10-11)

Chorotype. Turranic-European.

Length. 4.0–5.5 mm.

Local distribution. MIFSUD & BILÝ (2002) record this species from Wardija and Buskett.

Notes. Larvae develop in dying branches of *Castanea sativa*, *Fraxinus excelsior*, *Fraxinus ornus*, *Pistacia lentiscus*, *Pistacia terebinthus* and *Quercus pubescens* (CONTARINI, 1983). Adults are usually found on these host plants and on flowers.

Buprestis (Buprestis) novemmaculata novemmaculata Linnaeus, 1767

(Fig. 12)

Chorotype. Palaearctic.

Length. 12.0–20.3 mm.

Local distribution. CURLETTI (1994) records material from Buskett. MIFSUD & BORG BARTHET (2005) record it from Żejtun.

Notes. A rare species locally, larvae are known to develop in wood of dead or dying trunks of *Larix decidua*, *Picea abies*, *Pinus halepensis*, *Pinus laricio*, *Pinus leucodermis*, *Pinus nigra*, *Pinus pinaster*, *Pinus pinea*, *Pinus salzmanni* and *Pinus sylvestris*. Adults are found on sawed pinewood and on logs.

***Chrysobothris (Chrysobothris) solieri* Gory & Laporte, 1839**

(Fig. 13)

Chorotype. Central Asiatic-European-Mediterranean.

Length. 7.0–12.0 mm.

Local distribution. CURLETTI (1994) records this species from Buskett.

Notes. This is a pine-associated species, with larval development occurring in *Pinus halepensis*, *Pinus laricio*, *Pinus nigra*, *Pinus pinaster*, *Pinus pinea*, *Pinus salzmanni* and *Pinus sylvestris*

***Melanophila cuspidata* (Klug, 1829)**

(Fig. 14)

Chorotype. Turranic-European-Mediterranean.

Length. 6.0–13.1 mm.

Local distribution. ANDRES (1916) records this species from Verdala barracks (Cospicua); MIFSUD & BÍLÝ (2002) record material from Girgenti, and MIFSUD & BORG BARTHET (2005) record it from Rabat.

Notes. Larvae develop in fire-damaged branches and stems of *Cupressus sempervirens*, *Ficus carica*, *Juniperus mprocarpa*, *Juniperus oxycedrus*, *Juniperus phoenicea*, *Phyllirea angustifolia*, *Pinus halepensis*, *Pinus pinea*, *Pistacia lentiscus*, *Quercus ilex*, *Quercus pubescens*, *Quercus suber*, *Salix alba*, *Spartium junceum* and *Ulmus minor*. Adults are usually found on host plants.

***Capnodis tenebrionis* (Linnaeus, 1761)**

(Fig. 15)

Chorotype. Central Asiatic-European-Mediterranean.

Length. 12.0–28.0 mm.

Local distribution. Girgenti (CAMERON & CARUANA GATTO, 1907); Buskett (CURLETTI, 1994); Żejtun, Rabat, Dingli, St. Julians, Ghajn Rihana (MIFSUD & BÍLÝ, 2002).

Notes. Larvae develop in roots and the basal parts of trunks of *Cotoneaster*, *Crataegus*, *Cydonia oblonga*, *Malus domestica*, *Mespilus germanica*, *Prunus armeniaca*, *Prunus avium*, *Prunus cerasus*, *Prunus dulcis*, *Prunus domestica*, *Prunus mahaleb*, *Prunus mariana*, *Prunus padus*, *Prunus persica*, *Prunus spinosa* and *Pyrus communis*. Adults are found on the host plants. This species is an infrequent pest of stone-fruit trees.

***Acmaeodera (Acmaeodera) pilosellae pilosellae* (Bonelli, 1812)**

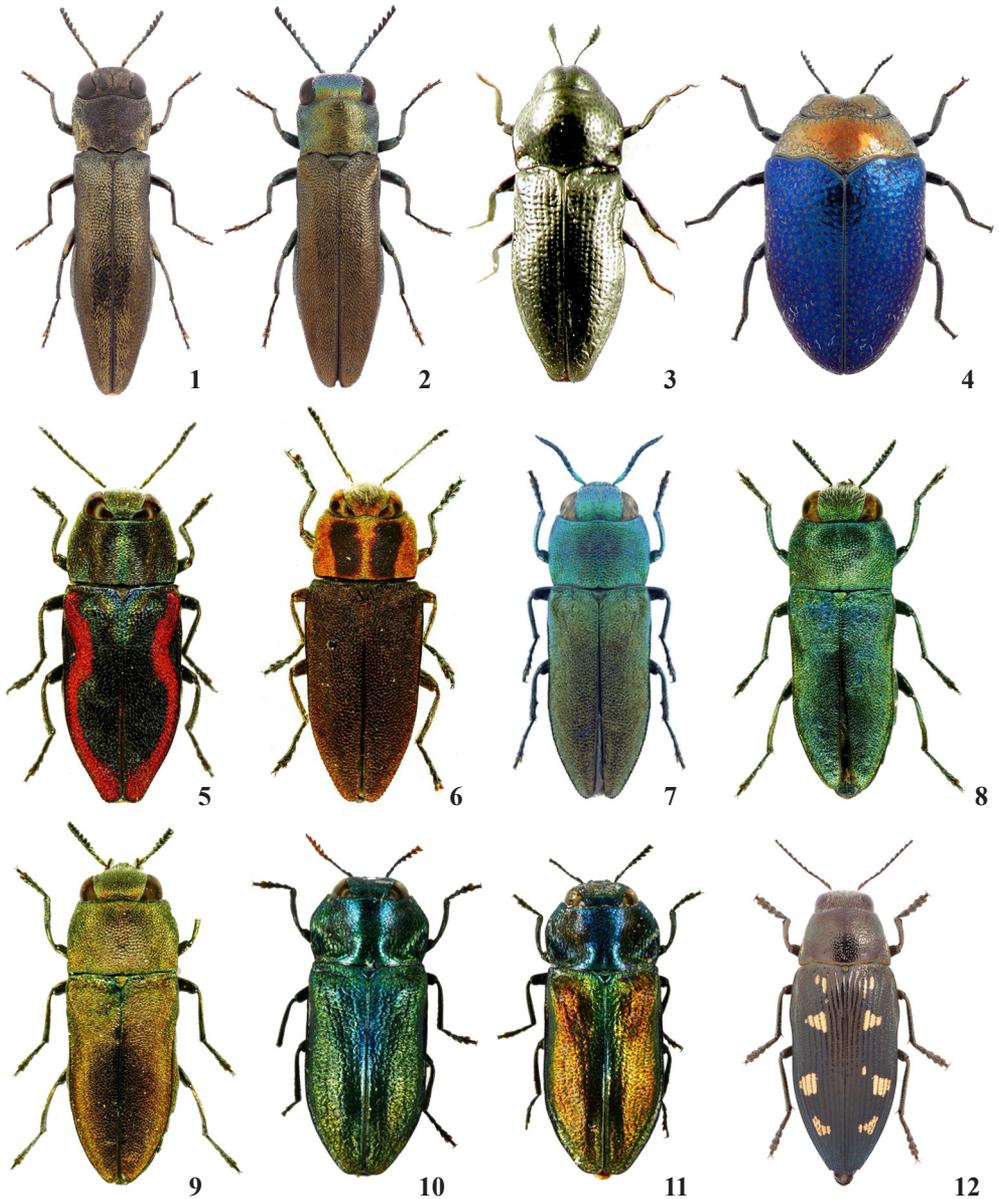
(Fig. 16)

Chorotype. Southern Europe and Asia Minor.

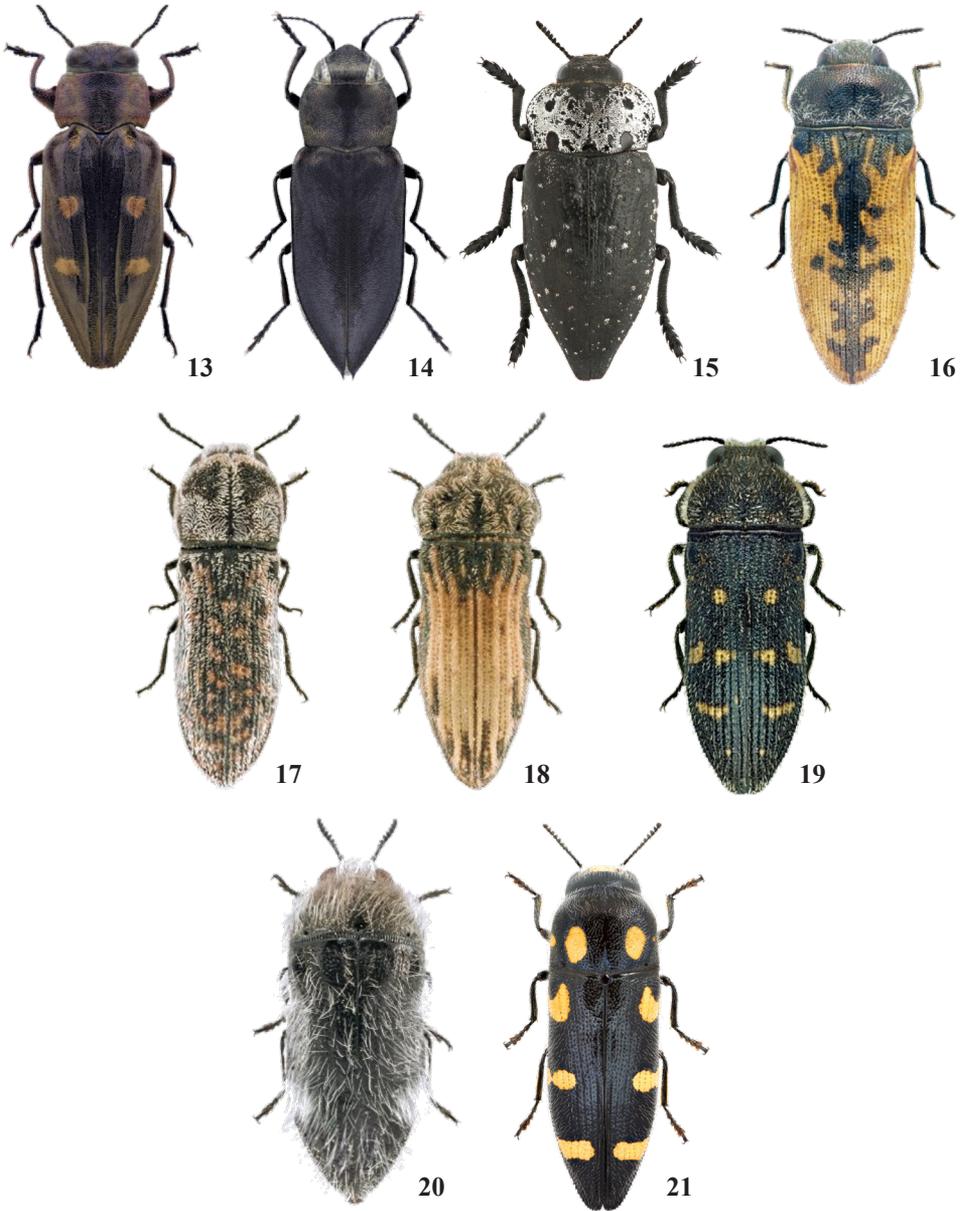
Length. 6.0–10.0 mm.

Local distribution. A single specimen is reported here for the first time from the Maltese Islands.

Material examined. MALTA: Fawwara, 22-29.v.2017, 1 ex., (malaise trap), leg. D. Mifsud.



Figures 1-21: Buprestidae of the Maltese Islands 1: *Agrilus derasofasciatus*; 2: *Agrilus roscidus*; 3: *Aphanisticus pygmaeus*; 4: *Trachys troglodytifformis*; 5: *Anthaxia lucens*; 6: *Anthaxia manca*; 7: *Anthaxia millefolii polychloros*; 8: *Anthaxia scylla*, male; 9: *Anthaxia scylla*, female; 10: *Anthaxia thalassophila thalassophila*, male; 11: *Anthaxia thalassophila thalassophila*, female; 12: *Buprestis novemmaculata*.



13: *Chrysobothris solieri*; **14:** *Melanophila cuspidata*; **15:** *Capnodis tenebrionis*; **16:** *Acmaeodera pilosellae pilosellae*; **17:** *Acmaeoderella adpersula*; **18:** *Acmaeoderella discoida*; **19:** *Acmaeoderella flavofasciata*; **20:** *Acmaeoderella lanuginosa*; **21:** *Ptosima undecimmaculata*.

Notes. It is a polyphagous species, and larval development can occur in *Quercus*, *Crataegus*, *Amygdalus*, *Corylus* and *Pistacia* among others; adults visit flowers such as those of *Cistus*, *Convolvulus* and yellow Asteraceae (VERDUGO, 2005).

Acmaeoderella (Omphalothorax) adpersula adpersula (Illiger, 1803)

(Fig. 17)

Chorotype. Mediterranean.

Length. 4.7–8.6 mm.

Local distribution. MIFSUD & BORG BARTHET (2005) mention a specimen reared from carob twigs collected in Mellieħa. Since then only one other specimen was taken, again from Mellieħa (Marfa).

Material examined. MALTA: Mellieħa (Marfa), 7.vii.2019, 1 ex., leg. T. Cassar.

Notes. This species is polyphagous. Plant species which may be suitable hosts for larval development include *Acacia* spp., *Acer monspessulanum*, *Celtis australis*, *Cistus albidus*, *Cytisus laburnum*, *Ephedra fragilis*, *Euphorbia dendroides*, *Genista corsica*, *Malus domestica*, *Pistacia lentiscus*, *Quercus* spp., *Retama retama*, *Sorbus* sp., *Spartium junceum*, *Thymelaea hirsuta*, *Ulmus* sp., *Vitis vinifera*, *Castanea*, *Ceratonia*, *Populus*, *Rhus*, *Zygophyllum* and *Ficus carica*.

Acmaeoderella (Acmaeoderella) discoidea (Fabricius, 1787)

(Fig. 18)

Chorotype. Turranic-European-Mediterranean.

Length. 3.8–6.0 mm.

Local distribution. CURLETTI (1994) mentions material from Buskett and Wied il-Ghasel (Mosta). MIFSUD & BÍLÝ (2002) mention Gharghur, Wied is-Sewda (Żebbuġ-Qormi), and Tal-Munxar (St. Thomas Bay, Marsaskala).

Notes. Larval hosts include the thistles *Carduus* and *Cirsium* (Asteraceae). Adults are flower-visitors.

Acmaeoderella (Carininota) flavofasciata flavofasciata (Piller & Mitterpacher, 1783)

(Fig. 19)

Chorotype. Central Asiatic-European.

Length. 6.5–10.0 mm.

Local distribution. MIFSUD & BÍLÝ (2002) recorded this species from Floriana.

Notes. Larval development takes place in deadwood of broad-leaved trees such as *Prunus avium*, *Juniperus communis*, *Castanea sativa*, *Fagus sylvatica* and several species of *Quercus* (*Q. ilex*, *Q. pubescens*, *Q. robur*; *Q. suber*). Adults are flower-visitors, but can be collected from the larval host plants as well.

Acmaeoderella (Euacmaeoderella) lanuginosa lanuginosa (Gyllenhal, 1817)

(Fig. 20)

Chorotype. Western Mediterranean.

Length. 5.5–9.0 mm.

Local distribution. MIFSUD & BILÝ (2002) mention a single specimen from Għar Lapsi (Siġġiewi).

Notes. Larvae develop in the tissues of *Cynara* species, and certain Apiaceae such as *Ferula communis*, *Thapsia garganica* and *Thapsia villosa*. Adults are flower-visitors.

***Ptosima undecimmaculata* (Herbst, 1784)**

(Fig. 21)

Chorotype. Central Asiatic-European-Mediterranean.

Length. 7.0–14.0 mm.

Local distribution. A single specimen was recorded by MIFSUD & BILÝ (2002), as *Ptosima flavoguttata* (Illiger, 1803) from Binġemma.

Notes. Larvae are known to develop in trunks and thick branches of *Ceratonia siliqua*, *Crataegus oxyacantha*, *Malus domestica*, *Prunus armeniaca*, *Prunus avium*, *Prunus domestica*, *Prunus dulcis*, *Prunus mahaleb*, *Prunus persica*, *Prunus spinosa*, *Prunus vulgaris* and *Pyrus communis*.

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