

# A preliminary account of the Auchenorrhyncha of the Maltese Islands (Hemiptera)

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**ABSTRACT.** A total of 46 species of Auchenorrhyncha are reported from the Maltese Islands. They belong to the following families: Cixiidae (3 species), Delphacidae (7 species), Meenoplidae (1 species), Dictyopharidae (1 species), Tettigometridae (2 species), Issidae (2 species), Cicadidae (1 species), Aphrophoridae (2 species) and Cicadellidae (27 species). Since the Auchenorrhyncha fauna of Malta was never studied as such, 40 species reported in this work represent new records for this country and of these, *Tamaricella complicata*, an eastern Mediterranean species, is confirmed for the European territory. One species, *Balclutha brevis* is an established alien associated with the invasive Fountain Grass, *Pennisetum setaceum*. From a biogeographical perspective, the most interesting species are represented by *Falciidius ebejeri* which is endemic to Malta and *Tachycixius remanei*, a sub-endemic species so far known only from Italy and Malta. Three species recorded from Malta in the Fauna Europaea database were not found during the present study.

**KEY WORDS.** Malta, Mediterranean, Planthoppers, Leafhoppers, new records.

## INTRODUCTION

The Auchenorrhyncha is represented by a large group of plant sap feeding insects commonly referred to as leafhoppers, planthoppers, cicadas, etc. They occur in all terrestrial ecosystems where plants are present. Some species can transmit plant pathogens (viruses, bacteria and phytoplasmas) and this is often a problem if the host-plant happens to be a cultivated plant. The group is represented by about 5,000 described species in the Palaearctic Region of which about 920 species are recorded from Italy (D'URSO & SABELLA, 2011).

As such, this group of insects was never studied in Malta and we were able to find very few published records. *Cicada orni* Linnaeus, 1758 was recorded from Malta on several occasions (e.g. MIFSUD, 2000) especially on popular articles and books related to the natural history of Malta. In the Fauna Europaea database, five species of Auchenorrhyncha (HOCH, 2004) were reported as occurring in Malta. These represent *Aphrophora alni* (Fallen, 1805) and *Philaenus spumarius* (Linnaeus, 1758) (Family Aphrophoridae), *Eupteryx salviae* Arzone & Vidano, 1994 (Family Cicadellidae), *Hyalesthes obsoletus* Signoret, 1865 and *Oliarus tristis* Fieber, 1876 (Family Cixiidae). Surely, the record for Malta of *Oliarus tristis* represents an error in the mentioned database. The species was described from Montenegro but in the mentioned database only Malta is given as a European country where it occurs. Based on this information, *Oliarus tristis* is removed from the Auchenorrhyncha fauna of Malta. Of the other four species, only *Philaenus spumarius* was confirmed as occurring in Malta. GNEZDILOV & WILSON (2008) described a new species, *Falciidius ebejeri* which seems to be

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endemic to the Maltese Islands. MIFSUD *et al.* (2012) recorded two species from Malta associated with *Ficus carica*, *Empoasca alsiosa* Ribaut, 1933 and *Ficocyba ficaria* (Horvath, 1897).

The present study was undertaken on material collected mainly by the authors (DM - David Mifsud; VD - Vera D'Urso) which is conserved in their respective collections. Few specimens conserved at the Natural History Museum of Malta (NHMM) were also available for this study. In the annotated species list which follows, the sequence of families and species within each family follows NAST (1972) with some modifications on the bases of recently published check-lists such as that for the Italian fauna (D'URSO, 1995) and the one for Fauna Europaea (HOCH, 2004). Appendix I provide a check-list of all recorded species for which families are arranged taxonomically and species there in are listed alphabetically.

## ANNOTATED SPECIES LIST

### CIXIIDAE

#### *Tachycixius remanei* D'Urso, 1999

**Material examined. MALTA:** St. Paul's Bay, 26.iv.1985, 1 ♂, VD; Madliena, 28.iii.2012, 1 ♂ & 2 ♀♀, DM; Qannotta Valley, 27.iv.1985, 2 ♀♀, VD; Bahrija, 20.iv.2002, 1 ♂, DM.

**Notes.** *Tachycixius remanei* was so far known only from Italy. It may well represent a sub-endemic species confined to Italy and Malta. D'URSO (1999) reported the occurrence of this species in rather xeric environments such as clearings in various thermophilous *Quercus* woods and thermophilous pasture lands, in a wide altitudinal range.

#### *Reptalus cf. panzeri* (Löw, 1883)

**Material examined. MALTA:** Buskett, 8.vii.2011, 1 ♀, DM; Wied Babu, 24.vi.1989, 1 ♀, DM.

**Notes.** The correct identity of these two females to species level was not possible as males are required. *Reptalus panzeri* is widespread in central and southern Europe, Mediterranean basin, extending eastwards up to Eastern Asia. The species is polyphagous on shrubs and herbs (HOLZINGER *et al.*, 2003).

### DELPHACIDAE

#### *Asiraca clavicornis* (Fabricius, 1794)

**Material examined. MALTA:** Birzebbugia, 15.vi.2012, 1 ♂, DM; Buskett, 13.i.1999, 1 ♂, DM; Migra Ferħa, 20.xii.1996, 1 ♂, DM.

**Notes.** A central Asiatic-European-Mediterranean species. *Asiraca clavicornis* is associated with grasses and was recorded from Greece in wet biotopes on *Avena sativa* (DROSPOULOS, 1982).

***Chloriona unicolor* (Herrich-Schäffer, 1835)**

**Material examined.** MALTA: Fiddien, 19.vi.2012, 2 ♂♂ & 1 ♀, DM.

**Notes.** A Turanic-European-Mediterranean species which is associated with *Phragmites communis* (ASCHE, 1982).

***Toya obtusangula* (Linnavuori, 1957)**

**Material examined.** MALTA: Ghajn Rihana, 18.v.2012, 14 ♂♂ & 17 ♀♀, DM & VD; Mtahleb, Wied il-Buzbies, 19.vi.2012, 2 ♂♂ & 2 ♀♀, DM.

**Notes.** An East Mediterranean species associated with grasses such as *Cynodon dactylon* (ASCHE, 1980).

***Toya propinqua* (Fieber, 1866)**

**Material examined.** MALTA: Mtahleb, Wied il-Buzbies, 20.vi.2012, 5 ♂♂ & 2 ♀♀, DM; Fiddien, 19.vi.2012, 1 ♂, DM; St. Thomas Bay, Munxar, 17.v.2012, 2 ♂♂, DM & VD. GOZO: Dwejra, 16.x.1997, 1 ♂, DM.

**Notes.** A cosmopolitan species associated with grasses such as *Cynodon dactylon* (ASCHE, 1980).

***Pseudaraeopus lethierryi* (Mulsant & Rey, 1879)**

**Material examined.** MALTA: Fawwara, 30.xii.1996, 1 ♂ & 1 ♀, DM.

**Notes.** A Mediterranean-Macaronesian species recorded from dry rocky places with *Hyparrhenia hirta* (DROSOPOULOS, 1982).

***Flastena fumipennis* (Fieber, 1866)**

**Material examined.** MALTA: Bahrija Valley, 27.iv.1985, 3 ♂♂ & 2 ♀♀, VD.

**Notes.** A North Mediterranean-Atlantic species restricted to wet biotopes and associated with *Carex* spp. (DROSOPOULOS, 1982).

***Matutinus putoni* (A. Costa, 1888)**

**Material examined.** MALTA: Ghajn Rihana, 20.viii.1989, 1 ♀, on *Typha* sp., DM.

**Notes.** A Mediterranean species associated with *Typha* spp.

**MEENOPLIDAE*****Nisia nervosa* (Motschulsky, 1863)**

**Material examined.** MALTA: Bahrija Valley, 27.iv.1985, 1 ♂, VD.

**Notes.** *Nisia nervosa* is known from the Far East, the Ethiopian Region, Australia, North Africa and the eastern Mediterranean (Pantelleria, Greece). Host plants are usually Cyperaceae (WILSON, 2010) and it is commonly found in rice field habitats (HEINRICH & BARRION, 2004).

## DICTYOPHARIDAE

### *Dictyophara europaea* (Linnaeus, 1767)

**Material examined. MALTA:** St. Julian's, 20.vii.1969, 1 ♂, leg. M. Gauci (NHMM); Mtahleb, Wied il-Buzbies, 19.vi.2012, 1 ♂, DM; Wied tal-Isqof, 16.vii.2002, 1 ♂, DM.

**Notes.** A central Asiatic Euro-Mediterranean species which is polyphagous on various shrubs and grasses.

## TETTIGOMETRIDAE

### *Tettigometra atra* Hagenbach, 1822

**Material examined. MALTA:** Birzebbugia, 17.v.2012, 1 ♀, DM & VD; St. Thomas Bay, Munxar, 25.v.2002, 1 ♂, DM, 1 ♂, same data but 30.iii.2010, DM, 2 ♂♂, 2 ♀♀ & 2 juveniles on roots of *Reichardia picroides* and attended by *Camponotus barbaricus* Emery, 1905 same data but 17.v.2012, DM & VD.

**Notes.** A widespread species in the Palaearctic Region often recorded in xerothermic locations with low vegetation (Fig. 1) and sometimes on woody plant. *Tettigometra atra* was also recorded as living in ant nests (*Lasius* and *Tetramorium*) (HOLZINGER *et al.*, 2003).

### *Tettigometra picta* Fieber, 1865

**Material examined. MALTA:** Wardija, 18.v.2012, 6 ♂♂ & 13 ♀♀, DM & VD; Migra Ferħa, 18.v.2012, 1 ♂ & 3 ♀♀, DM & VD. **COMINO:** Il-Hazina, around artificial freshwater pool, 13.viii.2002, 2 ♂♂, DM.

**Notes.** A central western Mediterranean species which is often associated with a wide range of plants.

## ISSIDAE

### *Clybeccus declivum* (Dlabola, 1986)

**Material examined. MALTA:** Buskett, 20.vi.2012, 1 ♂ & 1 ♀, DM; Ghargħur, Wied id-Dis, 13.vi.2002, 2 ♂♂ & 1 ♀, DM; Marsaskala, 15.vi.2012, 1 ♂, DM; Zurrieq, above Blue Grotto, 1 ♀, 18.v.12, on *Periploca angustifolia*, DM & VD; Birzebbugia, 17.v.2012, 1 ♂, DM & VD. **FUNGUS ROCK:** 9.vii.1989, 1 ♂, DM.

**Notes.** *Clybeccus declivum* is recorded from Greece (Crete), Italy, Spain and Tunisia (GNEZDILOV, 2003; 2010; 2011; GNEZDILOV *et al.*, 2004) and is generally found in dry biotopes.

## CICADIDAE

*Cicada orni* Linnaeus, 1758

(Fig. 2)

**Material examined. MALTA:** Zejtun, 10.viii.2002, 1 ♂, DM.

**Notes.** This species is distributed in central and southern Europe, throughout the Mediterranean basin and Turanic Asia. It is a common species in Malta generally associated with xerothermic biotopes where broad-leaved trees are present.

## APHROPHORIDAE

*Philaenus spumarius* (Linnaeus, 1758)

**Material examined. MALTA:** Bahrija Valley, 27.iv.1985, 1 ♂, VD; St. Julian's, 26.4.1985, 1 ♂, VD; Buskett, 20.vi.2012, 5 ♂♂ & 5 ♀♀, DM; Madliena, 21.iv.1960, 2 ♀♀ (NHMM); Buskett, 18.v.2012, 6 ♂♂ & 3 ♀♀, DM & VD.

**Notes.** A Palaearctic species introduced in the Nearctic and Australian Regions. The species is polyphagous and eurytopic (HOLZINGER *et al.*, 2003).

## CICADELLIDAE

## MEGOPHTHALMINAE

*Megophthalmus scabripennis* Edwards, 1915

**Material examined. MALTA:** Mtahleb, 2.v.1997, 1 ♂ on *Cystus monspeliensis*, DM.

**Notes.** This species is distributed in central and southern European and throughout the Mediterranean basin. This species is often found at the base of grasses in diverse habitat types (GUGLIELMINO, 1994). In Corsica it was found on *Helychrysum microphyllum* (DELLA GIUSTINA, 1989).

## AGALLINAE

*Anaceratagallia laevis* (Ribaut, 1935)

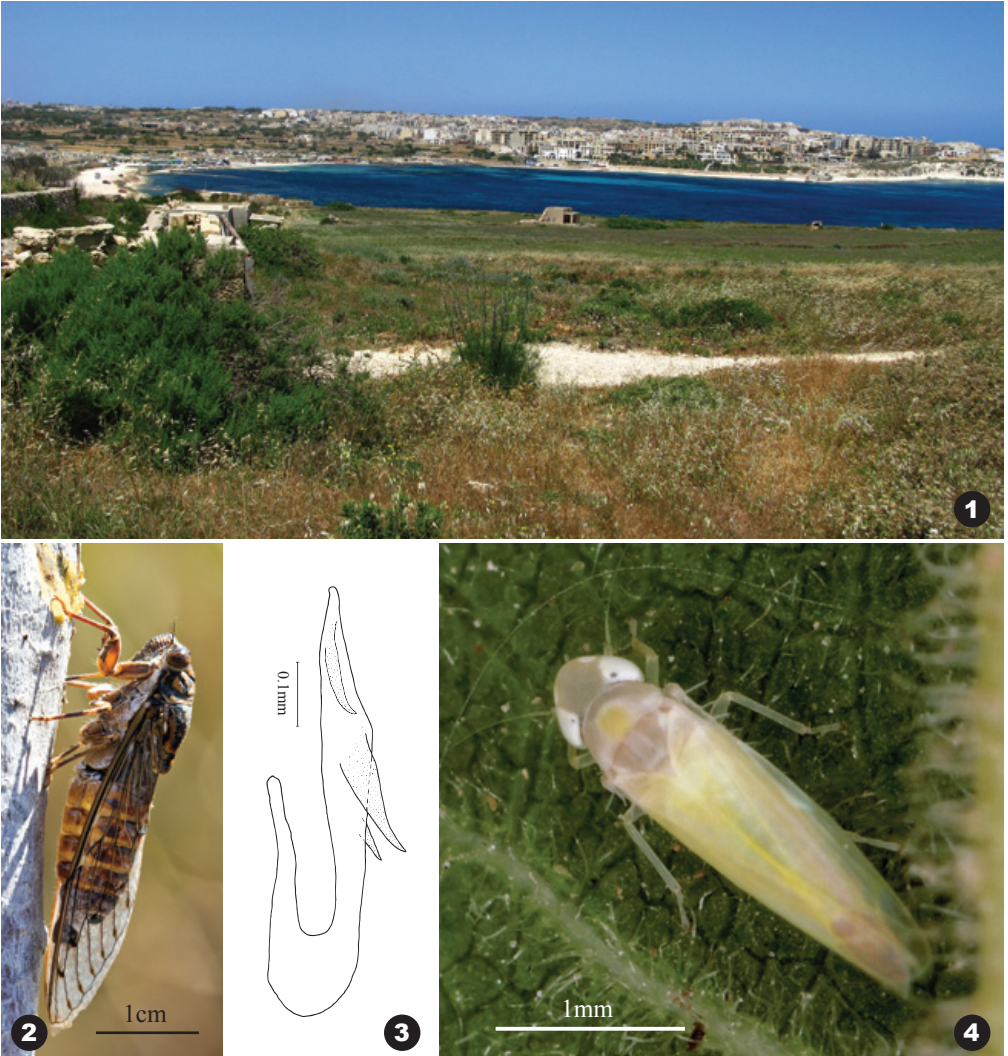
**Material examined. GOZO:** Ramla, 28.i.1997, 1 ♂ & 1 ♀, DM.

**Notes.** This species is widely distributed in the Palaearctic Region. *Anaceratagallia laevis* is associated with different herbaceous plants (GUGLIELMINO, 1994). In Lebanon the species was recorded as very common in biotopes rich in *Trifolium* and *Medicago* (ABDUL-NOUR, 1985).

*Austroagallia sinuata* (Mulsant & Rey, 1855)

**Material examined. MALTA:** Wied il-Ghasel, 21.ix.1989, 1 ♂, DM; Mtahleb, 20.vi.2012, 1 ♀, DM; Wardija, 18.v.2012, 1 ♀, DM & VD; Birzebbugia, Wied Has-Sabtan, 17.v.2012, 2 ♀♀, DM & VD; St. Thomas Bay, Munxar, 30.iii.2010, 1 ♀, DM; Buskett, 18.v.2012, 1 ♀, DM & VD. **GOZO:** Ramla, 28.i.1997, 2 ♂♂ & 1 ♀, DM.

**Notes.** A Euro-Mediterranean-Turanic species which extends its distribution range in the Ethiopian Region. *Austroagallia sinuata* is associated with different herbaceous plants (GUGLIELMINO, 1994). It was recorded from France from arid places on *Ononis* (VILLIERS, 1977).



**Figure 1:** Tal-Munxar area in St. Thomas Bay - coastal habitat characterised by low vegetation suitable for several species of Auchenorrhyncha such as *Toya propinqua*, *Tettigometra atra*, *Austroagallia sinuata*, *Euscelis lineolatus*, *Empoasca alsiosa* and *Psammotettix alienus*; **Figure 2:** *Cicada orni*; **Figure 3:** *Anoscopus* gr. *albifrons* (from Qannotta Valley) - aedeagus, left lateral view; **Figure 4:** *Ficocyba ficaria*.

## DORYCEPHALINAE

*Eupelix cuspidata* (Fabricius, 1775)

**Material examined.** MALTA: Zejtun, 25.x.1989, 1 ♀, DM.

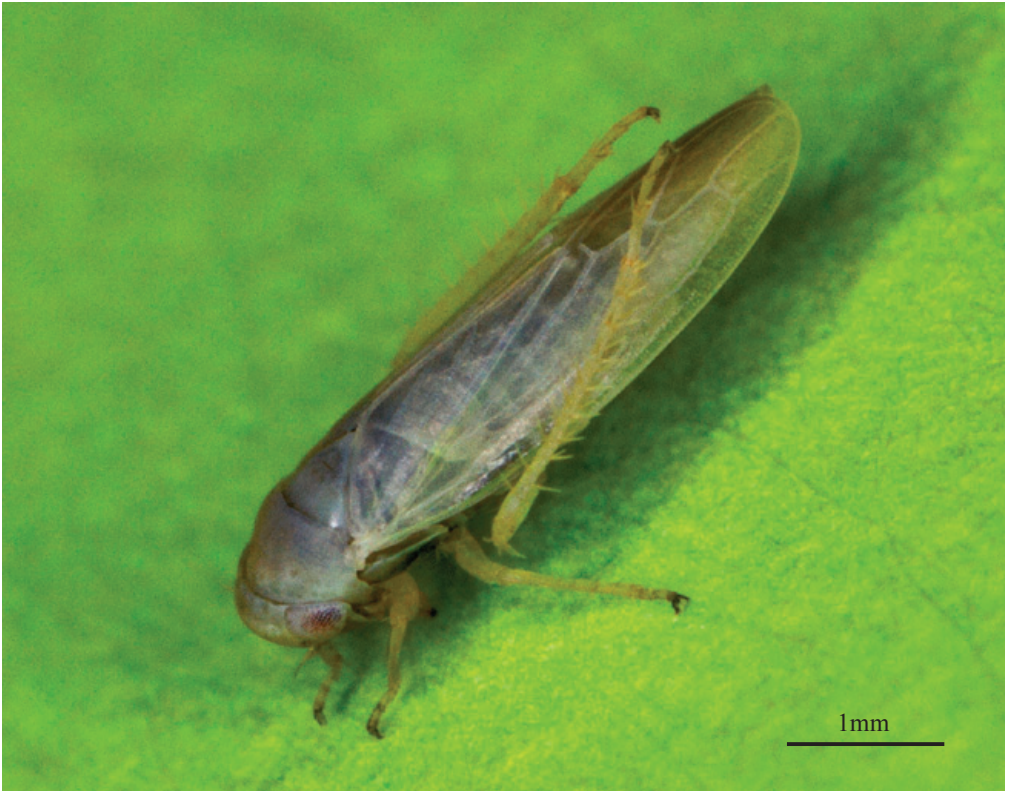
**Notes.** This species is widely distributed in the Palaearctic Region. *Eupelix cuspidata* is associated with different herbaceous plants (GUGLIELMINO, 1994). VILLIERS (1977) recorded this species on low vegetation on uncultivated land or in grasslands.

## HECALINAE

*Hecalus* sp.

**Material examined.** MALTA: Birzebbugia, 15.vi.2012, 1 ex., DM; Fiddien, 19.vi.2012, 1 ex., DM.

**Notes.** The identity of this taxon to species level was not possible as the material at hand consists of juveniles only.



**Figure 5:** *Balclutha brevis*

## APHRODINAE

*Anoscopus* gr. *albifrons* (Linnaeus, 1758)

**Material examined.** MALTA: Qannotta Valley, 27.iv.1985, 3 ♂♂ & 2 ♀♀ VD.

**Notes.** The identity of this taxon to species level is problematic and more material is required to understand its range of variability. The species is close to *A. albifrons* and *A. limicola* (Edwards, 1908) but the aedeagus is of a different pattern (Fig. 3), as it is more similar to the Sicilian specimens than to those illustrated by RIBAUT (1952) and OSSIANNILSSON (1981). GUGLIELMINO (1994) gave some taxonomic considerations regarding this possible species group as she also could not assign with certainty the Sicilian material to species level.

## TYPHLOCYBINAE

*Empoasca alsiosa* Ribaut, 1933

**Material examined.** MALTA: Buskett, 29.iii./20.vi.2012, 1 ♂ & 4 ♀♀, DM; Fiddien, 19.vi.2012, 1 ♂ & 3 ♀♀, DM; St. Thomas Bay, Munxar, 17.v.2012, 1 ♂ & 3 ♀♀, DM & VD.

**Notes.** A North Mediterranean species which is polyphagous on herbaceous plants.

*Ficocyba ficaria* (Horvath, 1897)

(Fig. 4)

**Material examined.** MALTA: Ghajn Rihana, 18.v.2012, 1 ♂ on *Ficus carica*, DM & VD.

**Notes.** A Mediterranean dioceous species, which is found on *Lonicera* spp. in winter and on *Ficus carica* in summer (VIDANO, 1960).

*Eupteryx andalusiaca* Ferrari, 1882

**Material examined.** MALTA: St. Paul's Bay, 26.iv.1985, 1 ♀, VD; Qannotta Valley, 27.iv.1985, 2 ♂♂ & 2 ♀♀, VD; St. Thomas Bay, 19.ii.1998, 2 ♂♂, DM. **COMINO:** Il-Hazina, 13.viii.2002, 1 ♂ & 4 ♀♀ on vegetation around artificial freshwater pool, DM.

**Notes.** A North Mediterranean species associated with biotopes where its host-plant, *Dittrichia viscosa* (Asteraceae) is present (GUGLIELMINO, LAUTERER & BÜCKLE, 2011).

*Eupteryx melissae* Curtis, 1837

**Material examined.** MALTA: Ghar Lapsi, 10.ii.1994, 1 ♂ on *Salvia* sp., DM; Buskett, 20.vi.2012, 1 ♂, DM.

**Notes.** A Turanic-Euromediterranean-Ethiopian species recorded also in the Nearctic Region and associated with Lamiaceae (BIEDERMANN & NIEDRINGHAUS, 2004).

*Hauptidia lapidicola* (Vidano, 1964)

**Material examined.** MALTA: Valletta, 13.vi.2012, 4 ♂♂ & 8 ♀♀, on cultivated *Petunia*, DM.



**Notes.** A North-western Mediterranean species so far reported from Portugal, Spain, France, Italy and now Malta; the latter territory representing the southernmost distributional limit of *H. lapidicola*. This species is reported on different herbaceous plants such as *Achillea*, *Cerastium*, *Geranium*, *Hyoseris*, *Polystichum*, *Satureja*, *Silene*, *Teucrium*, *Thymus* (VIDANO, 1964) and *Petunia*.

***Zyginidia serpentina* (Matsumura, 1908)**

**Material examined. MALTA:** St. Paul's Bay, 26.iv.1985, 5 ♂♂ & 6 ♀♀, VD; Bahrija Valley, 27.iv.1985, 8 ♂♂ & 28 ♀♀, VD; Qannotta Valley, 27.iv.1985, 18 ♀♀, VD; Fiddien, 19.vi.2012, 2 ♂♂ & 14 ♀♀, DM; Mtaħleb, Wied il-Buzbies, 20.vi.2012, 1 ♂ & 3 ♀♀, DM; Buskett, 15.vii.1997/20.vi.2012, 2 ♂♂ & 1 ♀, DM; Ghajn Rihana, 18.v.2012, 1 ♂ & 1 ♀, DM & VD.

**Notes.** *Zyginidia serpentina* has a patchy distribution within the Mediterranean basin. GUGLIELMINO (1994) pointed out the possible synonymy of this species with *Z. italica* (Ribaut, 1947) in which case the species would be of Palaearctic distribution. The species is most likely to be associated with Gramineae especially weedy ones (GUGLIELMINO, 1994).

***Zygina flammigera* (Fourcroy, 1785)**

**Material examined. MALTA:** Mtaħleb, Wied il-Buzbies, 19.vi.2012, 1 ♀, DM; Buskett, 20.vi.2012, 1 ♀, DM.

**Notes.** A Holarctic species associated with woody Rosaceous plants such *Prunus*, *Malus* and *Crataegus* (BIEDERMANN & NIEDRINGHAUS, 2004).

***Fruticidia bisignata* (Mulsant & Rey, 1855)**

**Material examined. MALTA:** Mtaħleb, Wied il-Buzbies, 20.vi.2012, 1 ♂ & 4 ♀♀, DM.

**Notes.** *Fruticidia bisignata* is known from central and southern Europe, the Mediterranean basin extending eastwards up to Iran. This species is mainly associated with Rosaceae (RIBAUT, 1936; BIEDERMANN & NIEDRINGHAUS, 2004).

***Tamaricella complicata* Dworakowska, 1971**

**Material examined. MALTA:** Ghadira, 26.iv.1985, 9 ♀♀ on *Tamarix africana*, VD; Birzebbugia, 15.vi.2012, 1 ♂ & 8 ♀♀, on *Tamarix africana*, DM; Marsaxlokk, 17.v.2012, 1 ♂ & 1 ♀, on *Tamarix africana*, DM & VD.

**Notes.** *Tamaricella complicata* is an eastern Mediterranean species known from Egypt and Israel. A single male specimen from Pantelleria previously cited as *Tamaricella* gr. *cyprica* (Ribaut, 1948) (D'URSO & GUGLIELMINO, 1995) was recently attributed to *T. complicata* but more material was required to confirm such an identification (GUGLIELMINO, POGGI & BÜCKLE, 2011). The species is associated with *Tamarix* spp.

***Tamaricella tamaricis* (Puton, 1872)**

**Material examined. MALTA:** Birzebbugia, 15.vi.2012, 1 ♂ & 1 ♀, on *Tamarix africana*, DM.

**Notes.** A Turanic-Mediterranean species recorded also from the Ethiopian Region and associated with *Tamarix* spp. In Malta, *T. tamaricis* coexists with *T. complicata*. The male genitalia of the Maltese specimen fit with the figures of *T. bipunctata* illustrated in DWORAKOWSKA (1971), a species which is generally considered a synonym of *T. tamaricis*. According to GUGLIELMINO, POGGI & BÜCKLE (2011) the genus *Tamaricella* is in need of taxonomic revision as many species can only be discriminated by minor morphological differences and high intraspecific variability exists. In fact, it was for these reasons that provisionally all records of *T. tamaricis* from Italy were attributed to *T. cf. ribauti* (GUGLIELMINO, POGGI & BÜCKLE, 2011).

#### DELTOCEPHALINAE

##### *Grypotes staurus* Ivanoff, 1885

**Material examined.** MALTA: Buskett, 29.iii.2012, 1 ♂, DM; Ghadira, 26.iv.1985, 3 ♂♂ & 1 ♀ on *Pinus halepensis*, VD.

**Notes.** A Mediterranean-Macaronesian species associated with *Pinus* spp. (RIBAUT, 1952).

##### *Opsius lethierryi* Wagner, 1942

**Material examined.** MALTA: Marsaxlokk, 17.v.2012, 2 ♂♂, on *Tamarix africana*, DM & VD. GOZO: Dwejra, 14.vii.1999, 1 ♂ & 1 ♀, DM.

**Notes.** A Turanic-Mediterranean-Macaronesian species associated with *Tamarix* spp.

##### *Opsius stactogalus* Fieber, 1866

**Material examined.** MALTA: Birzebbugia, 15.vi.2012, 1 ♂ & 1 ♀ on *Tamarix africana*, DM; Birzebbugia, Wied Has-Sabtan, 17.v.2012, 4 ♂♂ & 3 ♀♀ on *Tamarix africana*, DM & VD; Marsaxlokk, 17.v.2012, 10 ♂♂ & 4 ♀♀ on *Tamarix africana*, DM & VD; Marsaskala, 15.vi.2012, 4 ♀♀ on *Tamarix africana*, DM.

**Notes.** A Turanic-Euromediterranean-Macaronesian species associated with *Tamarix* spp.

##### *Nealiturus fenestratus* (Herrich-Schäffer, 1834)

**Material examined.** MALTA: Gharghur, Wied id-Dis, 27.vi.1997, 1 ♂, DM, 1 ♂ & 1 ♀, same data but 13.vi.2002, DM.

**Notes.** A widespread species in the Palaearctic Region. In Italy, this species which is associated with herbaceous dicotyledons, goes through two generations per year and overwinters in the adult stage (VIDANO, 1988).

##### *Balclutha brevis* Lindberg, 1954

(Fig. 5)

**Material examined.** MALTA: Birzebbugia, 17.v.2012, numerous males, females and juveniles on cultivated *Pennisetum setaceum*, DM & VD.

**Notes.** *Balclutha brevis* is currently known from the Canary Islands, Cape Verde Islands and Sicily. This species, described from the Canary Islands was recently introduced in Sicily with its host-plant, *Pennisetum setaceum*, an invasive Poaceae (BELLA & D'URSO, *in press*). Although described from the Canary Islands, this species is probably native to the same native range of *P. setaceum* (a wide area comprising North and East Africa, the Near East and the Arabian Peninsula) and the species should be considered as an established alien.

***Balclutha punctata* (Fabricius, 1775)**

**Material examined. MALTA:** Marsaskala, 15.vi.2012, 8 ♂♂ & 5 ♀♀, DM; Fiddien, 19.vi.2012, 3 ♂♂ & 3 ♀♀, DM.

**Notes.** A sub-cosmopolitan species associated with Graminaceae (GUGLIELMINO, 1994).

***Balclutha saltuella* (Kirschbaum, 1868)**

**Material examined. MALTA:** Birzebbugia, 15.vi.2012, 1 ♀, DM; Mtahleb, 20.vi.2012, 1 ♂, DM.

**Notes.** A cosmopolitan species widespread in tropical and temperate regions and associated with Graminaceae.

***Synophropsis lauri* (Horvath, 1897)**

**Material examined. MALTA:** Bingenma, 10.ix.2001, 1 ♂, DM; St. Thomas Bay, 1.viii.2010, 1 ♀, DM; Wied Babu, 3.vii.2002, 1 ♀, DM.

**Notes.** An East Mediterranean species which is polyphagous on various trees, shrubs and woody climbers such as *Hedera*.

***Euscelis lineolatus* Brullé, 1832**

**Material examined. MALTA:** Qannotta Valley, 27.iv.1985, 1 ♂, VD; Ghajn Rihana, 18.v.2012, 1 ♂ & 1 ♀, DM & VD; St. Julian's, 26.iv.1985, 1 ♂, VD; Bir id-Deheb, 6.v.2012, 1 ♂, DM; Wardija, 18.v.2012, 2 ♀♀, DM & VD; Migra Ferha, 18.v.2012, 1 ♂, DM & VD; Buskett, 18.v.2012, 1 ♂, DM & VD; Marsaxlokk, 17.v.2012, 1 ♀, DM & VD; Birzebbugia, 17.v.2012, 1 ♂ & 1 ♀, DM & VD; St. Thomas Bay, Munxar, 17.v.2012, 1 ♂ & 2 ♀♀, DM & VD.

**Notes.** A Euromediterranean-Turanic species which is also present in the Canary Islands. In Italy, *E. lineolatus* which is associated with herbaceous dicotyledons particularly *Trifolium*, goes through three generations per year and overwinters in the larval stage (VIDANO, 1988).

***Psammotettix alienus* (Dahlbom, 1850)**

**Material examined. MALTA:** Birzebbugia, 15.vi.2012, 1 ♂, DM; Birzebbugia, Wied Has-Sabtan, 17.v.2012, 1 ♂, DM & VD; St. Thomas Bay, Munxar, 17.v.2012, 3 ♂♂ & 2 ♀♀, DM & VD; Zejtun, 4.xii.1989, 1 ♀, DM; Mtahleb, Wied il-Buzbies, 20.vi.2012, 1 ♂ & 1 ♀, DM; Fiddien, 19.vi.2012, 1 ♂ & 1 ♀, DM.

**Notes.** A Holarctic species associated with grasses (GUGLIELMINO, 1994).

## DISCUSSION

Prior to the present work, the Auchenorrhyncha fauna of the Maltese Islands was never studied as such. From collections mainly carried out by the present authors, a total of 42 species were found. Four additional records were reported from Malta and this brings the total number to 46 species which belong to the following nine families of Auchenorrhyncha: Cixiidae (3 species), Delphacidae (7 species), Meenoplidae (1 species), Dictyopharidae (1 species), Tettigometridae (2 species), Issidae (2 species), Cicadidae (1 species), Aphrophoridae (2 species) and Cicadellidae (27 species). This number will surely increase if additional collecting is carried out in the Maltese Islands. We already have additional material (mostly females) which represents further new records for this territory but we need to study this in more detail and hopefully it will be supplemented with additional material. It is only in this way that we hope to provide reliable species determinations.

Since the present knowledge of the Auchenorrhyncha fauna of Malta is still incompletely known, not much biogeographical considerations can be put forward. However, it is worth mentioning that two species represent eastern Mediterranean elements, *Synophropsis lauri* and *Tamaricella complicata*, the presence of the latter is confirmed for the European territory. One species, *Falcidius ebejeri*, may well represent an endemic species to Malta, whereas *Tachycixius remanei* seems to be a sub-endemic species confined to Italy and Malta. Almost all species reported for Malta, are also found in Sicily and/or circumsicilian islands, with the exception of two species, *Toya obtusangula* and *Eupteryx salviae* (D'URSO, 1995; D'URSO & ALMA, 2006). We are of the opinion that at least *Toya obtusangula* will be eventually found in Sicily but *Eupteryx salviae* represent a species so far confined to Northern Italy and its presence in Malta (HOCH, 2004) needs to be validated.

## ACKNOWLEDGMENTS

We would like to thank John Borg who gave us complete access to the insect collection housed in the Natural History Museum of Malta and Guido Bonett for figure 2. We also thank Mike Wilson and Roland Mühlethaler for their input in the present work and for all suggestions and clarifications received. We thank Dora Aguin Pombo for giving us Macaronesian specimens on *Balclutha brevis* for comparison.

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Received: August 30, 2012  
Accepted: October 15, 2012

**APPENDIX I** - Check-list of Auchenorrhyncha from Malta with families arranged taxonomically (after NAST, 1972) and species within listed alphabetically.

**CIXIIDAE Spinola, 1839**

- Hyalesthes obsoletus* Signoret, 1865<sup>1</sup>  
*Reptalus* cf. *panzeri* (Löw, 1883)  
*Tachycixius remanei* D'Urso, 1999

**DELPHACIDAE Leach, 1815**

- Asiraca clavicornis* (Fabricius, 1794)  
*Chloriona unicolor* (Herrich-Schäffer, 1835)  
*Flastena fumipennis* (Fieber, 1866)  
*Matutinus putoni* (A. Costa, 1888)  
*Pseudaraeopus lethierryi* (Mulsant & Rey, 1879)  
*Toya obtusangula* (Linnavuori, 1957)  
*Toya propinqua* (Fieber, 1866)

**MEENOPLIDAE Fieber, 1872**

- Nisia nervosa* (Motschulsky, 1863)

**DICTYOPHARIDAE Spinola, 1839**

- Dictyophara europaea* (Linnaeus, 1767)

**TETTIGOMETRIDAE Germar, 1821**

- Tettigometra atra* Hagenbach, 1822  
*Tettigometra picta* Fieber, 1865

**ISSIDAE Spinola, 1839**

- Clybeccus declivum* (Dlabola, 1986)  
*Falcidius ebejeri* Gnezdilov & Wilson, 2008

**CICADIDAE Leach, 1815**

- Cicada orni* Linnaeus, 1758

**APHROPHORIDAE Amyot & Serville, 1843**

- Aphrophora alni* (Fallen, 1805)<sup>1</sup>  
*Philaenus spumarius* (Linnaeus, 1758)

**CICADELLIDAE Latreille, 1825**

- Anaceratagallia laevis* (Ribaut, 1935)  
*Anoscopus* gr. *albifrons* (Linnaeus, 1758)  
*Austroagallia sinuata* (Mulsant & Rey, 1855)  
*Balclutha brevis* Lindberg, 1954  
*Balclutha punctata* (Fabricius, 1775)  
*Balclutha saltuella* (Kirschbaum, 1868)  
*Empoasca alsiosa* Ribaut, 1933  
*Eupelix cuspidata* (Fabricius, 1775)

<sup>1</sup> Recorded from Malta in the Fauna Europaea Database and not collected during the present study.

*Eupteryx andalusiaca* Ferrari, 1882  
*Eupteryx melissae* Curtis, 1837  
*Eupteryx salviae* Arzone & Vidano, 1994<sup>1</sup>  
*Euscelis lineolatus* Brullé, 1832  
*Ficocyba ficaria* (Horvath, 1897)  
*Fruticidia bisignata* (Mulsant & Rey, 1855)  
*Grypotes staurus* Ivanoff, 1885  
*Hauptidia lapidicola* (Vidano, 1964)  
*Hecalus* sp.  
*Megophthalmus scabripennis* Edwards, 1915  
*Nealiturus fenestratus* (Herrich-Schäffer, 1834)  
*Opsius lethierryi* Wagner, 1942  
*Opsius stactogalus* Fieber, 1866  
*Psammotettix alienus* (Dahlbom, 1850)  
*Synophropsis lauri* (Horvath, 1897)  
*Tamaricella complicata* Dworakowska, 1971  
*Tamaricella tamaricis* (Puton, 1872)  
*Zygina flammigera* (Fourcroy, 1785)  
*Zyginidia serpentina* (Matsumura, 1908)

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<sup>1</sup> Recorded from Malta in the Fauna Europaea Database and not collected during the present study.