

The picture-winged flies and related families (Diptera, Tephritoidea) of the Maltese Islands

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ABSTRACT. An account of the Tephritoidea of the Maltese Islands is presented, based on a review of the literature and an examination of new material. The nomenclature of older records is updated. The family Lonchaeidae is represented by only three species, one is a new record, the Piophilidae by a single species, the Tephritidae by 27 species, three of these are new records, and the Ulidiidae by four species, two of which are new records. Pallopteridae, Platystomatidae and Pyrgotidae have never been recorded from Malta.

KEY WORDS. Mediterranean, Malta, Lonchaeidae, Piophilidae, Tephritidae, Ulidiidae, new records.

INTRODUCTION

The Tephritoidea consists of a group of Diptera families that have in common larvae associated with plants either as primary phytophages or secondary saprophages (the Piophilidae is an exception as species in this family develop in carrion and other decomposing, moulding or fermenting material such as cheese), females with a telescopic ovipositor, and many members with patterned wings. FERRAR (1987) gave a useful summary with full references of the larval feeding habits of these families. The families Pallopteridae, Platystomatidae and Pyrgotidae have not been found on Malta.

In the Tephritidae there are a few species of significant economic importance because of their negative effect on fruit growing and horticulture. Two of these species have been known to occur in Malta for over a century and they are very common. These are the olive fly *Bactrocera oleae* (Rossi, 1790) and the Mediterranean Fruitfly *Ceratitis capitata* (Wiedemann, 1824).

Species of Lonchaeidae are often saproxylic and some are secondary invaders of already damaged fruit. A few species form galls. MACGOWAN & ROTHERAY (2008) give a useful key for identification (though many Mediterranean species are not covered) and much interesting biological and ecological information.

Piophilidae includes several species of flies that are of economic and forensic importance. Most species develop in carrion that has reached an advanced stage of decay. They are attracted to the odour emanating from rancid lipids. *Piophila casei* is well-known to develop also in cheese and dry meat.

The Tephritidae are often referred to as fruitflies, but these are not to be confused with the Drosophilidae also often known colloquially as fruitflies. Most Tephritidae develop in the capitula of many species of Asteraceae, sometimes forming galls that may or may not lignify, a few species mine leaves or stems.

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The Ulidiidae comprised of the two subfamilies Otitinae and Ulidiinae is family of diverse biology although for many species this remains unknown. Some Otitinae are phytophagous or saprophytophagous and some Ulidiinae develop in dung. Indeed dung is an important attractant to some species in this subfamily. RIVOSECCHI (1995) gave a comprehensive taxonomic review of the Italian Ulidiidae which is useful for the identification of the Maltese species.

The Tephritoidea of the Maltese Islands have received some attention in the past because of the agricultural and horticultural importance of several species. They are also attractive insects because so many have striking colours and patterns and are quite common.

MATERIAL AND METHODS

The literature was searched to locate articles that mention any species of Tephritoidea occurring on Malta. Rondani's and Zetterstedt's publications were particularly consulted as it was known that both persons received material from Antonio Schembri and a Mr Delicata both from Malta and who personally collected Diptera. All the species names retrieved from the literature were nomenclaturally updated using a number of sources, but mainly the Catalogue of Palaearctic Diptera (SOÓS & PAPP, 1984).

The current list of species, extant on Malta, is based on examination of material mainly collected by the author and deposited in his personal collection. It is supplemented with some records of specimens in the personal collection of Dr Paul Gatt (Southend, UK). Several persons who came across tephritoid flies passed on their material to the author and this is noted in the data for each species concerned.

A photographic illustration of the wing is given for all the extant species examined (i.e., excluding historical or literature records) with the exception of *Tephritis divisa* Rondani, 1871. Photographs of the forewings were mostly obtained from material conserved in 70% alcohol, which were dissected and mounted in glycerine. Photographs were taken with a Canon PowerShot A80 mounted on a Zeiss Axioscope 2 plus compound microscope. In the case of dry mounted material, wing photographs were taken with a Leica M60 and using the multi focus Leica software photographs were combined into single images. This same procedure was used for the habitus photograph of *Herina ghilianii* Rondani, 1869 (Fig. 34).

PHILLIPS (1946) gave extensive information on larvae and the host plants of many species, but much taxonomic and nomenclatural change since then makes this work difficult to use. Recent works dealing with the taxonomy and biology of Tephritidae of the West Palaearctic were also consulted (MERZ, 1994; WHITE, 1988; FREIDBERG & KUGLER, 1989) both for the purposes of identification and for obtaining information on biology where the species from Malta have not been reared.

The species recorded from the Maltese Islands are listed below in alphabetical order within each family and subfamily. For Tephritidae the subfamily arrangement is according to NORRBOM (2000). The collecting data of each species is first given for the island of Malta, followed by Gozo and Comino when available. Within each island, alphabetical order is followed for locality names and chronological order is followed for date of collection within one locality. Different locality data are separated by a semicolon. The collector's initials are given where this is not the author. All the material is deposited in the author's private collection unless stated otherwise. The initials of the various individuals are given in parenthesis as follows: Albert Bezzina (AB), Guido Bonnet (GB),

Louis Cassar (LFC), Aldo Catania (AC), David Dandria (DD), Karl A. Ebejer (KAE), Charles Farrugia (CF), Mario Gauci (MG), John W. Ismay (JWI), Edwin Lanfranco (EL), David Mifsud (DM), Bernhard Merz (BM), Colin Plant (CP), Paul Sammut (PS), James L. Schembri (JLS), Stephen P. Schembri (SPS), Martin A. Thake (MAT) and Mark Zammit (MZ).

RESULTS

ZETTERSTEDT (1849) gave the earliest records of tephritoid flies from Malta. These were mainly based on specimens sent to him by A. Schembri. Zetterstedt clearly indicates in his text whether specimens were received from Schembri or whether Schembri just wrote to him stating that he knew of that particular species occurring on Malta. In the latter case, it is not clear who identified the species. However, the species concerned were common and well known at the time, and Schembri corresponded also with Prof. C. Rondani in Italy. ZETTERSTEDT (1849: 3344–3348) listed the following species: *Plioreocepta poeciloptera* (Schrank, 1776) as *Tephritis centaureae*, *Sphenella marginata* (Fallén, 1814) as *Tephritis marginata*, *Trupanea stellata* (Fuessly, 1775) as *Tephritis radiata*, *Campiglossa producta* (Loew, 1844) as *Tephritis tessellata*. The name *T. tessellata* could refer to any of five species in two genera now recognized, but given that *C. producta* is a common species on Malta and the other four species are either not found on Malta or their distribution does not reach this far south, I consider it most likely that the species from Malta that Zetterstedt had was *C. producta*.

RONDANI (1871) described *Herina ghilianii* from specimens collected in Sicily and from a specimen sent to him from Malta by Schembri. RONDANI (1874) also listed the following species as occurring on Malta: *Terellia fuscicornis* (Loew, 1844) (as *Tripeta fuscicornis*), *Campiglossa producta* (Loew, 1844) (as *Oxyina punctella* Fallén), *Acanthiophilus helianthi* (Rossi, 1794) (as *Tephritis helianthi*), *Trupanea stellata* (Fuessly, 1775) (as *Ditricha stellata*), and in the Lonchaeidae he listed *Earomyia viridana* Zetterstedt, 1842 (as *Lonchaea viridana*), based on a specimen that Schembri sent him, but this species was probably a misidentification of *Lamprolonchaea smaragdi* (Walker, 1849) as Rondani described it as metallic green with white calypters. *Lamprolonchaea smaragdi* is common on Malta and the other species has never been found in these islands and its distribution does not extend this far south.

BEZZI & DE STEFANI (1897), in their compilation of a list of the Diptera of Sicily, included Malta and based their records entirely on the publications of Zetterstedt and Rondani (see above). They added no new records.

BORG (1922) recorded *Ceratitis capitata* (Wiedemann, 1824) under a number of names. This species has long been known to be present in Malta and is a worldwide economically important species owing to its ability to attack a very wide range of cultivated fruits. In Malta it is an important pest of citrus and peaches among many other fruits. Borg also recognized cultivated figs (*Ficus carica*) as often attacked by a species of fly – *Lonchaea aristella*, but following a taxonomic revision on this group, this was recognized to be a different species and its correct name is *Silba adipata* McAlpine J.F., 1956. The third species listed by Borg is *Bactrocera oleae* (Rossi, 1790) (listed as *Dacus oleae*), again a well-known pest of olives and long known to occur in Malta.

CARUANA-GATTO (1926) added *Euarestella megacephala* (Loew, 1846) (as *Tephritis megacephala* forming galls in *Inula crithmoides* L.), *Capparimyia savastani* (Martelli, 1911) (as *Ceratitis savastani* forming galls in the buds of *Capparis spinosa* L.), and *Sphenella marginata* (Fallén,

1814) as (*Tephritis marginata* as very common in galls of the flowers of *Senecio vulgaris*, L.) All three remain among the commonest species of fruit flies in these islands.

SALIBA (1963) listed *Lonchaea aristella* as occasional on fig, apparently unaware of the taxonomic changes in the species group, *Ceratitis capitata* as very common on a wide range of cultivated fruits and *Dacus oleae* as common on olive. This same information is given by SCHEMBRI *et al.* (1991), again without a taxonomic update and without a clear indication what new material was actually examined.

FREIDBERG (1989) recorded *Capparimyia savastani* (Martelli, 1911) from Malta.

SCHEMBRI *et al.* (1991) added the following list of species: *Acanthiophilus helianthi* (Rossi, 1794), *Campiglossa producta* (Loew, 1844) (as *Paroxyna tessellata* (Loew)), *Capparimyia savastani* (Martelli, 1911), *Ceratitis capitata* (Wiedemann, 1824), *Chaetostomella steropea* (Rondani, 1870) as (*Orellia steropea*), *Euarestella megacephala* (Loew, 1846), *Euleia heracleii* (Linnaeus, 1758), *Myopites zernyi* Hering, 1939, *Tephritis formosa* (Loew, 1844), *Tephritis praecox* (Loew, 1844) (as *Tephritis poecilura* Loew), *Trupanea amoena* (Frauenfeld, 1857), *Urophora mauritanica* Macquart, 1851 (as *Urophora macrura* Loew), *Urophora quadrifasciata* (Meigen, 1826). The authors did not update the nomenclature and made some errors with regard to plant associations. It may not be clear that the plant association as they gave it was merely that plant on which the fly species was collected and not that upon which it developed. This is misleading. The errors are: (i) *Ceratitis capitata* on *Capparis spinosa*. This is almost certainly an error of identification as, with the naked eye, *C. capitata* looks very similar to *C. savastani*, which is the correct species that attacks *Capparis*, a plant not known to host *C. capitata*; (ii) *Euleia heraclei* on *Capparis*. Although *E. heraclei* has a wide range of host species these are in a variety of plant genera of the family Apiaceae; (iii) *Trupanea amoena* on *Glebionis coronaria* (= *Chrysanthemum coronarium* (Compositae)). This is a possible host but the data they give does not specify this; (iv) *Urophora quadrifasciata* on grasses. *Urophora* develop in the capitula of Asteraceae. SCHEMBRI *et al.* (1991) also listed *Herina* ? *lugubris* Meigen under Tephritidae instead of Ulidiidae. SÉGUY (1934) had correctly listed *Herina ghilianii* Rondani and not *H. lugubris* (Meigen, 1826) as present on Malta. MERZ (2002) examined the specimens recorded by Schembri *et al.* (presently in Dr Gatt's collection, Essex, UK) and confirmed them to be *H. ghilianii*.

The relevant sections of the Catalogue of Palaearctic Diptera were searched for records from Malta of Lonchaeidae (KOVALEV & MORGE, 1984), Piophilidae (ZUSKA, 1984), Tephritidae (FOOTE, 1984), and Ulidiidae (ZAITSEV, 1984). Only *Herina ghilianii* is given despite several species of Tephritidae being published by Zetterstedt, Rondani and Bezzi years earlier.

The Fauna Europaea Database gave no species for Malta under Lonchaeidae (CARLES-TOLRÁ, 2013), in spite of known records in the literature, or Piophilidae (OZEROV, 2013) but gave *Herina ghilianii* and *Physiphora alceae* (Preysslér, 1791) for Ulidiidae (KAMENEVA & GREVE, 2013) and 24 taxa (one a subspecies) for the Tephritidae (KORNEYEV, 2004). The subspecies *Urophora quadrifasciata algerica* (Hering, 1941) is sympatric with the nominate taxon and therefore this cannot be valid, at least where Malta is concerned. For this reason only the nominate taxon is listed here. Only one species of Tephritidae, *Myopites longirostris* (Loew, 1846), listed under Malta in the Fauna Europaea database has not been found in the present study. However, there are nomenclatural and taxonomic difficulties with this genus that are not adequately resolved and therefore old records and indeed the recorded species of *Myopites* in this article may have to be updated or corrected in future.

The references to Rondani's publications given below were updated for accuracy according to O'HARA *et al.* (2011).

ANNOTATED SPECIES LIST

Family **Lonchaeidae** Loew, 1861

Lamprolonchaea smaragdi (Walker, 1849)

(Fig. 1)

Material examined: Malta, Bahrija, 3.xi.1991, 3 ♂♂, 21.vi.1992, 1 ♀; Balzan, 2.ix.1991, 4 ♂♂; Buskett, 16.ix.1976, 1 ♂, 25.viii.1991, 2 ♂♂ & 5 ♀♀; Chadwick Lakes, 24.viii.1979, 1 ♀, JLS (in PG coll.), 11.x.1992, 1 ♂, PG (in PG coll.), 29.x.1992, 1 ♀, PG (in PG coll.), 8.xi.1992, 1 ♀; Fiddien, 26.ix.1978, 2 ♂♂, JLS (in PG coll.), 1.xi.1992, 1 ♂, on fruit of *Ficus carica*, PG (in PG coll.); Hagar Qim, 15.xi.1992, 1 ♀, PG (in PG coll.); Marfa Ridge, 17.iv.1992, 1 ♂; Marsaxlokk, 27.ix.1992, 1 ♂ & 1 ♀, PG (in PG coll.); Rabat, Wied l-Isqof, 15.xi.1992, 1 ♀; Salina, 23.viii.1992, 1 ♀; Wied id-Dies, 8.xii.1992, 3 ♂♂, PG (in PG coll.); Wied il-Ghasel, 21.iv.1978, 1 ♀, PG (in PG coll.); Wied Incita, 7.xi.1976, 8 ♂♂, swarming, JLS (in PG coll.); Wied Qannotta, 25.iii.1978, 1 ♀, JLS (in PG coll.), 13.vii.1978, 1 ♂, JLS (in PG coll.), 13.vi.1979, 1 ♀, JLS (in PG coll.), 8.xi.1980, 11 ♂♂, SPS (in PG coll.); Wied Qirda, 6.vii.1977, 1 ♀, 22.ix.1978, 1 ♀, JLS, 4.viii.1979, 1 ♀ on fruit of edible fig, JLS (in PG coll.). Gozo, Ramla dunes, 14.xi.1992, 1 ♂ & 3 ♀♀, PG (in PG coll.).

Notes: New record for the Maltese Islands. Known to develop in a wide range of decaying fruits and vegetables, commonly tomatoes.

Silba adipata McAlpine J.F., 1956

(Fig. 2)

Material examined: Malta, Bahrija, 5.i.1987, 1 ♂, 21.vi.1992, 2 ♂♂, 12.vi.1994, 1 ♂; Balzan, 2.ix.1991, 1 ♂, KAE; Birkirkara, vii.1978, 1 ♂, JLS (in PG coll.); Buskett, 9.viii.1978, 4 ♂♂ & 3 ♀♀, JLS (in PG coll.), 3 ♀♀, on bird droppings, PG (in PG coll.); Chadwick Lakes, 11.x.1992, 1 ♀, PG (in PG coll.), 8.xi.1992, 1 ♀; Fiddien, 29.vii.1989, 3 ♂♂ & 2 ♀♀, 21.ix.1994, 1 ♂ & 1 ♀; Ghadira, 4.vi.1994, 1 ♂; Ghammieri Government Farm, from puparia in unripe *Ficus carica*, 10.v.1997, 1 ♂ & 1 ♀, CF; Gnejna, 1.viii.1993, 1 ♀, PG (in PG coll.); Gnejna, Ras il-Karraba, 23.xii.1999, 1 ♂; Marsaxlokk, 27.ix.1992, 1 ♀, PG (in PG coll.); Mgiebaħ, 26.v.1993, 2 ♂♂ & 1 ♀; Mistra, 7.vii.1977, 1 ♂, JLS (in PG coll.), 7.vii.1987, 1 ♂ & 1 ♀; Mtarfa, 7.viii.1989, 2 ♀♀, PS; Wied il-Ghasel, 14.x.1978, 1 ♀, JLS (in PG coll.); Wied Qirda, 22.ix.1978, 1 ♂, JLS (in PG coll.). Gozo, Mgarr, 27.vii.1978, 1 ♀, JLS (in PG coll.).

Notes: Known for a long time in Malta as a common pest of edible figs (BORG, 1922), but under the name *Lonchaea aristella*. A taxonomic revision of this species group (McALPINE, J.F. 1956) resulted in several closely related species being recognized. MIFSUD *et al.* (2012) report it from Malta under its correct name.

Silba fumosa (Egger, 1862)

(Fig. 3)

Material examined: Malta, Buskett, 1.v.1992, 1 ♀, 14.vi.1999, 1 ♀, BM; Fiddien, 8.iv.1992, 1 ♂ & 1 ♀, 11.v.1992, 1 ♂, 3.vii.1996, 1 ♂; Rabat, Wied Ghomor, 31.iii.1992, 1 ♂; Zurrieq, Wied Babu, 6.iii.1998, 1 ♂.

Notes: New record for the Maltese Islands. Known to develop in decaying stems of *Opuntia ficus-indica* (MACGOWAN & FREIDBERG, 2008).

Family **Piophilidae** Macquart, 1835

***Piophila casei* (Linnaeus, 1758)**

(Fig. 4)

Material examined: Malta, Balzan, 23.vi.1977, 1 ♂, 12.vii.1987, 1 ♀ & 1 puparium, MJE (in PG coll.), 17.iv.2001, 1 ♂; Birkirkara, 28.iii.1978, 1 ♂ & 1 ♀, SPS (in PG coll.), 4.iv.1978, 1 ♀, SPS (in PG coll.), 14.x.1978, 1 ♀, JLS, 20.xi.1979, 1 ♀, SPS (in PG coll.); Wied is-Sewda, 17.vi.1977, 1 ♀.

Notes: An almost cosmopolitan species attacking animal skins, meat (especially dried) and cheese. It has been recorded from Malta breeding in goat cheese stored in vinegar (EBEJER, 2012).

Family **Tephritidae** Newman, 1834

Subfamily **Dacinae** Loew, 1862

***Bactrocera oleae* (Rossi, 1790)**

(Fig. 5)

Material examined: Malta, Balzan, 30.i.1994, 1 ♀; Fiddien, 26.ix.1978, 1 ♂, JLS (in PG coll.); Mgiebaħ, 9.xi.1997, 1 ♀; Mizieb, 31.iii.1993, 1 ♂; Qormi, 20.ix.1992, 1 ♂, DD; 26.ix.1992, 1 ♂; Rabat, Fiddien, larvae in olives, 21.xi.1999, adults 19–26.xii.1999, 6 ♂♂ & 2 ♀♀; Wardija, 25.ii.1996, 1 ♀; Wied Babu, 1.v.1993, 1 ♀; Wied Ghajn Rihana, 16.xi.1980, 1 ♂, SPS (in PG coll.); Wied Incita, 27.ii.1994, 1 ♂.

Notes: A species of major economic importance because of the damage it causes to the olive fruit.

***Capparimyia savastani* (Martelli, 1911)**

(Fig. 6)

Material examined: Malta, Marsascalea, 7.viii.1978, 1 ♂ & 3 ♀♀, 4 puparia, AB (in PG coll.); Marsaxlokk, 27.ix.1992, 2 ♂♂ & 1 ♀, PG (in PG coll.); Msida, Tal-Qroqq, 29.x.1975, 1 ♀, MAT; Mtahleb, 25.vii.1989, 1 ♂; Pembroke, 4.xi.1990, 1 ♀, AC; Qammieh, 23.vii.1977, 3 ♂♂ & 2 ♀♀; Valletta, Hastings Bastions, larvae 28.viii.1991, in gall on *Capparid orientalis*, pupariation 29.viii.1991, adults emerged 4–7.ix.1991, 5 ♂♂ & 2 ♀♀, MG; Wied il-Ghasel, 2.viii.1979, 1 ♀, on *C. orientalis*, JLS (in PG coll.); Wied Qirda, 4.viii.1979, 1 ♀, on *C. orientalis* JLS (in PG coll.), 20.viii.1983, 4 ♂♂ & 1 ♀, on *C. orientalis*, SPS (in PG coll.); Comino, Santa Marija, 17.viii.1977, 1 ♀, SPS (in PG coll.).

Notes: The larvae form an oval gall in the flower buds of *Capparid orientalis*.

***Ceratitis capitata* (Wiedemann, 1824)**

(Fig. 7)

Material examined: Malta, Balzan, 27.vi.1981, 1 ♂, 1.ix.1991, 1 ♂ & 1 ♀, from tangerine (*Citrus reticulata*), larvae 23.xi.1991, pupariation 29.xi–2.xii.1991, adults 10–20.i.1992, 3 ♂♂ & 3 ♀♀, apricot (*Armeniaca vulgaris*), larvae 23–25.vi.1993, adults 8–9.viii.1993, 2 ♂♂ & 2 ♀♀, from orange (*Citrus sinensis*), i.1997, 2 ♂♂; Fiddien, viii.1992, 2 ♂♂ & 1 ♀, 3 puparia, reared from fruit of *Opuntia ficus-indica*, PG (in PG coll.); Gzira, 17.iv.1978, 1 ♀, PG (in PG coll.).

coll.); Mgarr, 20.ix.1974, 1 ♀, SPS (in PG coll.). Gozo, Xaghra, from pear (*Pyrus cydonia*), larvae 7.xi.1991, pupariation 11.xi.1991, adults 23.xi.1991, 2 ♂♂, MG.

Notes: The larvae develop in a large number of fruits belonging to various plant families. According to FIMIANI (1989) the first record of this species attacking fruit was in Malaga in 1842. Since then it has spread and infested more than 250 types of fruit grown commercially in all countries around the Mediterranean making it one of the most economically important fruit flies in the world. In Malta, it is especially common for it to attack *Citrus*, *Prunus*, *Persica*, *Armenica* and *Opuntia*.

Subfamily **Tephritinae** Newman, 1834

***Acanthophilus helianthi* (Rossi, 1794)**

(Fig. 8)

Material examined: Malta, Bahrija, 16.iv.1994, 2 ♂♂ & 1 ♀, 20.iv.2002, 1 ♀, DM (in DM coll.); Buskett, 25.viii.1996, 1 ♂; Delimara, 24.iv.1993, 1 ♂; Fomm ir-Rih, 16.iv.1994, 1 ♂ & 3 ♀♀; Ghadira, 9.iv.1993, 1 ♀, PG (in PG coll.); Marfa Ridge, 10.vii.1989, 1 ♂, 17.iv.1992, 1 ♂ & 1 ♀, PG (in PG coll.); Marsasala, ix.1978, 2 ♂♂ & 2 ♀♀, at light, AB (in PG coll.); Marsaxlokk, 27.ix.1992, 1 ♂, 1 ♂ & 1 ♀, PG (in PG coll.); Mgiebah, 26.iii.1995, 3 ♀♀; Mtahleb, 25.vii.1989, 1 ♂; Pembroke, 23.x.1990, PS, 1 ♀; Rabat, Wied Ghomor, 31.iii.1992, 2 ♀♀, 13.x.1996, 2 ♂♂ & 1 ♀; Salina, 23.viii.1992, 1 ♀, 1 ♀, PG (in PG coll.); Wied Babu, 1.iv.1993, 1 ♀, PG (in PG coll.); Wied Qannotta, 15.v.1983, 1 ♀, JLS (in PG coll.), 5.iv.1992, 1 ♂ & 1 ♀. Gozo, Dahlet Qorrot, 2.iv.1994, 1 ♀; Rabat, 19.iv.1989, 1 ♀, SPS (in PG coll.); Ramla, 11.vi.1994, 1 ♀, JWI; Xaghra, 2.vi.1992, 1 ♂ & 1 ♀, PG (in PG coll.). Comino, Santa Marija, 12.vii.1975, 1 ♂, 14.vii.1976, 1 ♂, SPS (in PG coll.).

Notes: The host plants include a large number of species in the genera *Carthamus* and *Centaurea*.

***Campiglossa producta* (Loew, 1844)**

(Figs. 9 & 10)

Material examined: Malta, Bahrija, 2.ii.1994, 1 ♂ & 1 ♀, 16.iv.1994, 1 ♂, CP; Blata l-Bajda, near St Paul's Islands, 13.xii.1993, 1 ♂ & 1 ♀; Buskett, 22.iv.1992, 1 ♂ & 1 ♀; Fawwara, 19.iii.1992, 1 ♂; Fiddien, 11.v.1992, 1 ♀; Ghajn Hadid, 8.v.1983, 1 ♂, SPS (in PG coll.); Ghar Lapsi, 7.xii.1997, 1 ♂ & 1 ♀; Madiena, 21.xii.1979, 2 ♂♂ & 1 ♀; Manikata, 9.iv.1993, 2 ♂♂; Mtahleb, 16.iv.2000, 1 ♂; Qammieh, 19.iii.1994, 1 ♂; Rabat, 15.v.1990, PS, 1 ♀; Wardija, 16.xi.1997, 1 ♂; Wied Ghomor, 13.x.1996, 1 ♂; Wied il-Mistra, 19.iii.1994, 1 ♂; Wied Incita, 16.iv.1978, 1 ♂, PG (in PG coll.); Wied Qannotta, 21.xii.1986, 1 ♂, 4.i.1987, 1 ♂, 20.ii.1994, 1 ♂. Gozo, Dwejra, 10.iv.1993, 1 ♂, 25.iv.2003, 1 ♂, DM (in DM coll.); Ramla dunes, 1.iv.1994, 1 ♀.

Notes: The larvae develop in the flower heads of *Bellis*, *Picris*, *Scorzonera* and *Chondrilla*.

***Chaetostomella steropea* (Rondani, 1870)**

(Fig. 11)

Material examined: Malta, Balzan, 30.vi.1981, 1 ♀; Paradise Bay, 28.viii.1991, 1 ♂, CF; Wied Qannotta, 7.vii.1987, 1 ♂.

Notes: The host plant is apparently unknown.

***Dioxya bidentis* (Robineau-Desvoidy, 1830)**

(Fig. 12)

Material examined: Malta, Rabat, Wied Ghomor, 13.x.1996, 1 ♂. Gozo, Dwejra, 28.xi.1993, 1 ♂.

Notes: Develops in host plants of the genus *Bidens*. However, this genus of plants does not occur on Malta (Lanfranco, E., *pers. comm.*) and the host plant locally is therefore still unknown.

***Ensina sonchi* (Linnaeus, 1767)**

(Fig. 13)

Material examined: Malta, Buskett, 25.viii.1991, 1 ♂, 9.vii.1993, 1 ♀, PG (in PG coll.); Fiddien, 6.vii.1987, 6 ♂♂ & 2 ♀♀, 7.vii.1987, 4 ♂♂, 28.vii.1989, 1 ♀, 4.vii.1993, 1 ♂ & 1 ♀, PG (in PG coll.); Fomm ir-Rih, 10.vii.1982, 1 ♂, SPS (in PG coll.), 16.iv.1994, 1 ♂ & 1 ♀; Ghadira: 5.v.1984, 1 ♂, SPS, 9.iv.1993, 1 ♂, PG (in PG coll.); Marfa Ridge, 17.iv.1992, 1 ♂, SPS (in PG coll.); Marsaxlokk, 26.vii.1992, 1 ♂ & 1 ♀, 24.iv.1993, 1 ♀, PG (in PG coll.); Rabat, Wied Ghomor, 17.vi.1992, 1 ♂; Salina, 13.vii.1992, 3 ♂♂, PG (in PG coll.); Wied Ghajn Rihana, 3.iii.1997, 1 ♀; Wied Qannotta: 7.vii.1993, 5 ♂♂ & 3 ♀♀, PG, 20.ii.1994, 2 ♂♂, PG (in PG coll.). Gozo, Dwejra, 12.v.2014, 1 ♂, MZ (in MZ coll.); Mgarr ix-Xini, 23.iv.1992, 2 ♂♂ & 1 ♀, 2 ♂♂ & 1 ♀, PG (in PG coll.).

Notes: Host plants include species of the genera *Picris*, *Podospermum* (= *Scorzonera*) (which is not found on Malta) (Lanfranco, E., *pers. comm.*), *Lactuca*, *Helminthotheca* and *Chondrilla*.

***Euarestella megacephala* (Loew, 1846)**

(Fig. 14)

Material examined: Malta, Bahrija, 9.vii.1976, 2 ♂♂ & 1 ♀; Marsaxlokk, 9.vii.1993, 1 ♂, PG (in PG coll.); Mgiebah, 7.vi.1994, 2 ♂♂, PG (in PG coll.); Mistra, 5.vii.1978, 1 ♂, on *Limbarda* (= *Inula crithmoides*, PG (in PG coll.); Salina, 7.vii.1989, 1 ♂, 13.vii.1992, 1 ♂, PG, 7.vii.1993, 1 ♂, PG (in PG coll.), 2.v.2001, 1 ♂, 28.x.2001, 2 ♂♂ & 2 ♀♀; Sliema, 12.vi.1976, 1 ♂; St. Thomas Bay, 24.v.14, 6 ♂♂ & 9 ♀♀, from stem galls on *L. crithmoides*, DM (in DM coll.).

Notes: This species forms galls in the stems of *Limbarda crithmoides*.

***Myopites longirostris* (Loew, 1846)**

Notes: This species is listed in the Fauna Europaea database (KORNEYEV, 2004) but no data is available. It may refer to one of the species given below. The host plants are reported to be *Pulicaria dysenterica* and *L. crithmoides*, but just as the identity of this species has caused much confusion, so probably the reliability of its host plants is equally uncertain. On the basis of adults caught in the wild and the reared material, I am of the opinion that there are only two species of *Myopites* on Malta. Given what is known of the host plants and the distribution of their associated species, I suspect that *stylatus* and *variofasciatus* are the only species present.

***Myopites stylatus* (Fabricius, 1775)**

(Fig. 15)

Material examined: Malta, Buskett, 29.xii.1998, 3 ♂♂ & 3 ♀♀, galls on *Dittrichia viscosa* (1 ♀, in DM coll.); Rabat, Kuncizzjoni, 24.xii.1998, 2 ♂♂ & 4 ♀♀, galls on *D. viscosa*.

Notes: New record for the Maltese Islands. Reared from *Dittrichia viscosa*, which is its host plant elsewhere in the Mediterranean. This species forms lignified galls in the capitulum of the plant.

***Myopites variofasciatus* Becker, 1903**

(Fig. 16)

Material examined: Malta, Baħar ic-Cagħaq, Qrejtjen Point, 4.x.1997, 1 ♀; Baħrija, 21.vi.1992, 1 ♂, 1.xi.1998, 1 ♂; Fomm ir-Riħ, 20.v.1995, 1 ♂ & 1 ♀; Għadira, 4.viii.1993, 3 ♂♂; Gnejna, from galls on *Limbarda crithmoides*, 23.xii.1999, 4 ♂♂ & 3 ♀♀; Marsascalea, 15.vi.2012, 1 ♀, DM (in DM coll.); Marsaxlokk, 26.vii.1992, 2 ♂♂ & 1 ♀; Salina, 7.vii.1993, 1 ♂, 28.x.2001, 6 ♂♂ & 3 ♀♀, 25.vii.2014, 3 ♂♂ & 1 ♀, DM (in DM coll.); Sliema, Tign, from gall on *L. crithmoides*, 19.ix.1999, 1 ♀; Sliema, 17–27.vii.2014, 54 ♂♂ & 58 ♀♀, from flower galls of *L. crithmoides*, DM (in DM coll.); St. Thomas Bay, 26.vii.1977, 1 ♂, JLS; Zurrieq, Wied Babu, 21.x.2001, 7 ♂♂. Gozo, Dwejra, 28.xi.1993, 2 ♂♂; Għarb, 30.xi.1991, 1 ♂; Ramla, 21.ix.1992, 1 ♀.

Notes: New record for the Maltese Islands. Reared from *Limbarda crithmoides*, as elsewhere in the Mediterranean. The galls of this species, in the capitulum of the plant, are smaller and less lignified than those of the previous species.

***Myopites zernyi* Hering, 1939**

Notes: This species was recorded by SCHEMBRI *et al.* (1991) on the basis of material identified by Dr Amnon Freidberg (Tel Aviv University, Israel). See note under *M. longirostris*, above.

***Spathulina sicula* Rondani, 1856**

(Fig. 17)

Material examined: Malta, Baħrija, 16.iv.1994, 1 ♂; Għadira, 17.iv.1992, 1 ♂, 9.iv.1993, 1 ♂, 9.iv.1993, 4 ♂♂ & 2 ♀♀, PG (in PG coll.); Hagar Qim, 15.xi.1992, 1 ♂ & 1 ♀, PG (in PG coll.); Marfa Ridge, 22.iii.1992, 1 ♂; Mistra, 19.iii.1993, 3 ♂♂ & 2 ♀♀; Qammieh, 19.iii.1994, 5 ♂♂ & 1 ♀; Wardija, 25.ii.1996, 2 ♂♂ & 1 ♀.

Notes: Larvae develop in the terminal stem galls of *Phagnalon rupestre*.

***Sphenella marginata* (Fallén, 1814)**

(Fig. 18)

Material examined: Malta, Baħrija, 3.xi.1991, 1 ♂; Balzan, 28.iii.1976, 1 ♀; Għadira, 9.iv.1993, 2 ♂♂, 9.iv.1993, 1 ♂, PG (in PG coll.), 24.v.1995, 1 ♂; Marfa Ridge, 17.iv.1992, 1 ♂; Qammieh, 19.iii.1994, 1 ♀; Sliema, from galls of *Senecio vulgaris*, 18.ii.2000, 4 ♀♀, EL; Wardija, 25.ii.1996, 1 ♂; Wied il-Għasel, 13.iv.1994, 1 ♂. Gozo, Għarb, Wied il-Mielah, 30.xi.1991, 1 ♀; Mgarr ix-Xini, 23.iv.1992, 1 ♂, PG (in PG coll.).

Notes: The host plants include several species in the genus *Senecio*.

***Tephritis divisa* Rondani, 1871**

Material examined: Malta, Wied Qannotta, 7.vii.1993, 1 ♂, PG (in PG coll.).

Notes: New record for the Maltese Islands. The host plant is *Picris* but this is not found on Malta. The local host plant is unknown.

***Tephritis formosa* (Loew, 1844)**

(Fig. 19)

Material examined: Malta, Bahrija, 21.vi.1992, 1 ♀.**Notes:** The larvae develop in *Crepis*, *Hypochaeris* and *Sonchus*.***Tephritis nigricauda* (Loew, 1856)**

(Fig. 20)

Material examined: Malta, Mtahleb, Migra Ferha, 18.iv.1999, 1 ♀.**Notes:** The host plant is *Anthemis arvensis*.***Tephritis praecox* (Loew, 1844)**

(Figs. 21 & 22)

Material examined: Malta, Bahrija, 21.vi.1992, 1 ♂; Bingemma, 12.i.1980, 1 ♀; Buskett, 25.viii.1981, 2 ♂♂, 22.iv.1992, 1 ♀, 7.iv.1999, 1 ♂ & 1 ♀; Fawwara, 18.iii.1992, 1 ♂ & 2 ♀♀; Fiddien, 6.vii.1987, 1 ♀, 28.i.2001, 1 ♂; Fomm ir-Rih, 25.iv.1994, 1 ♂; Hagar Qim, 15.xi.1992, 1 ♂; Marfa Ridge, 10.vii.1987, 1 ♂, 22.iii.1992, 1 ♂ & 1 ♀; Marsascalea, vi.1978, 1 ♂, at light, PG (in PG coll.); Mizieb, 8.xii.1993, 1 ♂; Qammieh, 19.iii.1994, 1 ♂; Qormi, Tal-Handaq, Wied il-Kbir, 17.i.1999, 1 ♀; Salina, 13.iii.1993, 1 ♀, PG (in PG coll.), 7.vii.1993, 1 ♂, PG (in PG coll.); Wied Qirida, 2.vii.1987, 1 ♂. Gozo, Dwejra, 10.iv.1993, 4 ♀♀, 12.v.2014, 2 ♀♀, MZ (in MZ coll.); Mgarr ix-Xini, 23.iv.1992, 1 ♂ & 2 ♀♀; Ramla dunes, 23.iv.1992, 1 ♂, PG (in PG coll.).**Notes:** The larvae develop in the flowers of *Calendula*.***Tephritis vespertina* (Loew, 1844)**

(Fig. 23)

Material examined: Malta, Buskett, 11.iv.1994, 1 ♂, CP.**Notes:** The host plant is *Hypochaeris radicata*. This plant is extinct from Malta. The local host plant for this species of *Tephritis* is unknown (Lanfranco, E., *pers. comm.*).***Terellia fuscicornis* (Loew, 1844)**

(Fig. 24)

Material examined: Malta, Fiddien, 28.iv.1996, 1 ♀; Fomm ir-Rih, 16.iv.1994, 2 ♂♂, 27.iv.1997, 2 ♂♂, 2.iv.1999, 1 ♀; Ghajn Hadid, 8.v.1983, 4 ♂♂ & 6 ♀♀, on *Cynara cardui*, PG, JLS, SPS (in PG coll.); Ghajn Rihana, 25.vi.1977, SPS, 1 ♀; Gnejna, 30.iv.1995, 1 ♀; Qammieh, 19.iii.1994, 1 ♂, PG (in PG coll.); Rabat, Wied Ghomor, 17.vi.1992, 3 ♂♂ & 1 ♀; Mtahleb, 26.v.2011, 2 ♂♂ & 1 ♀; Zejtun, 23.iv.1989, 1 ♀, SPS (in PG coll.). Gozo, Mgarr ix-Xini, 23.iv.1992, 1 ♂; Wied il-Lunzjata, 23.iv.1992, 2 ♂♂ & 2 ♀♀, 2 ♂♂ & 1 ♀, PG (in PG coll.); Wied ix-Xlendi, 20.iv.1981, 1 ♂ & 1 ♀, SPS (in PG coll.); Zebbug, Xwienu Bay, 2.iv.1994, 2 ♂♂.**Notes:** Develops in the flower heads of *Cynara*.

***Terellia serratulae* (Linnaeus, 1758)**

(Wing identical to previous species; see fig. 24)

Material examined: Gozo, Ramla dunes, 21.ix.1992, 1 ♀.**Notes:** Develops in the flowers of *Carduus*.***Trupanea amoena* (Frauenfeld, 1857)**

(Fig. 25)

Material examined: Malta, Bahrija, 16.iv.1994, 1 ♂; Fiddien, 4.v.1988, 1 ♂; Fomm ir-Rih, 20.v.1995, 1 ♀; Ghadira, 4.vi.1994, 1 ♀, 24.v.1995, 1 ♀; Hagar Qim, 15.xi.1992, 1 ♂, PG (in PG coll.); Marsascalea, x.1978, 1 ♂, AB (in PG coll.); Mosta, Victoria Lines, 2.iv.2000, 1 ♀; Mtahleb, Wied il-Busbies, 25.vii.1989, 1 ♂, DM (in DM coll.); Mtahleb, 25.vii.1989, 2 ♂♂, 16.iv.2000, 1 ♀; Rabat, Wied Ghomor, 17.x.1992, 1 ♀, 13.x.1996, 1 ♂; Salina, 23.viii.1992, 1 ♂, PG (in PG coll.), 11.iv.1994, 1 ♀; Wied Qirda, 2.vii.1987, 1 ♀. Gozo, Dwejra, 10.iv.1993, 1 ♂, PG (in PG coll.), 20.xi.1993, 1 ♂, PG (in PG coll.); Ramla, 11.vi.1994, 2 ♂♂ & 1 ♀, JWI. Comino, Santa Marija, 12.vii.1976, 1 ♂ & 1 ♀.**Notes:** A highly successful and widespread species, the host plants include *Achillea*, *Carthamus*, *Centaurea*, *Lactuca*, *Launaea* (extinct from Malta (Lanfranco, E., *pers. comm.*)), *Leontodon* and *Sonchus*.***Trupanea stellata* (Fuessly, 1775)**

(Fig. 26)

Material examined: Malta, Buskett, 25.viii.1981, 1 ♀, 27.iii.1994, 1 ♂, PG (in PG coll.); Fomm ir-Rih, 16.iv.1994, 2 ♂♂ & 4 ♀♀; Ghadira, 9.iv.1993, 1 ♂, 24.v.1995, 4 ♂♂ & 1 ♀; Hagar Qim, 15.xi.1992, 1 ♂ & 2 ♀♀, 1 ♂, PG (in PG coll.); Marsascalea, viii.1978, 1 ♂ & 1 ♀, at light, AB (in PG coll.); Mgiebah, 26.iii.1995, 7 ♂♂ & 2 ♀♀; Mizieb, 31.iii.1993, 2 ♂♂; Mosta, Victoria Lines, 2.iv.2000, 1 ♂; Salina, 31.v.1992, 2 ♂♂; Wied Incita, 19.ii.1995, 1 ♀. Gozo, Gharb, Wied il-Mielah, 30.xi.1991, 1 ♀; Ramla Dunes, 10.iv.1993, 1 ♀, PG (in PG coll.).**Notes:** This is another successful and widespread species. The larvae develop in the flowers of *Limbarda*, *Carthamus*, *Senecio* and *Artemisia*.***Urophora mauritanica* Macquart, 1851**

(Fig. 27)

Material examined: Malta, Fiddien, 4.v.1998, 4 ♂♂; Qormi, Wied il-Kbir, 22.v.1995, 5 ♂♂ & 2 ♀♀; Tas-Silg, 1.vi.1972, 1 ♀, GB (in PG coll.); Wied il-Ghasel, 27.iv.1999, 2 ♂♂ & 4 ♀♀; Wied Qirda, 7.v.1977, 2 ♂♂ & 1 ♀, PG, JLS (in PG coll.), 10.v.1977, 1 ♂, SPS (in PG coll.).**Notes:** Previously recorded from Malta on the basis of one female specimen in the Natural History Museum, London, but no data was given (WHITE & KORNEYEV, 1989). This species forms lignified galls in the capitulum of species of *Carthamus*.

***Urophora quadrifasciata* (Meigen, 1826)**

(Fig. 28)

Material examined: Malta, Bidnija, 16.v.1999, 1 ♀; Fomm ir-Rih, 27.iv.1997, 1 ♀, 2.iv.1999, 2 ♂♂ & 1 ♀, 2.iv.1999, 3 ♂♂, PG (in PG coll.); Marsalokk, 2.iv.1999, 1 ♂; Migra Ferha, 2.iv.1999, 1 ♀, PG (in PG coll.); Mtaħleb, 24.v.2000, 6 ♂♂ & 3 ♀♀, 4.iii.2001, 1 ♂; Qormi, Wied il-Kbir, 22.v.1995, 1 ♂ & 1 ♀; Wied Qannotta, 25.iii.1978, 1 ♀, PG (in PG coll.). Gozo, Ramla Valley, 10.iv.1993, 1 ♂, PG (in PG coll.).

Notes: Larvae develop in the capitulum of several species of *Centaurea*.

Subfamily **Trypetinae** Loew, 1861

***Euleia heraclei* (Linnaeus, 1758)**

(Figs. 29 & 30)

Material examined: Malta, Balzan, 21.viii.1984, 1 ♂; Buskett, 23.vi.1975, 1 ♂, SPS (in PG coll.), 18.vii.1975, 1 ♂ & 1 ♀, JLS, PG (in PG coll.), 5.viii.1975, 2 ♂♂, SPS (in PG coll.), 28.vii.1976, 2 ♂♂ & 2 ♀♀, 1.v.1992, 1 ♂ & 1 ♀, 15.viii.1992, 1 ♀, PG (in PG coll.), 9.vii.1993, 1 ♂ & 1 ♀, 21.xi.1993, 1 ♂, from mined leaves of *Smyrnum olusatrum*, 25.iv.1994, 3 ♂♂ & 1 ♀; Fiddien, 3.vii.1996, 1 ♂; Għammieri, 12.iv.1999, 1 ♂, CF; Marsaxlokk, 15.vi.1980, 1 ♂ & 1 ♀, PG, JLS (in PG coll.); Salina, 16.iv.1977, 2 ♀♀.

Notes: The larvae mine the leaves of *Smyrnum olusatrum*, but this species can also develop in *Apium*. The two colour forms, yellow and black, of the adult insect do not correlate with season or sex.

***Plioreocepta poeciloptera* (Schrank, 1776)**

Notes: Recorded by ZETTERSTEDT (1849), this species has not been encountered again. The host plant is *Asparagus officinalis* which occurs on Malta.

Family **Ulidiidae** Macquart, 1835

Subfamily **Otitinae** Aldrich, 1932

***Ceroxys urticae* Linnaeus, 1758**

(Fig. 31)

Material examined: Malta, Salina, 26.viii.92, 1 ♀, LFC (in PG coll.), 13.vii.1992, 1 ♀, 7.vii.1993, 2 ♂♂, PG (in PG coll.), 16.x.1993, 1 ♂, PG (in PG coll.), 11.iv.1994, 2 ♂♂; Wied Ghajn Rihana, 17.x.1989, 1 ♂, SPS (in PG coll.).

Notes: New record for the Maltese Islands. Larvae develop in decaying organic matter, predominantly in wet meadow and marsh vegetation.

***Herina ghilianii* Rondani, 1869**

(Fig. 34)

Material examined: Malta, Fiddien, 25.vii.1978, 1 ♀, JLS (in PG coll.); Mtaħleb, 20.x.1991, 1 ♂; Wied Ghajn Rihana, 16.ix.1977, 1 ♂, JLS (in PG coll.).

Notes: A rare species that is easily mistaken for a tephritid by the non specialists. It is known from very few specimens from Malta, Sicily and Morocco. The biology is unknown.

***Otitis atripes* Loew, 1858**

(Fig. 32)

Material examined: Malta, Bahrija, 6.iv.1985, 1 ♀, 8.iv.1993, 2 ♂♂ & 2 ♀♀, PG (in PG coll.); Fawwara, 9.iv.1983, 2 ♂♂ & 1 ♀, PG, 1 ♀, SPS (in PG coll.), 18.iii.1992, 2 ♂♂ & 1 ♀, 19.iii.1992, 4 ♂♂ & 3 ♀♀; Fomm ir-Riħ, 2.iv.1999, 1 ♂ & 1 ♀; Manikata, 9.iv.1993, 1 ♂, PG (in PG coll.); Migra l-Ferħa, 2.iv.1999, 2 ♂♂ & 1 ♀; Mosta, Victoria Lines, 2.iv.2000, 2 ♂♂ & 1 ♀; Qammieħ, 19.iii.1994, 2 ♂♂, PG (in PG coll.); Wied Gerzuma, 24.iv.1983, 1 ♀, SPS (in PG coll.); Wied il-Għasel, 3.iv.1999, 1 ♀; Wied il-Mistra, 19.iii.1994, 2 ♂♂ & 2 ♀♀. Gozo, Ramla Dunes, 23.iv.1992, 1 ♂, 23.iv.1992, 3 ♂♂, PG (in PG coll.), 10.iv.1993, 4 ♂♂ & 3 ♀♀, PG (in PG coll.); Ramla Valley, 10.iv.1993, 2 ♂♂ & 1 ♀, 17.iv.1993, 3 ♂♂ & 2 ♀♀, PG (in PG coll.). Comino, 28–30.iii.2002, 2 ♂♂ & 1 ♀.

Notes: New record for the Maltese Islands. The biology is unknown.

Subfamily **Ulidiinae** Macquart, 1835

***Physiphora alcaeae* (Preyßler, 1791)**

(Fig. 33)

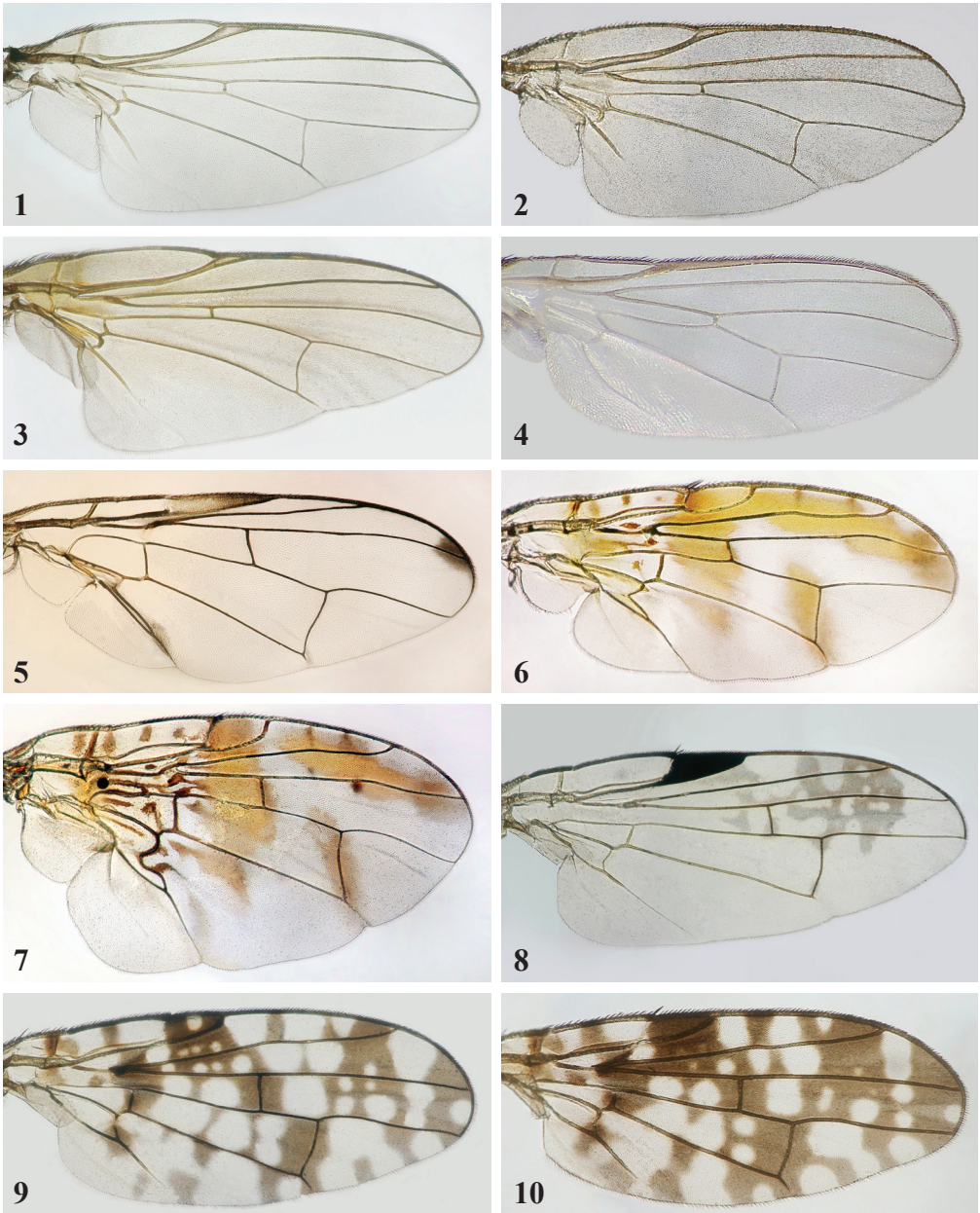
Material examined: Malta, Bahrija, 21.vii.1977, 1 ♂, 16.v.1991, 1 ♂, 3.xi.1991, 1 ♂, 16.iv.1994, 2 ♂♂; Fomm ir-Riħ, 2.iv.1999, 1 ♀; Balzan, 11.viii.1975, 3 ♂♂ & 3 ♀♀; Birkirkara, 26.viii.1974, 1 ♀, SPS (in PG coll.), 14.ix.1975, 3 ♀♀, SPS (in PG coll.); Gzira, 26.viii.1978, 3 ♂♂, at window, PG (in PG coll.); Marfa Ridge, 10.vii.1987, 3 ♂♂ & 1 ♀; Marsaxlokk, 26.vii.1992, 2 ♂♂ & 2 ♀♀; Rabat, 20.vi.1990, 5 ♂♂ & 1 ♀, PS, 1.vi.1994, 1 ♂, at light, PG (in PG coll.); Salina, 25.vii.1978, 2 ♂♂ & 2 ♀♀ (in *copula*), JLS (in PG coll.); Wied is-Sewda, 13.v.1978, 1 ♂ & 1 ♀ (in *copula*), PG (in PG coll.), 9.vi.1979, 1 ♂, JLS (in PG coll.); Wied Qannotta, 13.vii.1978, 1 ♂ & 1 ♀, JLS (in PG coll.), same data but 1 ♂ on *Foeniculum vulgare*, PG (in PG coll.); Wied Qirda, 20.vii.1978, 2 ♂♂, JLS (in PG coll.), 22.ix.1978, 1 ♂, JLS (in PG coll.). Gozo, Wied il-Lunzjata, 21.vii.1979, 1 ♂, JLS (in PG coll.), 28.iv.1992, 1 ♀, PG (in PG coll.); Xaghra, 11.ii.1995, 1 ♀, on farmyard manure, PG (in PG coll.).

Notes: Larvae develop in dung, decaying vegetable matter and compost heaps.

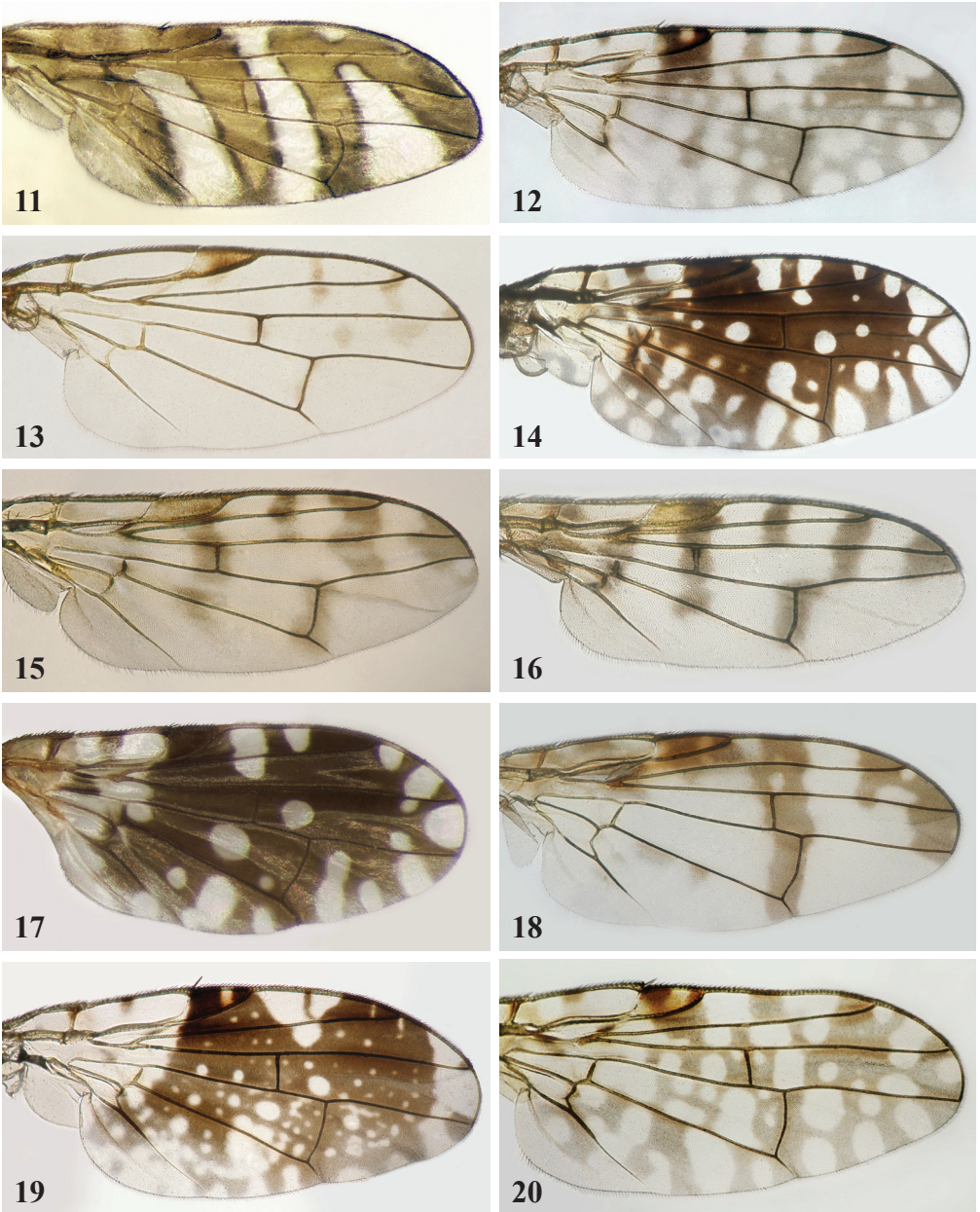
CONCLUSION

The number of species of Tephritoidea for the Maltese Islands is small and mainly consists of common and widespread species. Seven represent new records for this territory. Although it is possible that more species may be discovered, this is considered improbable given the amount of fieldwork already undertaken. Nevertheless, the biology and ecology of several species is poorly known especially as it applies to Malta and more investigation is likely to yield interesting results.

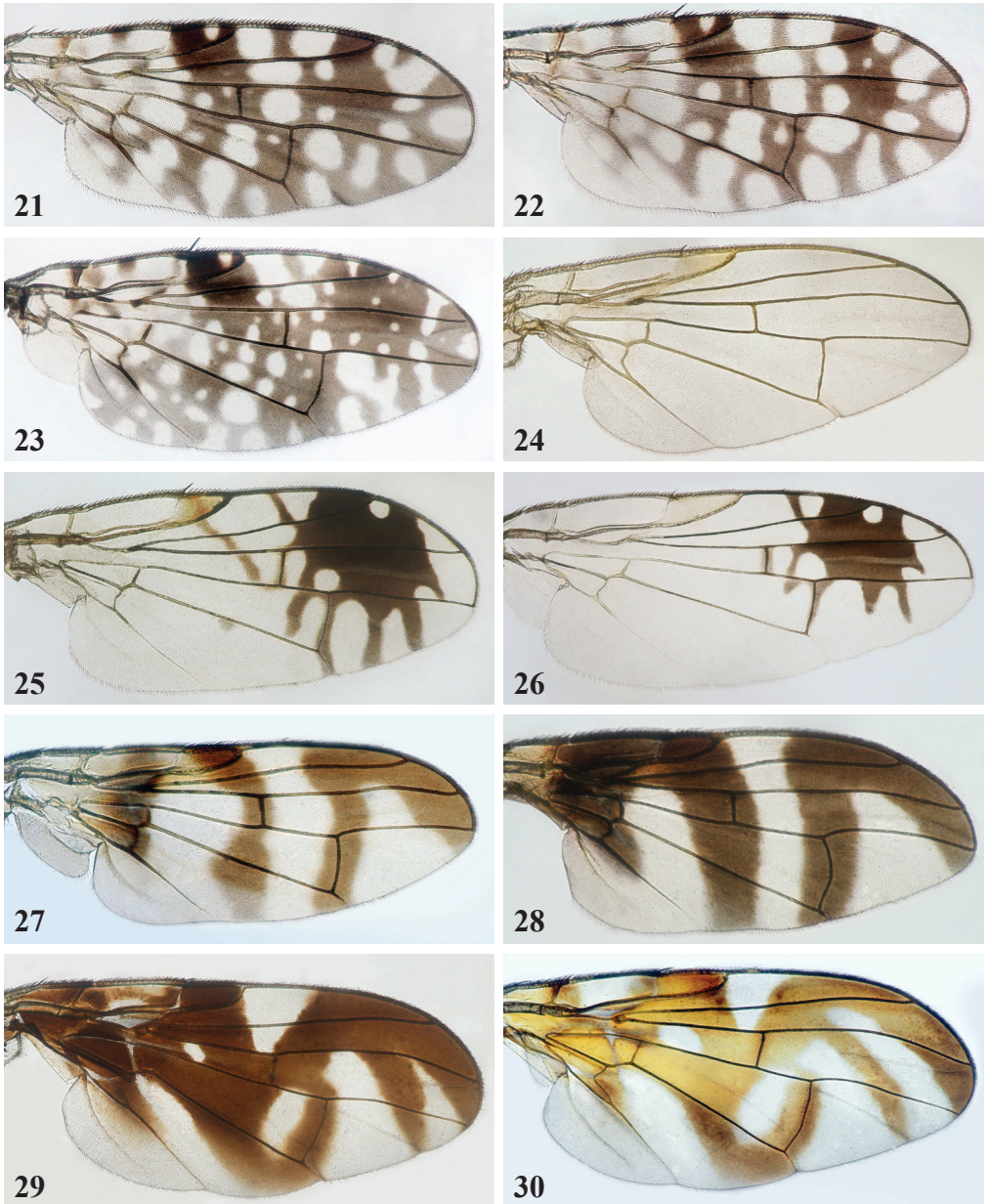
The relatively small fauna reflects the small size of the Maltese Islands, their distance from the mainland, the range of habitats being small and very fragmented, the diversity of host plants (for the Tephritidae) and the considerable human impact of urbanization and pesticide use.



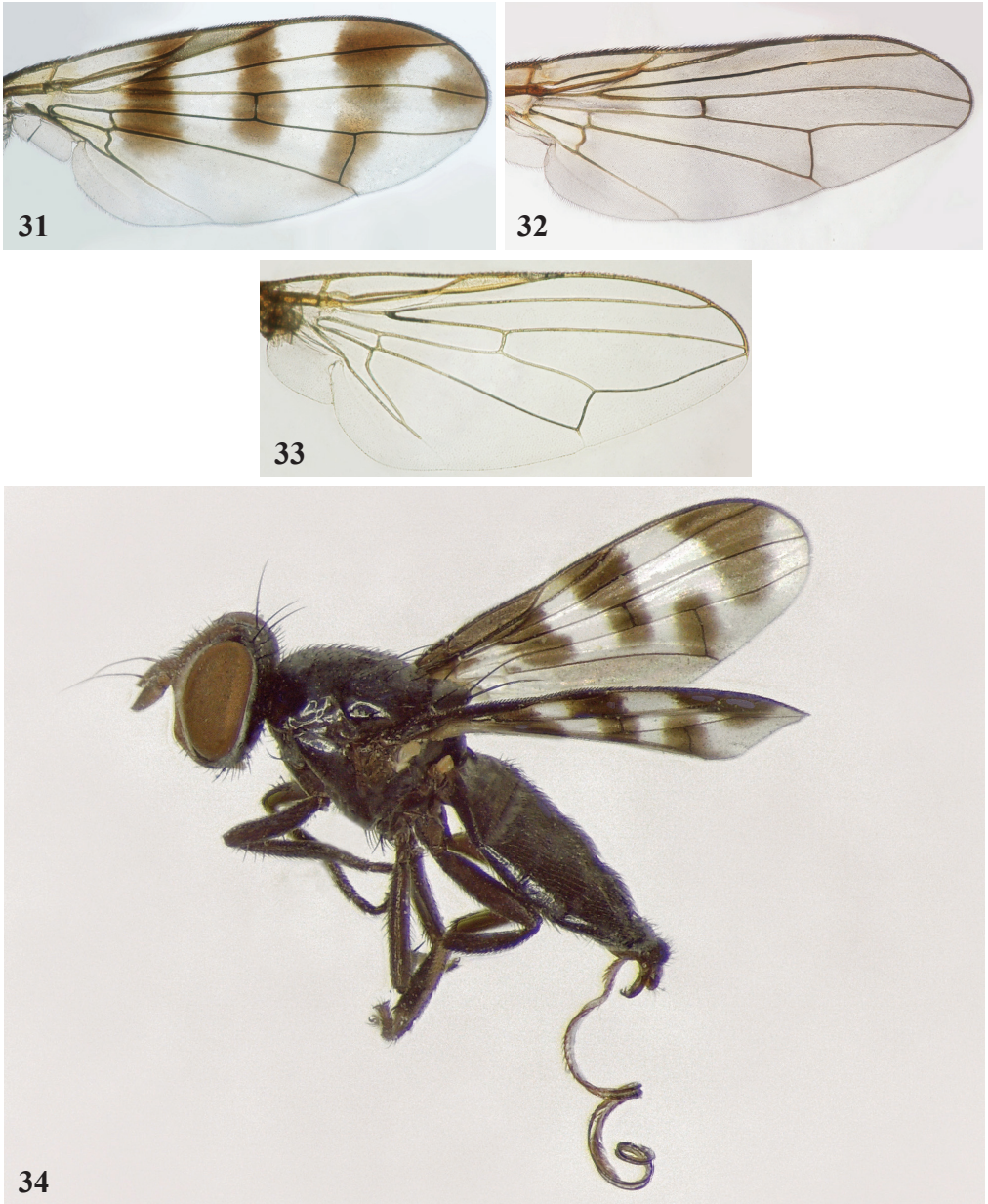
Figures 1–10: Wings of Tephritoidea (not to scale). **1:** *Lamprolonchaea smaragdi*; **2:** *Silba adipata*; **3:** *Silba fumosa*; **4:** *Piophila casei*; **5:** *Bactrocera oleae*; **6:** *Capparimyia savastani*; **7:** *Ceratitis capitata*; **8:** *Acanthophilus helianthi*; **9:** *Campiglossa producta*; **10:** same, variation.



Figures 11–20: Wings of Tephritoidea (not to scale). 11: *Chaetostomella steropea*; 12: *Dioxyna bidentis*; 13: *Ensina sonchi*; 14: *Euarestella megacephala*; 15: *Myopites stylatus*; 16: *Myopites variofasciatus*; 17: *Spathulina sicula*; 18: *Sphenella marginata*; 19: *Tephritis formosa*; 20: *Tephritis nigricauda*.



Figures 21–30. Wings of Tephritoidea (not to scale). **21:** *Tephritis praecox*; **22:** same, variation; **23:** *Tephritis vespertina*; **24:** *Terellia fuscicornis*; **25:** *Trupanea amoena*; **26:** *Trupanea stellata*; **27:** *Urophora mauritanica*; **28:** *Urophora quadrifasciata*; **29:** *Euleia heracleii*, dark form; **30:** same, light form.



Figures 31–33: Wings of Tephritoidea (not to scale). **31:** *Ceroxys urticae*; **32:** *Otites atripes*; **33:** *Physiphora alceae*. **Figure 34:** Habitus of *Herina ghilianii*.

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