

The sawflies of the Maltese Islands (Hymenoptera, Symphyta)

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ABSTRACT. Five species of Hymenoptera Symphyta are recorded from the Maltese Islands: *Ametastegia glabrata*, *Athalia ancilla*, *Athalia cordata*, *Halidamia affinis* and *Pristiphora atlantica*. A key and illustrations are provided to enable identification. Except for *Athalia ancilla*, these are first records of sawfly species from Malta. *Rubus ulmifolius* is confirmed as a host of *Pristiphora atlantica*.

KEY WORDS. Tenthredinidae, Malta, new records, *Ametastegia*, *Athalia*, *Halidamia*, *Pristiphora*.

INTRODUCTION

The sawflies and woodwasps are traditionally placed in the suborder Symphyta of the Hymenoptera. The ‘Symphyta’, comprising the basal lineages of Hymenoptera, is however at present considered to be paraphyletic (VILHELMSSEN, 2006). The over 8,300 described species of Symphyta (TAEGER *et al.* 2010) are distinguished from all other Hymenoptera by the absence of the “wasp waist”, the constriction between the first and remaining segments of the abdomen, presence of which is regarded as an apomorphy of Apocrita (VILHELMSSEN, 2006). With the exception of the Orussidae, whose larvae are parasitoids of wood-dwelling insects, the large majority of symphytans are plant-feeders: only the wood-boring larvae of Siricidae differ, in depending on symbiosis with species of fungi for the pre-digestion of the wood of their hosts. Larvae of Symphyta, particularly of the most species-rich superfamily Tenthredinoidea (the true sawflies), are predominantly external feeders (but some gall-makers, leaf-miners and other specialized endophytic habits occur) and are superficially similar to larvae of Lepidoptera.

Special attempts to examine the sawfly fauna of the Maltese Islands have not previously been made. Technical literature, as far as the authors are aware, contains no mention of symphytans from the archipelago. Solely *Athalia ancilla* Serville, 1823 (as *A. glabricollis* Thomson, 1871: synonym) has been mentioned in some ‘popular’ printed works on Maltese wildlife and depicted, often under wrong names, in internet publications that present digital images of insects. BORG (1922) mentioned some sawfly species as potentially damaging in Malta to fruit trees of the family Rosaceae, but failed to make clear whether he examined material of these sawflies collected in Malta.

MATERIAL AND METHODS

Nomenclature and taxonomic placement follow TAEGER *et al.* (2010). Names of species recorded for the first time in the Maltese Islands are preceded by an asterisk (*). All material is deposited in the Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany.

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KEY TO MALTESE SAWFLIES

No single work is available that enables identification of sawflies from the Mediterranean area. Although partly obsolete, particularly with regard to nomenclature, the keys by ENSLIN (1912-1918), BENSON (1951-1958) and ZHELOCHOVTSEV (1993) to the central and northern European fauna can be used for initial identification, at least to genus level. The simplified key below, in conjunction with Figs 1-6, is intended to aid recognition of the known Maltese species. Body lengths are approximate and refer to distance between front of head (excluding antennae) and apex of abdomen. Sexual dimorphism, which is rather pronounced in some sawfly species, is only slight in the species so far found in Malta.

- 1. Thorax, at least dorsally, mainly black; abdomen mainly yellow (Figs. 2-6) **2**
 - Thorax mainly black; abdomen mainly black (Fig. 1) (elongate body; legs yellow except for black tarsi and apices of tibiae; body length: 5.5-8.0 mm) *Ametastegia glabrata*

- 2. Each tarsomere pale basally, ringed apically with black; flagellum of antenna widening towards apex **3**
 - Tarsomeres uniformly dark, not ringed with black; flagellum of antenna of nearly equal width throughout, or tapering towards apex **4**

- 3. Underthorax mainly black (Fig. 2); costa black with at most extreme base (less than one third) yellow; subcosta black; body length: 4.0-6.5 mm *Athalia cordata*
 - Underthorax mainly yellow (Figs. 3-4); costa and subcosta black with at least basal third yellow; body length: 5.0-7.0 mm *Athalia ancilla*

- 4. Antenna at most 1.5x as long as width of head behind eyes, or half as long as costa of forewing; apical abdominal terga with black markings; sawsheath of female also black (Fig. 5); body length: 5.0-5.5 mm *Halidamia affinis*
 - Antenna about 3.0x as long as width of head behind eyes, or as long as costa of forewing; apical abdominal terga entirely yellow, but sawsheath of female apically black (Fig. 6); body length: 4.5-5.5 mm *Pristiphora atlantica*

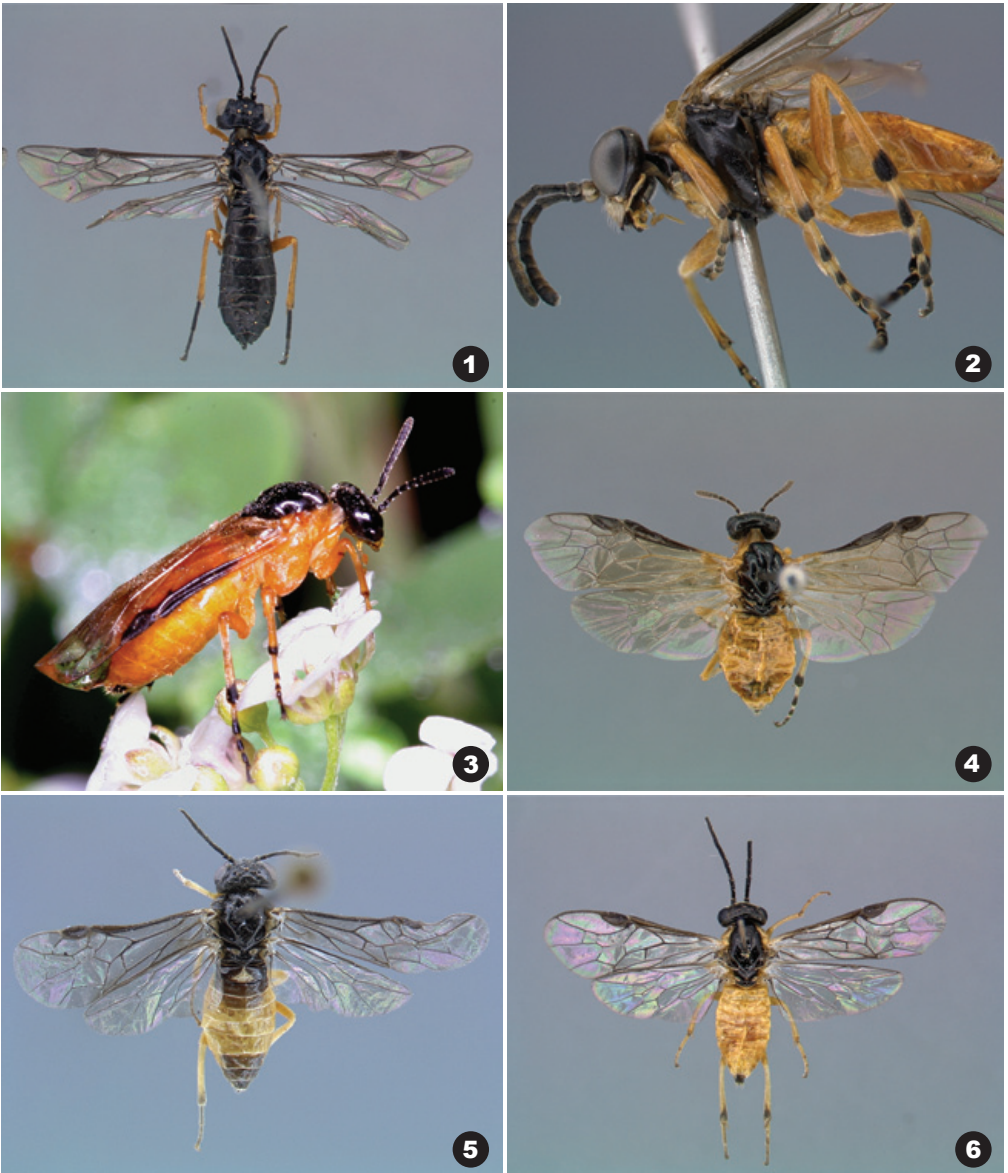


Figure 1: *Ametastegia glabrata*, female; **Figure 2:** *Athalia cordata*, male; **Figure 3-4:** *Athalia ancilla*, female; **Figure 5:** *Halidamia affinis*, female; **Figure 6:** *Pristiphora atlantica*, female.

ANNOTATED SPECIES LIST

Tenthredinoidea Latreille, 1803**Tenthredinidae** Latreille, 1803**Allantinae** Rohwer, 1911***Athalia ancilla* Serville, 1823**

(Figs. 3-4)

Synonym: *A. glabricollis* Thomson, 1870

Material examined. MALTA: [exact locality and date unknown, early 1990's], 1 ♀, leg. M. Zerafa; Kennedy Grove, Salina, xi.2003, 1 ♀, photo by G. Bonett (Fig. 3); Wied ta' I-Isperanza, 8.iv.2012, 1 ♀, leg. M. Zerafa; Fomm ir-Riħ, 9.v.2012, 1 ♀, on inflorescence of *Daucus carota* L., leg. R. Casha.

Notes. A Palearctic species, widespread in Europe (TAEGER *et al.*, 2006) and North Africa (LACOURT, 1999), including the Mediterranean islands of Sicily, Sardinia, Balearic Archipelago and Crete (TURRISI, 2011) and reaching West Siberia (ZHELOCHOVTSSEV & ZINOVJEV, 1996). The larva is oligophagous on various Brassicaceae (LORENZ & KRAUS, 1957). It is sometimes damaging to cultivated species of this family (SÁRINGER, 1988). The species was probably referred to by SULTANA & FALZON (2002) under the names *Athalia glabricollis* and “common sawfly”, as occurring in the Maltese Islands, but the illustration [drawing] in that work clearly depicts a different species: *Athalia rosae* (Linnaeus, 1858), immediately distinguishable from its congeners by its extensively orange mesonotum. In Central Europe, *A. ancilla* may complete consecutive generations (SÁRINGER, 1988) from May to September (BENSON, 1951-1958). Some records from Tunisia are from March to May (BLANK, 2002), and for Algeria from February to June (FORSIUS, 1918). To what extent the phenology of Mediterranean populations differs from those in Central Europe, requires further investigation.

****Athalia cordata* Serville, 1823**

(Fig. 2)

Material examined. MALTA: Wied Qirda, valley bottom, 26.iii.2012 and 29.iii.2012, 2 ♂♂, leg. A. Liston; Buskett, 28.iii.2012, 1 ♀, leg. A. Liston; Tal-Wej in Naxxar, xi.2003, 1 ♀, photo by G. Bonett.

Notes. A widespread West Palearctic species, east to Azerbaijan, recorded from most of the larger Mediterranean islands, including Sicily (TAEGER *et al.*, 2006) and North Africa (LACOURT, 1999). Host associations in the literature relate mainly to various genera and species of Lamiaceae, yet the sources of these data are (strangely, for such an abundant and widespread sawfly) largely unclear and the larva remains undescribed. An old record of *Plantago* sp. as a host of *A. cordata*, often uncritically repeated in the literature, has likewise not been traced back to its original source, and needs confirmation. At Wied Qirda, the only Lamiaceae present in the immediate vicinity of the points of capture were *Ballota nigra* L. and *Mentha pulegium* L.: perhaps one or both of these are the host-plants of *Athalia cordata*.

****Ametastegia glabrata* (Fallén, 1808)**

(Fig. 1)

Material examined. MALTA: Wied il-Kbir, 3/5.iv.2000 [emergence date], reared ex larvae on *Rumex conglomeratus*, 2 ♀♀, leg. M. Zerafa.

Notes. Mature larvae of this species bore into a variety of substrates to complete their development. Sometimes this activity results in damage which affects humans: for example, into fruit (e.g. NEWCOMER, 1916) or wooden objects (e.g. CYMOREK, 1978). Real larval hosts comprise various genera of Polygonaceae (MALIPATIL *et al.*, 1995), of which *Rumex* species are the most frequent, and some Chenopodiaceae (LORENZ & KRAUS, 1957). According to LACOURT (1999), Solanaceae, including potato, are also hosts. Numerous records in the literature of *A. glabrata* from other herbaceous and woody “hosts” in many dicotyledonous families probably result from rearing of adults from plant material, particularly stems, located near the actual host plants and into which the mature larvae had bored. *A. glabrata*, of presumed original Palaearctic origin (to eastern Siberia), has achieved (no doubt because of its larval habits), an almost cosmopolitan distribution and now also occurs in North America, South America and Australia. It has been found practically throughout mainland Europe, except in the arctic areas, as well as the British Isles and the Faroes (latter based on unpublished data: Liston), and in North Africa (LACOURT, 1999). For other Mediterranean islands, presence is recorded only in Sicily and Sardinia (TAEGER *et al.*, 2006).

Blennocampinae Konow, 1890****Halidamia affinis* (Fallén, 1807)**

(Fig. 5)

Material examined. MALTA: Fiddien, 23.iii.2012, 3 ♀♀, leg. A. Liston; Zejtun, small plot with ruderal vegetation near town centre, 25.iii.2012, 1 ♀, leg. A. Liston; Buskett, valley bottom, 28.iii.2012, 5 ♀♀, leg. D. Mifsud & A. Liston; Wied Qirda, valley bottom, 29.iii.2012, 1 ♀, leg. A. Liston.

Notes. A widespread West Palaearctic species, introduced to the Nearctic (GREENBAUM, 1977). Larvae feed on *Galium aparine* L. and *G. mollugo* L. (LORENZ & KRAUS, 1957). *H. affinis* has been found on most of the larger Mediterranean islands (TAEGER *et al.*, 2006), and in North Africa (LACOURT, 1999). Males occur frequently amongst populations in the Mediterranean Region, but not in northern and central Europe. It would be interesting to investigate whether the species reproduces parthenogenetically in Malta, or whether males occur (they might only occur during the first phase of adult activity, that may be earlier than included by the records above).

Nematinae Thomson, 1871****Pristiphora atlantica* Malaise, 1939**

(Fig. 6)

Material examined. MALTA: Wied il-Ghasel, 21.ii.2007 and v.2009 [emergence dates], 2 ♀♀, reared ex larvae on *Rubus ulmifolius*, leg. M. Zerafa.

Notes. Taxonomy and nomenclature of this species and similar morpho-taxa require revision, which cannot be achieved within the scope of this work. The Maltese specimens agree with the original description by MALAISE (1939) and that of *Pristiphora pallidiventris atlantica* Lacourt, 1989 (species

name is junior synonym and homonym of Malaise' taxon) by LACOURT (1989). The most important character for separation of *P. atlantica* from *P. pallidiventris* (Fallén, 1808) and *P. denudata* Konow, 1902 is the entirely pale metafemur of *P. atlantica*, that is at least apically black in the other taxa. The Maltese records prove *Rubus ulmifolius* Schott to be a host of *P. atlantica*. This association has already been indicated as probable by LACOURT (1989), but was not substantiated. *P. atlantica* was previously recorded only in the Azores, Madeira, southern Spain and Marocco (LACOURT, 1989), and not from any Mediterranean islands (TURRISI, 2011).

DISCUSSION

Although some additional sawfly species probably remain undetected in the Maltese islands, the present total of only five recorded species suggests that the fauna may be very limited, compared to other, much larger, Mediterranean islands. The diversity of the sawfly fauna of the latter has recently been discussed by TURRISI (2011), including the relationships of species-richness with land-area. Sicily, the nearest (96 km distant) large landmass to the Maltese archipelago, is the largest Mediterranean island (25 426 km²) and possesses a sawfly fauna of about 140 species (TURRISI, 2011 and unpublished data [A. Liston & H.-J. Jacobs]). With approximately 315 km² (SCHEMBRI, 1997), the Maltese islands have about one eightieth of the land area of Sicily, and one thirtieth of the number of sawfly species. Apart from their much smaller size and greater distance from a continental landmass, various other factors can be presumed to affect negatively the suitability of the Maltese islands for Symphyta, compared to Sicily, such as: almost complete deforestation, lack of any mountains, and dearth of river systems with water that flows throughout the year. In view of these disadvantages, the low species-richness of sawflies in the Maltese archipelago is not surprising.

Finally, we wish to emphasize that all records of sawflies from the Maltese islands are so far from Malta itself. During a single day in late March 2012, D. Mifsud and the first author visited four localities (well known for their richness in other groups of insects) in Gozo, but despite much general sweeping, and searching of likely hosts, not a single sawfly was found.

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