

Azorean aphid fauna (Homoptera, Aphidoidea): comments on some species and an updated list

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Specific biological comments are made about the following four aphid species from the Azores: *Brachycaudus persicae* (Passerini) [Aphididae], *Macrosiphoniella tanacetaria* (Kaltenbach) [Aphididae], *Melanaphis donacis* (Passerini) [Aphididae] and *Sal-tusaphis scirpus* Theobald [Drepanosiphidae].

Using the known literature an updated list of the aphids of the Azores is presented, with indication of each first reference record for the Archipelago.

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Key words: Aphidoidea, Macaronesia, Continental Portugal, Azores, São Miguel, Santa Maria, Terceira, Faial, Pico, Flores, Corvo.

INTRODUCTION

The Azorean aphids have been studied by the second author since the 70's (ILHARCO, 1976, 1980, 1982, 1987). Other authors have had the same subject of study (BAPTISTA & SUSPIRO, 1955; MÜLLER, 1965; NEVES, 1966; EASTOP, 1966; LECLANT, 1967; GRANATE, 1971; TAMBS-LYCHE, 1971; EASTOP, 1972; GOUVEIA, 1972; MARQUES, 1972; GOUVEIA, 1974; NIETO NAFRÍA *et al.*, 1977; CARNEIRO, 1979; CARVALHO, 1984; STÖETZEL, 1985; CRUZ DE BOELPAEPE & TEIXEIRA, 1990; SILVA & TAVARES, 1995; SOUSA-SILVA & ILHARCO, 1995; PITA & ILHARCO, 1995, 1997, 1998; BORGES *et al.*, 2000; BERGMANN *et al.*, 2002). Also Maps nos. 242 (1968), 264 (1969) and 289 (1971) of the Commonwealth Institute of Entomology (series A) have recorded some aphid species from the Azores.

From the already known bibliography, this work presents an Azorean aphid list (Table I), where species and subspecies are alphabetically listed, within each family, according to the classification proposed by ILHARCO (1992). Considering all the new additions, the total number of species and subspecies adds up to 133 and the Azorean aphid fauna is then thus represented: São Miguel 110, Santa Maria 25, Terceira 66, Faial 39, Pico 15, Flores 10 and Corvo 2. Table I also give us the information about the author of each first record of species for a given island; three of them has no indication of the island.

The communication "Some aphid species new to the Archipelago of the Azores (Homoptera, Aphidoidea)" by the same authors was presented at the "1st International Symposium on Biological Control in European Islands", Ponta Delgada, S. Miguel,

Table 1. List of the aphids of the Archipelago of the Azores, where an alphabetic character indicate the author of each first record for a given island. Azorean islands: SMi (São Miguel), SMa (Santa Maria), Ter (Terceira),

Fai (Faial), Pic (Pico), Flo (Flores), Cor (Corvo); W/i (Without indication of the island). Records by: a – BAPTISTA & SUSPIRO (1955), b – MÜLLER (1965), c – NEVES (1966), d – EASTOP (1966, 1972), e – LECLANT (1967), f – Map no. 242 (1968) of the Commonwealth Institute of Entomology (series A), g – Map No. 264 (1969) *idem*, h – Map no. 289 (1971) *idem*, i – GRANATE (1971) and MARQUES (1972), j – TAMBIS-LYCHE (1971), k – GOUVEIA (1972, 1974), l – ILHARCO (1976), m – CARNEIRO (1979), n – ILHARCO (1980), o – CARVALHO (1984), p – STOETZEL (1985), q – ILHARCO (1987), r – CRUZ DE BOELPAEPE & TEIXEIRA (1990), s – SILVA & TAVARES (1995), t – SOUSA-SILVA & ILHARCO (1995), u – PITA & ILHARCO (1995), v – PITA & ILHARCO (1997), w – PITA & ILHARCO (1998), x – BORGES *et al.* (2000), y – BERGMANN *et al.* (2002)

Species and subspecies	SMi	SMa	Ter	Fai	Pic	Flo	Cor	W/i
Phylloxeridae								
<i>Viteus vitifoliae</i> (Fitch)	a		a	a	o			
Pemphigidae								
<i>Eriosoma lanigerum</i> (Hausmann)	l		l					
<i>Eriosoma lanuginosum</i> (Hartig) *	r							
<i>Geoica utricularia</i> (Passerini)	l							
<i>Pemphigus populitransversus</i> Riley	n							
<i>Prociphilus</i> sp. *	r							
<i>Tetraneura ulmi</i> (Linné)	b							
<i>Thecabius affinis</i> (Kaltenbach)	l		l					
Drepanosiphidae								
<i>Anoecia corni</i> (Fabricius)	n	x	x		x			
<i>Calaphis flava</i> Mordvilko	l							
<i>Chaitophorus leucomelas</i> Koch	l		l	l				
<i>Chromaphis juglandicola</i> (Kaltenbach)	l							
<i>Drepanosiphum oregonensis</i> Granovsky			l	l				
<i>Drepanosiphum platanoidis</i> (Schrank)	l		l	l				
<i>Eucallipterus tiliae</i> (Linné)	l							
<i>Hoplocallis pictus</i> (Ferrari)	l							
<i>Myzocallis boernerii</i> Stroyan	l							
<i>Myzocallis castanicola</i> Baker	l		l	l				
<i>Myzocallis kuricola</i> (Matsumura)	y							
<i>Phloeomyzus passerinii</i> (Signoret)	l							
<i>Phyllaphis fagi</i> (Linné)	w							
<i>Pterocallis alni</i> (De Geer)	l							
<i>Saltusaphis scirpus</i> Theobald	u	x			x			
<i>Sipha flava</i> (Forbes)	t	t					t	
<i>Thelaxes suberi</i> (Del Guercio)	l							
<i>Therioaphis trifolii</i> (Monell)	l	x						
<i>Tuberculoides annulatus</i> (Hartig)	l			l				
Aphididae								
<i>Acyrtosiphon loti</i> (Theobald)	l		l					
<i>Acyrtosiphon malvae malvae</i> (Mosley)	l		l					
<i>Acyrtosiphon malvae</i> (Mosley) <i>rogersii</i> (Theobald)	l							
<i>Acyrtosiphon pisum</i> (Harris)	b	x	l	l	x			
<i>Amphorophora idaei</i> (Börner)			l					
<i>Aphis affinis</i> Del Guercio	q		q					q
<i>Aphis craccivora</i> Koch	l	x	l	l	x			
<i>Aphis fabae</i> Scopoli	i	x	i	i				
<i>Aphis farinosa</i> Gmelin	l		l	l				

Species and subspecies	SMi	SMa	Ter	Fai	Pic	Flo	Cor	W/i
<i>Aphis gossypii</i> Glover	c	x	i	i	s			
<i>Aphis hederæ</i> Kaltenbach	l			l				
<i>Aphis nasturtii</i> Kaltenbach	l		l	l				
<i>Aphis origani</i> Passerini	l							
<i>Aphis parietariæ</i> Theobald	l							
<i>Aphis pomi</i> De Geer	l		l	l	o			
<i>Aphis ruborum</i> (Börner)	l		l	l				
<i>Aphis sarothamni</i> Franssen		v						
<i>Aphis sedi</i> Kaltenbach	l							
<i>Aphis solanella</i> Theobald	b		l	l				
<i>Aphis spiræcola</i> Patch	l		l		o			
<i>Aphis tirucallis</i> Hille Ris Lambers		v						
<i>Aphis umbrella</i> (Börner)	n							
<i>Aphis urticata</i> Gmelin	l							
<i>Aulacorthum solani</i> (Kaltenbach)	b		l					
<i>Brachycaudus cardui</i> (Linné)	l		l	l				
<i>Brachycaudus helichrysi</i> (Kaltenbach)	l	b	l					
<i>Brachycaudus lateralis</i> (Walker)	l		l					
<i>Brachycaudus persicæ</i> (Passerini)						u		
<i>Brachycaudus schwartzi</i> (Börner)	l		l	l				
<i>Brachyunguis tamaricis</i> (Lichtenstein)		v						
<i>Brevicoryne brassicæ</i> (Linné)	l		l	l				
<i>Capitophorus elaeagni</i> (Del Guercio)	l							
<i>Capitophorus hippophaes</i> (Walker) <i>dubius</i> Ilharco	l							
<i>Cavariella aegopodii</i> (Scopoli)	l		l					
<i>Cavariella theobaldi</i> (Gillette & Bragg) *	r							
<i>Coloradoa rufomaculata</i> (Wilson)	l		l					
<i>Cryptomyzus</i> sp. *	r							
<i>Dysaphis apiifolia</i> (Theobald)	l		l	l				
<i>Dysaphis aucupariæ</i> (Buckton)	b	x	x		x			
<i>Dysaphis crataegi crataegi</i> (Kaltenbach)	l							
<i>Dysaphis crithmi</i> (Buckton)						v		
<i>Dysaphis foeniculus</i> (Theobald)	l		l					
<i>Dysaphis maritima</i> (Hille Ris Lambers)	l							
<i>Dysaphis plantaginea</i> (Passerini)			l	l				
<i>Dysaphis pyri</i> (Boyer de Fonscolombe)	l							
<i>Dysaphis radicola</i> (Mordvilko)	l							
<i>Dysaphis tulipæ</i> (Boyer de Fonscolombe)			i					
<i>Eucarazzia elegans</i> (Ferrari)								p
<i>Holcaphis</i> sp.	b							
<i>Hyperomyzus lactucae</i> (Linné)	l		l	l				
<i>Hyperomyzus picridis</i> (Börner & Blunck)	w							
<i>Idiopterus nephrolepidis</i> Davis	w							
<i>Illinoia azaleæ azaleæ</i> (Mason)	l							
<i>Jacksonia papillata</i> Theobald	n				b			
<i>Lipaphis erysimi</i> (Kaltenbach)	l		l					
<i>Longiunguis pyrarius</i> (Passerini)	l							
<i>Macrosiphoniella artemisiæ</i> (Boyer de Fonscolombe)			l					
<i>Macrosiphoniella sanborni</i> (Gillette)			l					
<i>Macrosiphoniella tanacetaria</i> (Kaltenbach)								
<i>bonariensis</i> E.E. Blanchard						u		
<i>Macrosiphum euphorbiæ</i> (Thomas)	i		i	i				
<i>Macrosiphum rosæ</i> (Linné)	l		l	l				
<i>Melanaphis donacis</i> (Passerini)	u	u		u		u	u	

Species and subspecies	SMi	SMA	Ter	Fai	Pic	Flo	Cor	W/i
<i>Metopolophium dirhodum</i> (Walker)	k		l	l				
<i>Metopolophium festucae</i> (Theobald)	b							
<i>Metopolophium friscum</i> Hille Ris Lambers	n							
<i>Myzaphis bucktoni</i> Jacob	l							
<i>Myzaphis rosarum</i> (Kaltenbach)	l		l					
<i>Myzus ascalonicus</i> Doncaster *	r							
<i>Myzus cerasi</i> (Fabricius)			l					
<i>Myzus cymbalariae</i> Stroyan			l					
<i>Myzus ornatus</i> Laing	g		g	g				
<i>Myzus persicae</i> (Sulzer)	k		k	k				
<i>Nasonovia ribisnigri</i> (Mosley)	l	x			x			
<i>Nearctaphis bakeri</i> (Cowen)	l							
<i>Neomyzus circumflexus</i> (Buckton)	b		l					
<i>Ovatus crataegarius</i> (Walker)	n		l	l				
<i>Ovatus insitus</i> (Walker)			l					
<i>Pentalonia nigronervosa</i> Coquerel	f		f	f				
<i>Pentatrachopus fragaefolii</i> (Cockerell)							v	
<i>Pentatrachopus tetraerhodus</i> (Walker)	l		l	l				
<i>Protaphis terricola</i> (Rondani)							w	
<i>Pterocomma pilosum</i> Buckton <i>konoii</i> Hori ex Takahashi		w						
<i>Pterocomma populeum</i> (Kaltenbach)	l		l	l				
<i>Pseudacaudella rubida</i> (Börner)		x	x		x			
<i>Rhopalosiphoninus latsiphon</i> (Davidson)	m							
<i>Rhopalosiphoninus staphyleae</i> (Koch)	n							
<i>Rhopalosiphoninus tulipaellus</i> (Theobald)		x						
<i>Rhopalosiphum insertum</i> (Walker)	b	x	l	b	x	b		
<i>Rhopalosiphum maidis</i> (Fitch)	b		i	i				
<i>Rhopalosiphum nymphaeae</i> (Linné)						v		
<i>Rhopalosiphum padi</i> (Linné)	b	b	k		x			
<i>Rhopalosiphum rufiabdominalis</i> (Sasaki)	k						n	h
<i>Schizaphis graminum</i> (Rondani)	l	x	k	k				
<i>Schizaphis pyri</i> Shaposhnikov	e							
<i>Schizaphis rotundiventris</i> (Signoret)		v						
<i>Sitobion avenae</i> (Fabricius)	b		l					
<i>Sitobion fragariae</i> (Walker)	l		l					
<i>Toxoptera aurantii</i> (Boyer de Fonscolombe)	c		i	i				
<i>Uroleucon sonchi</i> (Linné)	b	b	l	b				
Lachnidae								
<i>Cinara juniperi</i> (De Geer)	l		l		d			
<i>Cinara maritimae</i> (Dufour)	l		l	l				
<i>Cinara tujafilina</i> (Del Guercio)	l		l					
<i>Eulachnus rileyi</i> (Williams)	l							
<i>Lachnus roboris</i> Linné *	r							
<i>Neotrampa maritima</i> Eastop	l	x						
<i>Tuberolachnus salignus</i> (Gmelin)	l	(1)	l	l				j
Total number of species and subspecies	110	25	66	39	15	10	2	3
Total for the Archipelago of the Azores	133							

*According to Cruz de Boelpaep & Teixeira (1990).

Note: As the islands of São Jorge and Graciosa have no published records of aphid species they were not included in this table.

(1)New record to the island of Santa Maria.

Material studied - Santa Maria, Ginjal (7 Sep. 87, CAEAN 4604, *Salix* sp., leg. D. T. Pombo).

Azores, 23-29 September 1995, referring four aphid species as new records to the Azores and one to Continental Portugal. Unexpected editorial problems prevented its publication.

MATERIAL AND METHODS

Most of the samples referred in this article were collected on the respective host, in different islands of the Azores Archipelago and in Continental Portugal. A few samples were obtained with yellow water traps.

The Azorean material has been collected during the second Aphid Expedition to that Archipelago, developed by F. A. Ilharco, A. van Harten and J. Pinto, between 15 September and 8 October 1979.

All those samples are preserved in ethanol and/or in slide mounts and are part of the Aphid Collection of Estação Agronómica Nacional (CAEAN), referenced by numbers preceded by that signal (e.g. CAEAN 3341).

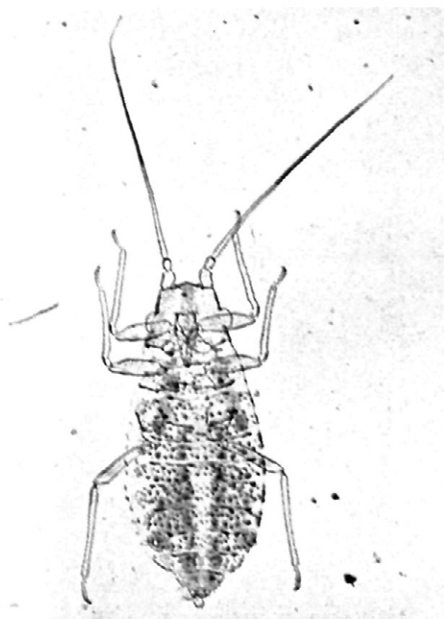


Figura 1: *Saltusaphis scirpus*, apterous form (x 19,5).



Figura 2: *Saltusaphis scirpus*, alate form (x 17).

LIST OF SPECIES

Family Drepanosiphidae

Saltusaphis scirpus Theobald, 1915

This species (Figures 1 and 2) has a vast geographical distribution: Central, East and South Europe, Middle East, Central Asia, Africa, and has been introduced in North America (HEIE, 1982).

For the first time it was described for Egypt on *Scirpus*, recorded for Kenya, South Africa on *Cyperus*, for Angola also on Cyperaceae and for Mozambique using water yellow traps (ILHARCO, 1970, van HARTEN & ILHARCO, 1971). In Germany and Poland it has been specifically found on *Carex hirta* (HEIE, 1982). Another host is *Juncus* (ROBERTI, 1991). Known in Continental Portugal since 1988 (VIEIRA & ILHARCO, 1988a, 1988b), it was cited for the first time in 1995 for the Azores and Macaronesia (PITA & ILHARCO, 1995).

Material studied - São Miguel, Ponta Delgada (29 Sep. 79, CAEAN 3366a, *Cyperus esculentus*, col. F. A. Ilharco & J. Pinto); Portugal Continental, Oeiras (30 Oct. 79, CAEAN 3417, vagrant, yellow water trap), (13 Sep. 85, CAEAN 4496, vagrant, yellow water trap), (19 Sep. 85, CAEAN 4498, vagrant, yellow water trap), (20 Sep. 85, CAEAN 4500, vagrant, yellow water trap), (20 Sep. 85, CAEAN 4501, vagrant, yellow water trap).



Figura 3: *Brachycaudus persicae*, apterous form (x 15).



Figura 4: *Brachycaudus persicae*, alate form (x 16).

Family Aphididae

Brachycaudus persicae (Passerini, 1860)

Brachycaudus persicae (Figures 3 and 4), commonly known as the black peach aphid, has a large geographical distribution: Great Britain, Norway, Finland, South Europe, North and South America, South Africa, Central Asia, Turkey, Australia and New Zealand (ILHARCO, 1973a; HEIE, 1992; BLAKMAN & EAŠTOP, 1994).

The hosts for this species are *Prunus* spp, mainly *Prunus persicae* and also *P. domestica*, *P. insititia* and *P. spinosa*. It is also found on Scrophulariaceae (ILHARCO, 1966, 1973a; ROBERTI, 1991). The host alternation from *Prunus* to some Scrophulariaceae was experimentally confirmed (BURGER, 1975).

B. persicae was for the first time recorded for the Azores and for Macaronesia by PITA & ILHARCO (1995).

Material studied - Flores, Ponta da Fajã (26 Sep. 79, CAEAN 3341, *Prunus insititia*, col. F. A. Ilharco, A. van Harten & J. Pinto).

Macrosiphoniella tanacetaria (Kaltenbach, 1843)

The subspecies *Macrosiphoniella tanacetaria tanacetaria* (Kaltenbach, 1843) is known from all Europe and on its usual hosts, *Tanacetum vulgare* and *Tanacetum parthenium*.

The name *Macrosiphoniella tanacetaria italica* Hille Ris Lambers, 1967 was recently confirmed as a synonym of *Macro-*



Figura 5: *Macrosiphoniella tanacetaria bonariensis*, apterous form (x 17).



Figura 6: *Macrosiphoniella tanacetaria bonariensis*, alate form (x 15).

siphoniella tanacetaria bonariensis E.E. Blanchard, 1922 (Figures 5 and 6) (HEIE, 1995; SECO FERNÁNDEZ *et al.*, 2000). This subspecies was referred for Italy on *Chrysanthemum* sp. and for Austria on *Chrysanthemum corymbosum* (HILLE RIS LAMBERS, 1967; ROBERTI, 1991) and also for Chile, Argentina and Brazil (COSTA *et al.*, 1993; HEIE, 1995; PÉREZ HIDALGO *et al.*, 1998). It was for the first time recorded for the Azores and Macaronesia (PITA & ILHARCO, 1995).

The species *Macrosiphoniella tanacetaria* was collected in Continental Portugal in 1982, but was reported only in 1995 by PITA & ILHARCO (*op. cit.*).

Macrosiphoniella tanacetaria tanacetaria (Kaltenbach, 1843)

Material studied - Portugal Continental, Sesimbra (01 May. 82, CAEAN 3884a, *Chrysanthemum coronarium*, col. F. A. Ilharco).

Macrosiphoniella tanacetaria bonariensis E.E. Blanchard, 1922



Figura 7: *Melanaphis donacis*, apterous form (x 26.5).

Material studied - Flores, Fajãzinha (26 Sep. 79, CAEAN 3326, *Tanacetum parthenium*, col. F. A. Ilharco, A. van Harten & J. Pinto); Portugal Continental, Ferreira do Alentejo (03 May. 82, CAEAN 3896, *Chrysanthemum* sp., col. A. Raimundo).

Melanaphis donacis (Passerini, 1862)

Melanaphis donacis (Figures 7 and 8) is a species found in Meridional Europe and other Mediterranean regions, besides the Indian region (ROBERTI, 1991).

ILHARCO (1961) cited it the first time for Continental Portugal where it is a common species. It is known for Macaronesia since

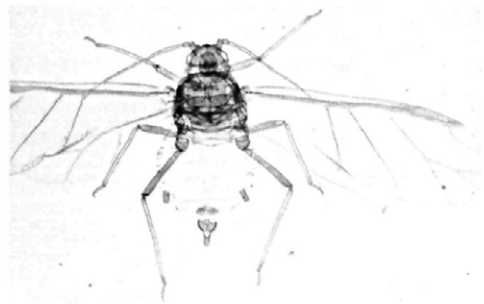


Figura 8: *Melanaphis donacis*, alate form (x 14).

1973, when it was initially signalled at Porto Santo and later in Madeira. It has been recognised as an useful aphid because as it lives only on canes it does not represent a danger for the crops. Besides some associated predators and parasitoids are species that attack those aphids that could constitute pests in crops. It is usually found on *Arundo donax* and also on *Phragmites communis* (ILHARCO, 1973b, 1974).

M. donacis was for the first time signalled for the Azores by PITA & ILHARCO (1995). It is remarkable that in 1967, though carefully searched for, it was not found at São Miguel, Terceira and Faial islands (ILHARCO, 1976). Nevertheless, in 1979 this species was spread on all the visited Azorean islands.

Material studied - São Miguel, Ponta Delgada (29 Sep. 79, CAEAN 3368, *Arundo donax*, col. A. van Harten), Santo António (30

Sep. 79, CAEAN 3373, *Arundo donax*, col. A. van Harten); Santa Maria, Ginjal (15 Sep. 79, CAEAN 3101, *Arundo donax*, col. F. A. Ilharco, A. van Harten & J. Pinto), Vila do Porto (17 Sep. 79, CAEAN 3141, *Arundo donax*, col. F. A. Ilharco, A. van Harten & J. Pinto), São Lourenço (18 Sep. 79, CAEAN 3161, *Arundo donax*, col. F. A. Ilharco, A. van Harten & J. Pinto); Faial, Horta (21 Sep. 79, CAEAN 3196, *Arundo donax*, col. F. A. Ilharco); Flores, Santa Cruz (21 Sep. 79, CAEAN 3219, *Arundo donax*, col. F. A. Ilharco, A. van Harten & J. Pinto), Santa Cruz (22 Sep. 79, CAEAN 3229, *Arundo donax*, col. F. A. Ilharco, A. van Harten & J. Pinto), Fazenda das Lajes (24 Sep. 79, CAEAN 3292, *Arundo donax*, col. F. A. Ilharco, A. van Harten & J. Pinto); Corvo, Corvo (25 Sep. 79, CAEAN 3301, *Arundo donax*, col. F. A. Ilharco, A. van Harten & J. Pinto).

RESUMEN

PITA M. T., F. A. ILHARCO. 2004. Pulgones de las islas Azores (Homoptera, Aphidoidea): comentarios sobre algunas especies y lista actualizada. *Bol. San. Veg. Plagas*, **30**: 301-310.

Se comenta la biología de cuatro especies de pulgones de las islas Azores: *Brachycaudus persicae* (Passerini) [Aphididae], *Macrosiphoniella tanacetaria* (Kaltenbach) [Aphididae], *Melanaphis donacis* (Passerini) [Aphididae] y *Salusaphis scirpus* Theobald [Drepanosiphidae].

Se presenta una lista actualizada de las especies de áfidos de las Azores, con indicación de las nuevas citas para el archipiélago, utilizando las referencias bibliográficas conocidas hasta el momento.

Palabras clave: Aphidoidea, Macaronesia, Portugal Continental, Azores, São Miguel, Santa Maria, Terceira, Faial, Pico, Flores, Corvo.

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(Recepción: 17 junio 2003)

(Aceptación: 16 marzo 2004)