

NEW RECORDS AND OBSERVATIONS ON MACROLEPIDOPTERA (INSECTA: LEPIDOPTERA) FROM THE AZORES

VIRGÍLIO VIEIRA

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This paper presents a summary of butterflies and moths from Santa Maria, Faial, Pico and S. Miguel islands. Collections and/or observations were made mostly during short visits in the years 1997, 1998 and 2001. The list of records includes 40 Macrolepidoptera species, belonging to the families Pieridae, Nymphalidae, Lycaenidae, Geometridae, Sphingidae and Noctuidae. Some species are new confirmed records, for Faial (*Vanessa virginiensis* (Drury), *Hippotion celerio* (Linnaeus), *Ophiusa tirhaca* (Cramer), *Agrotis segetum* (Denis & Schiffermüller)), for Pico (*Vanessa cardui* (Linnaeus)) and for Ilhéu de Vila Franca do Campo (*Autographa gamma* (Linnaeus)).

Virgílio Vieira (e-mail: vvieira@notes.uac.pt), Universidade dos Açores, Departamento de Biologia, CIRN, Rua da Mãe de Deus, PT - 9501-801 Ponta Delgada, Açores, Portugal.

INTRODUCTION

The information on the Lepidoptera of the Azores, an archipelago comprising nine inhabited islands (Corvo, Flores, Faial, Pico, Graciosa, São Jorge, Terceira, São Miguel and Santa Maria) located between latitudes 36° 55'-39° 43'N and 25° 00'-31° 30'W, is scattered throughout a large number of publications. DROUET (1861) and GODMAN (1870) listed a few species and correctly highlighted the Palearctic affinity of the Azorean Lepidoptera. Since then, a considerable number of papers recording additional species have been published (e.g. WARREN 1905; REBEL 1940, CARTHY 1957; PINKER 1971; CARVALHO 1982, 1992; MEYER 1991a, 1991b, 1997; MEYER et al. 1997; SOUSA 1991, VIEIRA & PINTUREAU 1991; VIEIRA & SILVA 1994; VIEIRA & TAVARES 1995; VIEIRA 1995, 1997; NUSS et al. 1998; CARVALHO et al. 1999; VIEIRA 2001). However, in the last few years, the author have made additional records, during short excursions to the islands of Faial, Pico, São Miguel and Santa Maria, in order to survey Lepidoptera species considered as agricultural pests. Part of these new observations are presented here.

METHODS

Fieldwork was conducted during various short visits: Santa Maria (30-31 July 1997, 19-21 November 1997, 8-10 October 1998, 12-13 November 1998), Faial (07-23 August 1997, 12-14 November 1997, 12-14 October 1998, 17 August - 02 September 2001) and Pico (13 August 1997, 27 August 2001). Also, occasional observations were registered on both S. Miguel Island and the nearby small islet, Ilhéu de Vila Franca do Campo. Several techniques were used to collect Lepidoptera specimens: (i) an adapted Pennsylvania light trap, with a TLD 15 W/05 lamp, feed by a 12 V battery coupled with a transformer, for the noctuids; (ii) an entomological net, for moths and butterflies; (iii) the direct observation of various host plants (exotic and endemic), for larval instars.

Lepidoptera families and species are listed and named according to VIVES MORENO (1994) and CARVALHO et al. (1999). In particular, regarding the *Hipparchia azorina* complex species group that has a long history of taxonomic controversy (e.g. see OEHMIG 1983; KUDRNA 1986; MEYER 1991a; OLIVIER & COUTSIS 1997;

SOUSA 1999; FUJACO et al. *in press*), the taxonomy used by FUJACO et al. (*in press*) was followed. For each species, date, place and number of specimens (=spec/specs) captured or observed are given. For those species where information was available, ecological notes and food plants (see also VIEIRA 1997) are also given. Information on distribution of taxa recorded on the Azorean islands is provided, based on the literature used to elaborate the checklist by different authors (e.g. CARVALHO 1982; MEYER 1991a, 1991b, 1993; SOUSA 1991, VIEIRA & PINTUREAU 1991; HACKER & SCHMITZ 1996; VIEIRA 1997, 1998; CARVALHO et al. 1999). The species considered new records for an individual island were marked with an asterisk (*).

LIST OF SPECIES

Family Pieridae Duponchel, [1835]
Subfamily COLIADINAE Swainson, 1827

Colias crocea (Fourcroy, 1785)

Santa Maria: 30.7.97 - Miradouro do Espigão (3 specs), Paúl, Fátima, S. Lourenço, Ponta do Castelo, Saúde, Vila do Porto (common); 21.11.97 - Almagreira (3 specs), Fontinhas (1 spec), S. Pedro (2 specs), Loural (1 spec); 8.10.98 - Saúde, Vila do Porto (2 specs); 12-13.11.98 - Common throughout the island, namely at Vila do Porto, Paúl, Airport, Almagreira, Fontinhas, Santo Espírito.

Faial: 7-23.8.97 - Varadouro, along the road from Ribeira do Cabo to Caldeira (common); 12-14.11.97 - Espalamaca (3 specs), Varadouro (4 specs), Canada da Faia (2 specs); 12-14.10.98 - Common throughout the island; 17.8-2.9.01 - Common throughout the island; 29.8.01 - Pico Verde (5 specs); 30.8.01 - Caldeira (7 specs).

Pico: 27.8.01 - Madalena, São Mateus, Lajes, Cais do Pico, Santa Luzia (common).

S. Miguel: Common throughout the island, particularly during spring, summer and autumn seasons of 1997, 1998, 1999 and 2000. *C. crocea*

adults feed on *Medicago*, *Trifolium* and *Lotus* flowers.

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Migrant indigenous into Azores. Palearctic.

Notes: *C. crocea* is common in the Azorean islands. Although the var. *helice* Hübner, a female form in which the normal orange yellow coloration is replaced by creamy-white, it is not uncommon at low altitudes (e.g. São Miguel: Relva, Sete Cidades, Furnas), it appears to be less common at higher altitudes.

Subfamily PIERINAE Duponchel, [1835]

Pieris brassicae azorensis Rebel, 1917

Santa Maria: 30.7.97 - Airport (4 specs), Paúl (1 spec), Anjos (4 specs), Pico Alto (5 specs), Miradouro do Espigão (1 spec), Fátima, S. Lourenço, Ponta do Castelo, Saúde, Vila do Porto (common); 21.11.97 - Airport (3 specs), Almagreira (1 spec); 8.10.98 - Saúde (3 specs: 2 adults, 1 pupa); 10.10.98 - Vila do Porto, Airport, Santa Bárbara, Lagoinhas (several adults flying); 13.11.98 - Saúde (3 specs), Vila do Porto (1 spec), Santana (1 spec).

Faial: 7-23.8.97 - Varadouro, along the road from Ribeira do Cabo to Caldeira (common); 12-14.11.97 - Varadouro, Horta, Flamengos (common), Espalamaca (4 specs); 12-14.10.98 - Varadouro, Castelo Branco, Horta, and Feteira (common); 17.8-2.9.01 - Common throughout the island at low altitudes. Larvae feed on *Brassica*, *Reseda* and *Raphanus sativus*.

Pico: 27.8.01 - Common throughout the island at low altitudes.

S. Miguel: Common throughout the island, particularly during spring, summer and autumn seasons of 1997, 1998, 1999 and 2000. The food plants of the *P. b. azorensis* larva are preferentially *Brassicae oleracea* L. - vars and cvs (Brassicaceae) and *Reseda* sp..

Ilhéu de Vila Franca: 26.7.98 - Two adults flying. Larvae were not seen on this islet.

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Endemic subspecies.

Family NYMPHALIDAE Swainson, 1827
Subfamily NYMPHALINAE Swainson, 1827

Vanessa atalanta (Linnaeus, 1758)

Santa Maria: 30.7.97 - S. Lourenço (1 spec); 10.10.98 - Vila do Porto (1 spec); 13.11.98 - Valverde (2 specs).

Faial: 12-13.8.97 - Varadouro (1 spec/day); 13.11.97 - Canada da Faia (1 spec), Capelo (1 spec); 29.8.01 - Pico Verde (4 specs); 30.8.01 - Varadouro (1 spec). *V. atalanta* adult feed on *Lantana camara* L. (Verbenaceae) and *Parietaria judaica* L. (Urticaceae) flowers, and larvae feed on *P. judaica*.

S. Miguel: 1-2.8.98 and 18.11.98 - Ponta Delgada/University of the Azores (1 adult flying); 4.8.98 - Água de Pau/Praia da Baixa da Areia (2 adults flying); 20.12.98 - S. Roque (1 adult flying); 16.04.01 and 10-12.08.01 - Ponta Delgada/Rua do Perú (1 adult flying/day); 16.03.01 - Ponta Delgada/University of the Azores (1 adult flying); 01-15.08.01 - Ponta Delgada/University of the Azores (1 couple); 5.04.01 - Cumeeiras/Sete Cidades (1 spec); 06-08.08.01 - Cumeeiras/Sete Cidades (several adults flying); 7.04.01 and 06.08.01 - Ribeira dos Caldeirões/Nordeste (1 spec/day); 14.9.01 - Ponta Delgada/University of the Azores (3 adults flying).

Ilhéu de Vila Franca: 26.7.98 - Six adults flying; 22.07.01 - one adult flying.

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Faial, Pico, São Jorge, Flores, Corvo. Holarctic.

Vanessa virginiensis (Drury, 1773)

*Faial**: 29.8.01 - Pico Verde (several specimens flying; two adults were included in the collection of the University of Azores). Larvae feed on Urticaceae and Asteraceae plants of which some exist in the island, although larvae were not seen.

Distribution: São Miguel, Faial*. Migrant species with Nearctic origin. Although *V. virginiensis* do not breed in Europe, the origin of the Azorean specimens is unknown.

Vanessa cardui (Linnaeus, 1758)

Santa Maria: 8.10.98 - Saúde (1 spec); 13.11.98 - Vila do Porto, Paúl, Almagreira, Valverde (several adults flying).

Faial: 13.11.97 - Espalamaca (1 spec); 29.8.01 - Pico Verde (8 adults flying).

*Pico**: 27.8.01 - Santo Amaro (1 adult flying). Larvae feed on Urticaceae and Asteraceae plants of which some exist in the island, although larvae were not seen.

S. Miguel: 4.8.98 - Praia da Baixa da Areia, Água de Pau (1 adult flying); 15.11.98 - Pisão (1 adult flying); 18.11.98 - Ponta Delgada/garden of the University of the Azores (3 adults flying); 15.9.01 - Miradouro do Porto/Nordeste (4 adults flying).

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico*, Faial, Flores. Cosmopolitan.

Subfamily SATYRINAE Boisduval, [1833]

Hipparchia (azorina) azorina azorina (Strecker, 1899)

Faial: 7-23.8.97 and 17.8-2.9.01 - Caldeira (common).

Distribution: Faial. Endemic subspecies.

Hipparchia (azorina) miguelensis (Le Cerf, 1935)

São Miguel: Summer months of 1997, 1998, 1999 and 2000 - Furnas/Salto do Cavalo, Monte escuro, Lagoa das Empadadas, Pico da Vara (common); 21.6.01 - Graminhais (4 adults flying). The food plant of *Hipparchia* larvae is *Festuca jubata* Lowe (Poaceae), which grows only in montane regions. Adults feed on flowers of *Tolpis azorica*, *Ilex perado* ssp. *azorica*, *Rubus* sp., and *Vaccinium cylindraceum*.

Distribution: São Miguel. Endemic species.

Sufamily DANAINAE Boisduval, [1833]

Danaus plexippus (Linnaeus, 1758)

Santa Maria: July 2000 - Several adults throughout the island (R. Resendes, pers. com.); during the last week of August 2000 and the first one of September 2000 - several adults throughout the island (A.C. Pereira, pers. com.).

Faial: see NEVES *et al.* (2001).

Pico: 27.8.01 - Several adults flying throughout the island: Silveira (2), Lajes (1), Pontas Negras (2), Fetais (1), S. Miguel Arcanjo (2), Ponta da Ilha (4), Piedade (2), Santo Amaro (8), Prainha do Norte (4), Prainha (2), São Vicente (1).

S. Miguel: 11.9.00 - Porto Formoso (1 adult flying); 1.11.00 - Ponta Delgada/Arquinha (1 adult flying); 16.12.00 - Ponta Delgada/Av. Infante D. Henrique (1 adult flying); 23.2.01 - Ponta Delgada / Rua Bruno Tavares Carreiro (1 adult flying); 15.7.01 - Praia do Pópulo (1 adult flying).

D. plexippus has been an occasional visitor to the Azores. However, during the last decade it has become a resident species in these islands and has adapted its behaviour to the geographic conditions of this new habitat, where Monarch butterfly caterpillars feed on *Gomphocarpus fruticosus* (L.) Aiton fil. (Asclepiadaceae) (NEVES *et al.* 2001). The first confirmed breeding of this butterfly in the Azores dates from the summer of 1994 (Faial), 1999 (Pico, Terceira) (NEVES *et al.*

2001; SOUSA 1999) and 2000 (S. Miguel) (V. Vieira, pers. obs.).

In S. Miguel, during two last weeks of August 2000, two adult Monarch butterflies were observed laying eggs on *G. fruticosus* bushes near Praia do Pópulo / Livramento, and several caterpillars were found in Farrobo/Pico da Pedra (A.O. SOARES, pers. comm.), Caloura (M.C. BORBA VIEIRA, pers. comm.) and Ponta Delgada (M.M. WALLENSTEIN, pers. comm.). Pupae have been observed as late as 15 September 2000 in Farrobo / Pico da Pedra (A.O. SOARES, pers. comm.) and Caloura (M.C. BORBA VIEIRA, pers. comm.). The bushes of *G. fruticosus* are usually almost destroyed by the voracity of the caterpillars, by the time they reach maturity and pupate. Interiors of porches, edges of roofs and even the surfaces of a garden chair have been used for pupation. The phenology, distribution and abundance of Asclepiadaceae are considered as a major determinant of the Monarch's life history strategy (BROWER 1985). As *Gomphocarpus* sp. is never found in large numbers, the availability of the host plant might be a limiting factor for the increasing population of *D. plexippus* in the S. Miguel Island.

Distribution: Santa Maria, São Miguel (resident), Terceira (resident), Pico (resident), Faial (resident), Flores, São Jorge (J. Tennent, pers. comm.). Migrant species with Nearctic origin.

Family LYCAENIDAE Leach, [1815]

Subfamily POLYOMMATINAE Swainson, 1827

Lampides boeticus (Linnaeus, 1767)

Santa Maria: 30.7.97 - Fátima, S. Lourenço, Ponta do Castelo, Saúde, Vila do Porto (common), Miradouro do Espigão (8 specs); 13.11.98 - S. Pedro (2 specs), Fontinhas (1 spec).

Faial: 12-14.11.97 - Courelas, Flamengos (several specs), Canada da Faia (4 specs); 12-14.10.98 - *L. boeticus* is very common at low altitudes of Faial island; 30.8.01 - Capelo, along the road from Ribeira do Cabo to Caldeira (several specs). *L. boeticus* adult feed on

Leguminosae (e.g. *Medicago sativa*, *Lotus*, *Tripholium*) flowers.

S. Miguel: Summer 2000/2001 - Sete Cidades and Ponta Delgada (several specs). *L. boeticus* adult feed on *Medicago*, *Lotus*, *Tripholium* and *Ulex* flowers.

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, São Jorge, Graciosa, Flores. Subcosmopolitan migrant species with Palearctic origin.

Family GEOMETRIDAE Leach, [1815]
Subfamily ENNOMINAE Guenée, [1845]

Cleora fortunata azorica Pinker, 1971

Santa Maria: 30.7.97 - Pico Alto (several specs). Larvae feed on *Myrica faya* Aiton (Myricaceae).

Faial: 12-14.11.97 - Capelinhos (several larvae feed on *M. faya*); 12-14.10.98 - Caldeira, Flamengos (several specs).

S. Miguel: 16.5.01 and 6.6.01 - Remédios/Lagoa (2 specs/day).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores. Endemic subspecies of endemic species to Macaronesia.

Subfamily STERRHINAE Meyrick, 1892

Cyclophora azorensis (Prout, 1920)

Santa Maria: 30.7.97 - Miradouro do Espigão (5 specs).

Faial: 17.8-2.9.01 - Varadouro (common); 29.8.01 - Pico Verde (common).

Ilhéu de Vila Franca: 26.7.98 and 22.7.01 - Common throughout the islet. The presence of the larva's preferential food plants, namely *M. faya* and *Erica scoparia* ssp. *azorica* (Ericaceae), assures de existence of this lepidopteran on the islet.

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, São Jorge, Graciosa, Flores. Endemic species.

Family SPHINGIDAE Latreille, [1802]
Subfamily SPHINGINAE Latreille, [1802]

Agrius convolvuli (Linnaeus, 1758)

Santa Maria: 3.7.97 - Anjos (1 spec); 21.11.97 - Saúde (1 spec); 13.11.98 - Santo Espírito (1 spec).

Faial: 11.8.97 - Varadouro 2 adults under streetlight closed to "Central Hidroeléctrica do Varadouro"; 12.10.98 - Horta, Espalamaca (3 specs); 17.8-2.9.01 - Varadouro (several specs). Eggs and larvae of *A. convolvuli* were observed on *Ipomoea batatas* L. and *I. indica* (Brum. Fil.) Merrill (Covolvulaceae).

Pico: 27.8.01 - Lajes (1 spec); *A. convolvuli* larva feeding on *I. indica*.

S. Miguel: October 2000 - Praia das Milícias (several larvae feeding on *Ipomoea imperati* (Vahl) Griseb.; L. Silva, pers. comm.); 16.5.01 - Lagoa do Congro (1 male).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Flores, Corvo. Migrant in this archipelago. Subtropical.

Acherontia atropos (Linnaeus, 1758)

Faial: 13.10.98 - Horta, Espalamaca (4 specs); 29.8.01 - Varadouro (1 adult under a streetlight).

Pico: 13.8.97 - Santo Amaro (1 spec).
S. MIGUEL: 16.8.01 - Remédios/Lagoa (1 spec).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores. Subtropical.

Subfamily MACROGLOSSINAE Harris, 1839

Macroglossum stellatarum (Linnaeus, 1758)

Santa Maria: 13.11.98 - Valverde (1 spec). *M. stellatarum* larvae feed on *Coprosma repens* A. Rich (Rubiaceae) leaves.

Faial: 13.8.97 - Horta (4 specs); 13.10.98 - Varadouro (2 specs); 17.8-2.9.01 - Varadouro (several specs). *M. stellatarum* egg and larvae on *C. repens* leaves.

Pico: 13.8.97 - Santo Amaro (1 spec); 27.8.01 - S. Mateus (1 spec).

S. Miguel: 2.8.98 - Ponta Delgada/University of the Azores (1 spec); 17.3.01 - Ponta Delgada/Carlos Machado Museum (1 spec); 22.7.01 - Pico da Pedra (1 spec); 14.8.01 - Ponta Delgada/Rua do Calhau (1 spec).

Distribution: Santa Maria, São Miguel, Pico, Faial, Graciosa, Flores. Palearctic.

Hippotion celerio (Linnaeus, 1758)

*Faial**: 13-14.10.98 - Horta, Espalamaca (1 adult/day); 30.8.01 - Varadouro (1 adult under a streetlight).

S. Miguel: 10.11.97 - Vila Franca do Campo (3 larvae feed on *Vitis* sp.).

Distribution: Santa Maria, São Miguel, Faial*. Subcosmopolitan.

Family NOCTUIDAE Latreille, 1809

Subfamily HYPENINAE Herrich-Schäffer, 1845

Hypena obsitalis (Hübner, [1813])

Faial: 30.8.01 - Varadouro (1 spec).

S. Miguel: May/June 2001 - Ponta Delgada (several specs).

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, Graciosa, Flores, Corvo. Asiatic-Mediterranean.

Hypena lividalis (Hübner, 1796)

S. Miguel: 18.12.98 - Ponta Delgada/Av. Infante D. Henrique (several specs).

Ilhéu de Vila Franca: 26.7.98 and 22.7.01 - several adults flying. Adults were observed on *P. judaica* and *Chenopodium album*.

Distribution: São Miguel, Ilhéu de Vila Franca do Campo. Subtropical.

Subfamily CATOCALINAE Boisduval, [1828]

Ophiusa tirhaca (Cramer, 1777)

*Faial**: 1.9.01 - Varadouro (1 adult alive on *Coprosma repens* A. Rich (Rubiaceae)); probably an immigrant individual!

Distribution: S. Miguel (VIEIRA, 2001), Faial*. Palearctic-Subtropical.

Subfamily PLUSIINAE Boisduval, [1828]

Autographa gamma (Linnaeus, 1758)

Santa Maria: 20.11.97 - Brasil (2 larvae in pasture), Almagreira (1 larva feed on *Citrus* sp. leave); 12.11.98 - S. Pedro (1 larva).

Faial: 8-9.8.97 - Varadouro (3 specs: adults 2, larva 1); 13.10.98 - Flamengos (1 spec) - *A. gamma* larva observed on *Mentha* sp. and *Phaseolus vulgaris*; 17.8-2.9.01 - Varadouro (4 specs: adults 3, larva 1).

S. Miguel: 23.5.01 and 6.6.01 - Remédios/Lagoa (1 spec/day).

*Ilhéu de Vila Franca**: 22.7.01 - One adult flying.

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo*, Terceira, Pico, Faial, São Jorge, Flores, Corvo. Palearctic.

Thysanoplusia orichalcea (Fabricius, 1775)

Santa Maria: 19.11.97 - Paúl (6 specs).

Faial: 12.10.98 - Horta, Espalamaca (1 spec); 17.8-2.9.01 - Varadouro (4 specs: adults 2, larvae 2).

S. Miguel: 15.11.98 - Ponta Delgada/Av. Infante D. Henrique (5 specs); 18.12.98 - Ponta Delgada/Av. Infante D. Henrique (several specs); 16.5.01 - Remédios/Lagoa (1 spec); 29.7.01 - Ponta Delgada/Av. Infante D. Henrique (1 spec).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Tropical-Subtropical.

Ctenoplusia limbirena (Guenée, 1852)

Faial: 11.8.97 - Cabeço Gordo (2 specs); 14.10.98 - Horta, Espalamaca (1 spec); 29.8.01 - Varadouro (1 spec).

S. Miguel: 15.11.98 - Ponta Delgada/Av. Infante D. Henrique (2 specs); 18.12.98 - Ponta Delgada/Av. Infante D. Henrique (several specs); 16.5.01 - Remédios/Lagoa (2 specs).

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Ethiopian.

Chrysodeixis chalcites (Esper, 1789)

Faial: 12.10.98 - Horta, Espalamaca (1 spec); 17.8-2.9.01 - Varadouro (several adults under streetlights).

S. Miguel: 29.7.01 - Ponta Delgada/Av. Infante D. Henrique (1 spec).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores. Tropical-Subtropical.

Subfamily HELIOTHINAE Boisduval, [1828]

Helicoverpa armigera (Hübner, [1808])

Santa Maria: Summer 98 - *H. armigera* larva common on *Lycopersicum esculentum* at low altitudes of the Santa Maria island (C. Bastos, pers. comm.).

Faial: 14.10.98 - Horta, Espalamaca (1 spec); 17.8-2.9.01 - Varadouro (1 spec), Capelinhos (1 spec).

Distribution: Santa Maria, São Miguel, Terceira, Faial, Graciosa, Flores. Tropical- Subtropical.

Subfamily IPIMORPHINAE Hübner, [1821]

Galgula partita Guenée, 1852

Faial: 7-23.8.97 - Varadouro, Cabeço Gordo (common); 13.11.97 - Canada da Faia (1 spec), Flamengos (1 spec); 13.10.98 - Caldeira (several specs); 17.8-2.9.01 - Varadouro (common).

S. Miguel: 16.5.01 and 6.6.01 - Remédios/Lagoa (3 and 2 specs, respectively).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Subtropical, originates from the New World.

Spodoptera littoralis (Boisduval, 1833)

Santa Maria: 19.11.97 - Airport (2 adults and several eggs on the window of the Hotel do Aeroporto); 20.11.97 - Vila do Porto (1 adult and several eggs), Brasil (larvae were common in pastures). 12-13.11.98 - S. Pedro, Santo Espírito (common: eggs and different larval instars).

S. Miguel: 15.11.98 - Ponta Delgada/Av. Infante D. Henrique (1 spec); August/September 2001 - Relva (common) - larvae feed on *Beta vulgaris* leaves.

Distribution: Santa Maria, São Miguel. Tropical.

Sesamia nonagrioides (Lefebvre, 1827)

Santa Maria: 20.11.97 - Valverde (several larvae feed on *Arundo donax* L.); 21.11.97 - Loural (several specs). *S. nonagrioides* larva feed on *Zea mays* L. (Poaceae).

Faial: 12-14.11.97 - Castelo Branco, Capelinhos (several specs) - *S. nonagrioides* larva feeding on *Z. mays* and *A. donax*; 13.10.98 - Horta, Espalamaca (1 spec); 17.8-2.9.01 - Varadouro (several specs) - *S. nonagrioides* larvae found on *Z. mays*.

- S. Miguel*: 6.6.01 - Remédios/Lagoa (1 spec). São Jorge, Flores, Corvo. Endemic species.
- Distribution*: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Subtropical.
- Phlogophora meticulosa* (Linnaeus, 1758)
Faial: 10.8.97 - Cabeço Gordo (1 spec); 13.10.98 - Caldeira (1 spec).
- S. Miguel*: 7.4.01 - Ponta Delgada (1 spec); 16-30.5.01 - Remédios/Lagoa (7 specs).
- Distribution*: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Asiatic-Mediterranean.
- Phlogophora furnasi* Pinker, 1971
S. Miguel: 30.5.01 - Remédios/Lagoa (1 spec).
- Distribution*: São Miguel, Terceira. Endemic species.
- Phlogophora interrupta* (Hampson, 1908)
Faial: 10.8.97 - Cabeço Gordo (1 spec).
- S. Miguel*: Remédios/Lagoa - 16.5.01 (2 specs), 30.5.01 (5 specs), 6.6.01 (1 spec).
- Distribution*: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Flores. Endemic species.
- Phlogophora cabrali* Pinker, 1971
S. Miguel: 30.7.01 - Remédios/Lagoa (1 spec).
- Distribution*: São Miguel, Pico, Faial, São Jorge. Endemic species.
- Mesapamea storai* (Rebel, 1940)
Faial: 10.8.97 - Cabeço Gordo (1 spec).
- S. Miguel*: 16.5.01 - Remédios/Lagoa (2 specs); 30.5.01 - Remédios/Lagoa (1 spec); 6.6.01 - Graminhais (8 specs).
- Distribution*: São Miguel, Terceira, Pico, Faial, São Jorge, Flores, Corvo. Endemic species.
- Subfamily HADENINAE Guenée, 1837
Acantholeucania loreyi (Duponchel, 1827)
Santa Maria: 20.11.97 - Almagreira (1 spec).
- Faial*: 13.10.98 - Horta, Espalamaca (1 spec).
- Distribution*: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Faial, Graciosa. Cosmopolitan with Tropical-Subtropical origin.
- Pseudaletia unipuncta* (Haworth, 1809)
Santa Maria: 30-31.7.97 - Saúde (7 specs); 19.11.97 - Paúl (1 spec); 20.11.97 - Saúde (6 specs), Brasil (several larvae); 21.11.97 - Saúde (3 specs), Almagreira (3 specs: 2 larvae, 1 adult), Fontinhas (4 specs: 3 larvae, 1 adult); 12.11.98 - S. Pedro (2 adults and several larvae), Paúl (2 specs), Fontinhas (2 specs), Saúde (1 spec), Santo Espírito (4 specs).
- Faial*: 7-23.8.97 - Varadouro (common). 12-14.11.97 - Courelas, Flamengos, Alto (several specs); low larval density of *P. unipuncta* was observed on pasture grasses, i.e. ca 1 larva per sample unit of 0.25 cm². 13.11.97 - Capelinhos (1 larva feed on *Arundo donax*). 12-14.10.98 - Common throughout the island; *P. unipuncta* larvae and adults also found on pasture grasses. 18-31.8.01 - Varadouro (very common under the streetlights).
- Pico*: 27.8.01 - Madalena, Santa Luzia (several specs); some adults seen under streetlights.
- S. Miguel*: Common throughout the island, in pastures; all seasons of 1997, 1998, 1999 and 2000. In particular, on 15 August 1998 and 18 December 1998, several adults were observed at Ponta Delgada/Av. Infante D. Henrique under the streetlights (probably immigrant individuals!).
- Distribution*: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, São Jorge, Graciosa (including Ilhéu da Praia), Flores, Corvo. Cosmopolitan.

Subfamily NOCTUINAE Latreille, 1809

Noctua pronuba (Linnaeus, 1758)

Santa Maria: 12.11.98 - Santo Espírito (2 specs).

Faial: 10.8.97 - Cabeço Gordo (1 spec); 13.10.98 - Caldeira, Ribeira do Cabo (common).

S. Miguel: Remédios/Lagoa - 16.5.01 (6 specs), 30.5.01 (16 specs), 6.6.01 (1 spec).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Flores, Corvo. Palearctic, excepting boreal polar region (CALLE 1982). Euroasiatic species introduced in the Nearctic region.

Noctua atlantica (Warren, 1905)

Faial: 10.8.97 - Cabeço Gordo (1 spec); 6.6.01 - Graminhais (several specs).

S. Miguel: Remédios/Lagoa - 16.5.01 (2 specs), 30.5.01 (2 specs), 6.6.01 (1 spec).

Distribution: São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Endemic species.

Noctua carvalhoi (Pinker, 1983)

Faial: 10.8.97 - Cabeço Gordo (1 spec).

Distribution: Terceira, Pico, Faial, São Jorge. Endemic species.

Xestia c-nigrum (Linnaeus, 1758)

Faial: 11.8.97 - Cabeço Gordo (1 spec). 13.11.97 - Flamengos (1 spec).

S. Miguel: Remédios/Lagoa - 16.5.01 (9 specs), 30.5.01 (11 specs), 6.6.01 (18 specs).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Holarctic.

Peridroma saucia (Hübner, [1808])

Santa Maria: 20.11.97 - Saúde (1 adult under a streetlight); 12.11.98 - S. Pedro (1 larva).

Faial: 11.8.97 - Cabeço Gordo (1 spec); 17.8-2.9.01 - Varadouro (several adults under a streetlight).

S. Miguel: Remédios/Lagoa - 16.5.01 (6 specs), 30.5.01 (19 specs), 6.6.01 (6 specs).

Distribution: Santa Maria, São Miguel, Ilhéu de Vila Franca do Campo, Terceira, Pico, Faial, São Jorge, Graciosa, Flores, Corvo. Cosmopolitan migrant species with Neotropical origin.

Agrotis ipsilon (Hufnagel, 1766)

Faial: 13.10.98 - Horta, Espalamaca (1 spec).

S. Miguel: 18.12.98 - Ponta Delgada/Av. Infante D. Henrique (several specs); 16.5.01 - Remédios/Lagoa (2 specs).

Distribution: Santa Maria, São Miguel, Terceira, Pico, Faial, São Jorge, Graciosa, Flores. Cosmopolitan.

Agrotis segetum (Denis & Schiffermuller, 1775)

*Faial**: 12.10.98 - Courelas (1 spec); 12-13.10.98 - Horta, Espalamaca (2 specs).

S. Miguel: 6.6.01 - Remédios/Lagoa (1 spec).

Distribution: Santa Maria, São Miguel, Terceira, Faial*, São Jorge, Graciosa, Flores, Corvo. Palearctic, Afrotropical and Oriental.

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