

Records of Macrolepidoptera from Corvo Island, Azores

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Abstract. An annotated list of butterflies and moths collected or observed on Corvo island (Azores) during September 11–13, 2002, is provided. Twenty six species are recorded (2 Pieridae, 2 Nymphalidae, 2 Geometridae, 2 Sphingidae and 18 Noctuidae), six of which are new to this island: *Cleora fortunata azorica* Pinker, 1971, *Macroglossum stellatarum* (Linnaeus, 1758), *Chrysodeixis chalcites* (Esper, 1789), *Helicoverpa armigera* (Hübner, [1808]), *Acantholeucania loreyi* (Duponchel, 1827), and *Agrotis ipsilon* (Hufnagel, 1766). This brings the total number of species recorded from Corvo to 44.

Résumé. L'auteur présente une liste annotée de 26 espèces de Macrolépidoptères récoltés ou observés dans l'île de Corvo, archipel des Açores, du 11 au 13 Septembre 2002. Parmi ces 26 espèces (2 Pieridae, 2 Nymphalidae, 2 Geometridae, 2 Sphingidae et 18 Noctuidae), parmi lesquelles six sont rapportées pour la première fois de cette île : *Cleora fortunata azorica* Pinker, 1971, *Macroglossum stellatarum* (Linnaeus, 1758), *Chrysodeixis chalcites* (Esper, 1789), *Helicoverpa armigera* (Hübner, [1808]), *Acantholeucania loreyi* (Duponchel, 1827), et *Agrotis ipsilon* (Hufnagel, 1766). La liste totale des espèces mentionnées de cette île s'élève maintenant à 44.

Key words. Lepidoptera, Azores, Corvo, endemism, new records.

Introduction

The Azores are an volcanic archipelago situated on the eastern slope of the Mid-Atlantic ridge rising from depths of 2000 m. The archipelago is composed of nine inhabited islands of which Corvo is the smallest (17 km²) and the northwesternmost. The geographical position of Corvo is 39°40'–43'N and 31°5'–8'W and the maximum altitude is 718 m at Estreito. Because of its outermost position within the archipelago, Corvo's lepidopteran fauna is less explored than that of all the other Azorean islands. The earliest records on Lepidoptera from Corvo are scattered throughout a very small number of publications (Drouët 1861; Godman 1870; Sousa 1985a, 1991; Vieira & Pintureau 1991; Vieira 1994), and generally provide vague information on the species. A preliminary checklist including 28 species and subspecies, of which 25 were new records for Corvo, was elaborated by Vieira & Tavares (1995). The present contribution deals with butterflies and moths records obtained during a recent visit to Corvo.

Material and methods

An arthropod survey was conducted on Corvo island during September 11–13, 2002, of which the results concerning Macrolepidoptera are treated here. For the collection of lepidopterous specimens, the following techniques were used: (i) an adapted Pennsylvania light trap, with a TLD 15 W/05 lamp, fed 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) and larvae (compare also Vieira 1994; Vieira & Tavares 1995). The taxonomy and nomenclature used is adapted from Vives Moreno (1994), Vieira & Tavares (1995), Vieira

(1997) and Carvalho *et al.* (1999), for the *Hipparchia azorina* species group from Tennent & Sousa (2003) and Fujaco *et al.* (in press). Place, date, number of specimens captured or observed were recorded for each species and ecological observations were noted. Records of the occurrence of the treated taxa in other Azorean islands and in the other Macaronesian archipelagos are given according to published data (e.g. Vieira 1997; Carvalho *et al.* 1999; Vieira 2002). Species here recorded from Corvo for the first time are marked with +, and those which are endemic to the Azores archipelago are marked with *.

List of species

Family PIERIDAE

Colias crocea (Fourcroy, 1785)

CORVO: 11–13.ix.2002 – Common throughout the island, namely at Vila Nova do Corvo, the airport, Engenhos, Forno Velho, Pico João de Moura, and Caldeirão. The larvae and adults of *C. crocea* feed on *Medicago*, *Trifolium*, and *Lotus* flowers. *Colias crocea* is common in the Azorean islands. A single specimen of var. *helice* Hübner, a female form in which the normal orange yellow coloration is replaced by creamy-white, was observed at Vila Nova do Corvo, on 12.ix.2002. *Colias crocea* is considered a migratory indigenous species in the Azores archipelago.

Pieris brassicae (Linnaeus, 1758)

*ssp. *azorensis* Rebel, 1917

CORVO: 11–13.ix.2002 – Larvae, pupae, and adults were very common throughout the island at low altitudes, especially close to cultivated Brassicaceae plants (Vila Nova do Corvo). *Pieris brassicae* is represented in the Azores by the endemic subspecies *azorensis* Rebel, 1917. The larvae cause very important economic damage to their preferred food plants (*Brassica oleracea* L.). However, some natural enemies in the Hymenoptera (see Vieira 1994) certainly facilitate the biological control of both larva and pupa of this horticultural pest. The local people call *P. brassicae* the “bicha da couve” and “borboleta da couve”.

Family NYMPHALIDAE

Vanessa atalanta (Linnaeus, 1758)

CORVO: 12.ix.2002 – At the port of Vila Nova do Corvo two *V. atalanta* larvae were feeding on *Parietaria judaica* L. (Urticaceae); a pupa suspended on this hostplant was also observed. This holarctic species is considered a migrant indigenous to the Azores archipelago.

**Hipparchia azorina* (Strecker, 1899)

ssp. *occidentalis* (Bivar de Sousa, 1982)

CORVO: 12.ix.2002 – Caldeirão: An old specimen flying. This Azorean endemic subspecies was observed on the external slope of Caldeirão (between ± 600–800 m). It is not common presently on the island. The foodplant of *H. azorina* larvae is *Festuca jubata* Lowe (Poaceae), which grows only in mountainous regions.

Remarks: In order to clarify the controversial taxonomy of this Azorean taxon see, for example, Meyer (1991a), Olivier & Coutsis (1997), Sousa (1999), Tennent & Sousa (2003), and Fujaco *et al.* (in press).

Family GEOMETRIDAE

Cleora fortunata Blachier, 1887

*+ssp. *azorica* Pinker, 1971

CORVO: 12.ix.2002 – Pico João de Moura: A male captured in a black light trap. Larvae feed on *Myrica faya* (Myricaceae), *Erica scoparia azorica* (Ericaceae), *Myrsine africana* var. *retusa* (Myrsinaceae), *Viburnum tinus subcordatum* (Caprifoliaceae). *Cleora fortunata* is an endemic species to Macaronesia, represented in the Azores by the endemic subspecies *azorica* Pinker, 1971 (Pinker 1971).

Gymnoscelis rufifasciata (Haworth, 1809)

CORVO: Pico João de Moura: 12.ix.2002 – Two adults captured in a light trap.

Remarks: Palearctic species recently recorded from Corvo island by O. Karsholt (Vieira, Borges, Karsholt & Wunderlich, submitted). Recently introduced into the Azores (Sousa 1991), although it had been previously recorded by Carthy (1957).

Family SPHINGIDAE

Agrius convolvuli (Linnaeus, 1758)

CORVO: 11-13.ix.2002 – Vila Nova do Corvo (Matriz and Cascalho): Larvae common on *Ipomoea batatas* (L.) (Convolvulaceae); 1♂, 6♀ were captured on “Boas noites” plants, i.e. *Mirabilis jalapa* L. (Nyctaginaceae). Several adults flying under a streetlight at Vila Nova do Corvo. Eggs were found on *I. batatas*. Larvae were attacking *I. batatas*, a preferred hostplant, causing serious damage.

The local people call *A. convolvuli* the “bicho batate”, “batato”, and “besouro”. A subtropical species which migrates in the Azorean archipelago.

+*Macroglossum stellatarum* (Linnaeus, 1758)

CORVO: 12.ix.2002 – Pico João de Moura: One adult flying. 13.ix.2002 – Vila Nova do Corvo (airport gare): one adult flying. Larvae feed on *Galium* and *Rubia* plants (Rubiaceae), of which some species exist in this island, although larvae were not seen. Palearctic diurnal migrant in the Azores.

Family NOCTUIDAE

Hypena obsitalis (Hübner, [1813])

CORVO: 11-12.ix.2002 – Vila Nova do Corvo (Caminho da Horta Funda): Two adults flying. Larvae feed on *Parietaria* and *Urtica* plants. 12.ix.2002 – Poço Velho: One specimen in a light trap.

Autographa gamma (Linnaeus, 1758)

CORVO: 12.ix.2002 – Vila Nova do Corvo (Matriz): One adult flying in *B. oleracea* culture, but not captured. 12.ix.2002 – Pico João de Moura: One ♂ captured in a black light trap.

Thysanoplusia orichalcea (Fabricius, 1775)

CORVO: 11.ix.2002 – Vila Nova do Corvo: Two adults and one pupa observed on *I. batatas* crop.

Ctenoplusia limbirena (Guenée, 1852)

CORVO: 11-12.ix.2002 – Vila Nova do Corvo (Matriz): Two adults under streetlights. 12.ix.2002 – Forno Velho: 4 adults captured in a light trap.

+*Chrysodeixis chalcites* (Esper, 1789)

CORVO: 12.ix.2002 – Vila Nova do Corvo: One adult captured under lights of EDA building.

+*Helicoverpa armigera* (Hübner, [1808])

CORVO: 11-13.ix.2002 – Vila Nova do Corvo: Larvae were very common in field crops of *Zea mays*; some larvae found on *Lycopersicum esculentum* fruits; various adults flying under streetlights. 11-12.ix.2002 – Pico do João Moura: 13 adults captured in light trap. Recently, *H. armigera* became an important pest of *Z. mays* in the archipelago.

Galgula partita Guenée, 1852

CORVO: 11-12.ix.2002 – Poço Velho and Vila Nova do Corvo: One adult observed each day at each site, but they were not captured. Subtropical species, originates from the New World.

Sesamia nonagrioides (Levebvre, 1827)

Not observed in 2002, but captured in 1993 (Vieira & Tavares 1995).

Phlogophora meticulosa (Linnaeus, 1758)

CORVO: 12.ix.2002 – Pico João de Moura: Three adults captured in a light trap. Larvae polyphagous on various plants (cf. Vieira 1997).

**Mesapamea storai* (Rebel, 1940)

CORVO: 12.ix.2002 – Pico João de Moura: One adult captured in a light trap.

+*Acantholeucania loreyi* (Duponchel, 1827)

CORVO: 12.ix.2002 – Pico João de Moura: One adult captured in a light trap. Cosmopolitan species with tropical to subtropical distribution.

Pseudaletia unipuncta (Haworth, 1809)

CORVO: 11-12.ix.2002 – 33♂, 34♀, Pico João de Moura. Larvae and adults were generally common throughout the island. Some larvae were observed on pasture grasses (e.g. Rebentão, Poço Velho, Pico João de Moura) and on *Zea mays* (e.g. Vila Nova do Corvo). At Vila Nova do Corvo adults were seen under streetlights. *Pseudaletia unipuncta* is the most important economic pest of the Azorean pasture grasses. It is considered a non-seasonal migrant species in the archipelago (Vieira 2000).

Tab 1. The Macrolepidoptera taxa recorded from Corvo in 2002 with indications of their distribution in the Azores, and other Macaronesian archipelagoes (Madeira, Canaries, Cape Verde). Numbers and percentages of the taxa from Corvo in relation with other islands are given. Azores: Co = Corvo, Fl = Flores, Gr = Graciosa, Jo = São Jorge, Fa = Faial, Pi = Pico, Te = Terceira, Mi = São Miguel, Ma = Santa Maria. Zoogeographical distribution (Dist.): E = Endemic, P = Palearctic, H = Holarctic, T = Tropical, ST = Subtropical, AM = Asiatic-Mediterranean, EA = Euroasiatic, ET = Ethiopian, C = Cosmopolitan. * = Taxon endemic to the Azores, + = new records from Corvo island.

	Azores									Madeira	Canary islands	Cape Verde	Dist.
	Co	Fl	Gr	Jo	Fa	Pi	Te	Mi	Ma				
<i>Cobus crocea</i>	x	x	x	x	x	x	x	x	x	x	x	.	P
<i>Pieris brassicae azorensis</i> *	x	x	x	x	x	x	x	x	x	.	.	.	E
<i>Vanessa atalanta</i>	x	x	.	x	x	x	x	x	x	x	x	.	H
<i>Hipparchia azorina occidentalis</i> *	x	x	.	.	.	.	.	.	.	.	.	.	E
<i>Cleora fortunata azorica</i> *+	x	x	x	x	x	x	x	x	x	.	.	.	E
<i>Gymnoscelus rufifasciata</i>	x	.	.	x	x	.	x	x	x	.	.	.	P
<i>Agrus convolvuli</i>	x	x	.	x	x	x	x	x	x	x	x	x	ST
<i>Macroglossum stellatarum</i> +	x	x	x	.	x	x	.	x	x	x	x	.	P
<i>Hypena obsitalis</i>	x	x	x	.	x	x	x	x	x	x	x	.	AM
<i>Autographa gamma</i>	x	x	x	x	x	x	x	x	x	x	x	.	P
<i>Thysanoplusia orichalcea</i>	x	x	x	x	x	x	x	x	x	x	x	x	T/ST
<i>Ctenoplusia limbirena</i>	x	x	x	x	x	x	x	x	x	x	x	x	ET
<i>Chrysodeixis chalcites</i> +	x	x	x	x	x	x	x	x	x	x	x	x	T/ST
<i>Helicoverpa armigera</i> +	x	x	x	.	x	.	x	x	x	x	x	x	T/ST
<i>Galgula partita</i>	x	x	x	x	x	x	x	x	x	x	x	.	ST
<i>Sesamia nonagrioides</i>	x	x	x	x	x	x	x	x	x	x	x	x	ST
<i>Phlogophora meniculosa</i>	x	x	x	x	x	x	x	x	x	x	x	.	AM
<i>Mesapamea storat</i> *	x	x	.	x	x	x	x	x	.	.	.	.	E
<i>Acantholeucania loreyi</i> +	x	.	x	.	x	.	.	x	x	x	x	x	C
<i>Pseudalena unipuncta</i>	x	x	x	x	x	x	x	x	x	x	x	.	C
<i>Noctua pronuba</i>	x	x	.	x	x	x	x	x	x	x	x	.	EA
<i>Noctua atlantica</i> *	x	x	x	x	x	x	x	x	.	.	.	.	E
<i>Xestia c-nigrum</i>	x	x	x	x	x	x	x	x	x	x	.	.	H
<i>Peridroma saucia</i>	x	x	x	x	x	x	x	x	x	x	x	x	C
<i>Agrotis ipsilon</i> +	x	x	x	x	x	x	x	x	x	x	x	.	C
<i>Agrotis segetum</i>	x	x	x	x	x	.	x	x	x	x	x	x	P
Total number of species	26	24	20	21	25	21	23	25	23	20	19	9	
Percentage (%)	100	92	77	81	96	81	88	96	88	77	73	35	

Noctua pronuba (Linnaeus, 1758)

Not observed in 2002, but captured by the author in 1993 (Vieira 1994, Vieira & Tavares 1995).

**Noctua atlantica* (Warren, 1905)

CORVO: 12.ix.2002 – 1♂, 1♀, Pico João de Moura, captured in a light trap.

Xestia c-nigrum (Linnaeus, 1758)

CORVO: 11–12.ix.2002 – 15♂, 4♀, Pico João de Moura, captured in a light trap.

Peridroma saucia (Hübner, [1808])

CORVO: 11–12.ix.2002 – 26♂, 42♀, Pico João de Moura and Poço Velho, captured in a light trap. Cosmopolitan migrant species with neotropical origin.

+*Agrotis ipsilon* (Hufnagel, 1766)

CORVO: 11–12.ix.2002 – 3♂, 3♀, Pico João de Moura and Poço Velho. A migrant species in the Azores with a cosmopolitan distribution.

Agrotis segetum ([Denis & Schiffermüller], 1775)

CORVO: 11–12.ix.2002 – 9♂, 24♀, Pico João de Moura and Poço Velho.

Conclusions

During a short visit on Corvo island from September 11–13, 2002, a total of 26 Macrolepidoptera species were recorded, of which six are first records for the island: *Cleora fortunata azorica*, *Macroglossum stellatarum*, *Chrysodeixis chalcites*, *Helicoverpa armigera*, *Acantholeucania loreyi*, and *Agrotis ipsilon*, rising the total number of Macrolepidoptera recorded from Corvo to 44 (cf. Vieira & Tavares 1995). This is about half the number of the 60 known Macrolepidoptera species from the Azores (Vieira 1997, 1998). None of them is endemic to Corvo or has been found exclusively on this island (Table 1), but *H. azorina occidentalis* seems to be restricted to Flores and Corvo (see Sousa 1985a; Olivier & Coutsis 1997; Tennent & Sousa 2003; Fujaco *et al.*, in press). Most taxa have been recorded on the central and eastern islands of the archipelago, as well as in other Macaronesian archipelagos (Table 1). The relatively low number of species recorded from Corvo might be due to insufficient collecting, as well as the small size of the island. More fieldwork needs to be conducted for a comprehensive account on the composition of the lepidopteran fauna of Corvo. The same holds true for other arthropod taxa, which were captured during the field trip as well. The Microlepidoptera have been studied already and will be reported on separately (Vieira, Borges, Karsholt & Wunderlich, submitted).

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References

- Carthy, J. D. 1957. Aspects of the fauna and flora of the Azores. XI. Lepidoptera. – *Annals and Magazine of Natural History, including Zoology, Botany and Geology* (ser. 12) **10**: 209–214.
- Carvalho, J. P., V. Vieira & M. U. P. Carvalho 1999. Borboletas nocturnas dos Açores. – *In*: Amigos dos Açores, Ponta Delgada. 115 pp.
- Drouët, H. 1861. *Eléments de la faune Açoréenne*. – *In*: J. B. Baillière & Fils, Librairie de l'Académie de Médecine, Paris. 245 pp.
- Fujaco, A., D. Mendonça, P. A. V. Borges, M. Laimer & A. de Câmara Machado (in press). Interpret *Hipparchia azorina* superspecies complex taxonomy and biogeography based on mtDNA analysis. – *Biological Journal of the Linnean Society*.
- Godman, F. D.-C. 1870. *Natural History of the Azores, Western Islands*. – John Van Voorst & Paternoster Row, London. 358 pp.
- Meyer, M. 1991a. Les Lépidoptères de la région macaronésienne, I. Papilionoidea des Açores: "Checklist" et observations en juillet-août 1990 (Lepidoptera: Rhopalocera). – *Linneana Belgica* **13** (3): 99–116.
- Meyer, M. 1991b. Les Lépidoptères de la région macaronésienne, II. Liste des Macro-Hétérocères observés en juillet-août 1990 aux Açores (Lepidoptera: Geometridae, Sphingidae, Noctuidae). – *Linneana Belgica* **13** (3): 117–134.
- Olivier, A. & J. G. Coutsis 1997. A revision of the superspecies *Hipparchia azorina* and of the *Hipparchia aristaeus* group (Nymphalidae: Satyrinae). – *Nota lepidopterologica* **20** (3-4): 150–192.
- Pinker, R. 1971. Neue und interessante Lepidopteren aus Madeira und den Azoren mit faunistischen Hinweisen auf die Kanaren. – *Zeitschrift der Wiener entomologischen Gesellschaft* **54**: 101–131.
- Sousa, A. B. de 1985a. Duas novas subespécies de *Hipparchia azorina* (Lepidoptera, Satyridae) dos Açores: *H. azorina barbara* n.ssp. e *H. azorina minima* n.ssp. respectivamente das ilhas Terceira e Corvo. – *Boletim da Sociedade portuguesa d'Entomologia* (Supl. 1): 375–382.

- Sousa, A. B. de 1991. Novas citações de Lepidópteros para os Açores. – Boletim da Sociedade portuguesa d'Entomologia **133** (V-1): 1–15.
- Sousa, A. B. de 1999. Catálogo dos Lepidópteros Papilionoidea, Nymphaloidea, Lycaenoidea e Hesperioida de Portugal (Continente, Açores, Madeira e Selvagens). – Boletim da Sociedade portuguesa d'Entomologia **2**: 1–13.
- Tennent, W. J. & A. B. de Sousa 2003. Notes on *Hipparchia* taxa from the Azores, with the description of a new subspecies of *H. miguensis* from the island of Terceira (Lepidoptera, Nymphalidae, Satyrinae). – Entomologist's Gazette **54**: 7–24.
- Vieira, V. 1994. Contributions to the Arthropoda fauna of the Corvo island (Azores). – Arquipélago (Life and Marine Sciences) **12A**: 51–56.
- Vieira, V. 1997. Lepidoptera of the Azores Islands. – Boletim do Museu Municipal de Funchal **49** (273): 5–76.
- Vieira, V. 1998. Biogeografia dos Lepidópteros (Insecta, Lepidoptera) dos Açores. – Revista Biologica, Lisboa **16**: 87–106.
- Vieira, V. 2000. Comparações biológicas entre populações continentais e insulares de *Pseudaletia unipuncta* (Haworth) (Lepidoptera: Noctuidae). Tese de Doutoramento. – Universidade dos Açores, Ponta Delgada. 166 pp.
- Vieira, V. 2002. New records and observations on Macrolepidoptera (Insecta: Lepidoptera) from the Azores islands. – Arquipélago (Life and Marine Sciences) **19A**: 55–65.
- Vieira, V., P. Borges, O. Karsholt & J. Wunderlich (submitted). Checklist of the Arthropoda fauna from the Corvo island (Azores) with some new records. – Vieraia.
- Vieira, V. & B. Pintureau 1991. Diversité comparée des Lépidoptères (Insecta) dans les îles des Açores. – Arquipélago (Life and Earth Sciences) **9**: 25–35.
- Vieira, V. & J. Tavares 1995. A checklist of the Lepidoptera from Corvo island (Azores). – Açoreana **8** (1): 79–89.
- Vives Moreno, A. 1994. Catalogo sistematico y sinonimico de los Lepidopteros de la Peninsula Iberica y Baleares (Insecta: Lepidoptera) (Segunda Parte). – MAPA/DGSPA, Madrid. 775 pp.