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A FEW INTRODUCTORY NOTES ON THE LEAFHOPPERS (HOMOPTERA, AUCHENORRHYNCHA, CICADELLIDAE) OF MADEIRA AND THE SALVAGES ⁽¹⁾

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ABSTRACT

The author makes a few comments on the thirty-eight species of leafhoppers which have been recorded so far from the archipelagos of Madeira and the Salvages. Some of these records need further checking and the remarkable Macaronesian character of this fauna is pointed out. Specific endemisms are considered (i) for the Madeira archipelago only (including Porto Santo and the Desertas), (ii) the Salvages, (iii) Madeira combined with the Canaries, and (iv) the Azores, Madeira, and the Canaries combined.

RESUMO

Algumas notas introdutórias sobre as cigarrinhas (Homoptera, Auchenorrhyncha, Cicadellidae) da Madeira e das Selvagens. — O autor apresenta alguns comentários preliminares sobre as trinta e oito espécies de cigarrinhas que foram descobertas até hoje nos arquipélagos da Madeira e das Selvagens. Algumas das citações requerem, contudo, confirmação. É de salientar que o carácter macaronésico da fauna cicadológica destas ilhas é notável. Neste contexto, são referidos os endemismos específicos respectivamente para as seguintes ilhas ou grupos de ilhas: (i) o arquipélago da Madeira (incluindo Porto Santo e as Desertas); (ii) ilhas Selvagens; (iii) Madeira e Canárias; e (iv) Açores, Madeira e Canárias.

This is part of a major project which aims at a later stage (a) to produce an annotated check-list of all leafhoppers occurring at present in Madeira and the Salvages, and (b) to provide further information on the distribution, zoogeography and ecology of all endemic leafhoppers for the area. This latter objective is made with a view one may eventually prepare a global Island Database sheet with suggestions for the protection of all interesting biotic communities still present in these islands.

⁽¹⁾ It is a great pleasure to have been invited to participate in this tribute to honour Prof. Santos Júnior. First, I had the privilege to lecture on Zoology at the University of Luanda (Angola) under his guidance, as well as to have made with him several collecting trips in magnificent and delightful areas such as in Angola and the Salvages. Second, I owe him a keen interest in my entomological studies which helped me considerably during my first years as a starting zoologist. Last, but not least, I also owe Prof. Santos Júnior the subtle realization that if there is any secret in life this lies undoubtedly in the search for beauty.

This project was initiated in 1971 when a first visit was paid to Madeira and the Salvages. This was made possible due to the kindness of Prof. Santos Júnior, who conducted interesting studies on the biology and migrations of the shearwaters of the Salvages (Santos Júnior, 1971).

Interesting material involving the *Homoptera Auchenorrhyncha* was collected then (Linnavuori, 1974), but the project was set aside in favour of African studies until 1980, when a zoological expedition was set out to these islands (Quartau, 1981a). Since then, several short visits were paid again, leafhoppers and other Homoptera having been collected (Quartau, 1981b, 1984; Quartau & André, 1991). As such it seemed appropriate to make now a few comments even if of a preliminary nature.

Brief description of the islands

The Madeira Archipelago

Madeira is the main island of an archipelago located in the Atlantic Ocean about 850 km south-west of Portugal and about 540 km west of the African continent (Morocco).

Madeira supports a generally lush sub-tropical vegetation, except at the beaches and along the sublittoral zone, atop the high central mountains, and at the subdesertic Paúl da Serra. The biotic communities represented are varied and range from rocky or the rare sandy beaches, to sublittoral scrub, to cultivated fields and vineyards, and to evergreen laurel and heath woodlands as well as to grassland communities and barrens in the central mountains (Gangwere, 1987).

The laurel and heath woodlands, which occupy the mountain zone between 600 and 1,300 m altitude in the southern sector of the island and come down to about 300 m in the northern area, is of great scientific interest since some of the species are very closely related to others that in the Tertiary were part of the western European flora. And while these species were destroyed or disappeared on the European continent on account of the glaciations that followed during the Quaternary, they persisted in the North Atlantic Islands, sheltered in these areas which were not subjected to the influence of the intense climatic coolings (Vieira *et al.*, undated).

Typical trees of the laurel woods are Til (*Ocotea foetens*), Vinhático (*Persea indica*), Loureiro (*Laurus azorica*), Barbusano (*Appolonias barbuiana*), Faia (*Myrica faya*), Folhado (*Clethra arborea*) and Pau Branco (*Piconea excelsa*). At higher altitudes heaths predominate instead and of these the most common are the tree heaths, Urze molar (*Erica arborea*) and Urze durázia (*E. scoparia*), with which the Madeira bilberry (*Vaccinium maderense*) is commonly associated.

Porto Santo is the second largest island in the Madeira group and the only inhabited besides Madeira. It is dry and arid, with a lowland xerophytic vegetation, being the native terrestrial flora depauperate. Much smaller and also barren are the Desertas (Ilhéu Chão, Deserta Grande and Bugio), three small uninhabited islands at about 30 km away from Madeira at the nearest point.

The Salvages

The Salvages (Ilhas Selvagens) are a group of three dry, small and usually uninhabited islands: Great Salvage (Selvagem Grande), Small Salvage (Selvagem Pequena) and Little Piton (Pitão Pequeno). This group lies about 250 km SSE of Madeira and slightly nearer to the Canaries than to Madeira. By decree of 29 October 1971, this group is an Integral Nature Reserve under the Portuguese Government. Besides a peculiar avifauna and an interesting entomofauna these islands have got a xerophytic floristic community of considerable scientific interest, since it probably provides unique evidence of the terrestrial original spontaneous vegetation in the area, having been scarcely visited by man.

The leafhoppers of Madeira and the Salvages

As referred to before, all islands of the two archipelagos are mostly dry and barren, except of course Madeira with a lush sub-tropical vegetation especially in the interior deep ravines. In spite of this, leafhoppers may be found not only in Madeira but practically within all the terrestrial biotic communities of the islands.

The total number of species of leafhoppers known so far to the area is 38, being 32 present in the island of Madeira, 12 in Porto Santo, and four in the Desertas as well as in the Salvages (see Appendix).

It is interesting to note that the Macaronesian character of the leafhopper fauna of the islands is remarkable. In fact, there are eight species endemic to the Madeira archipelago (*Aphrodes brachyptera*, *Asianidia albula*, *A. atlantica*, *A. chinai*, *A. insulana*, *A. madeirensis*, *Euscelis ormaderensis* and *Typhlocyba maderae*), one to the Salvages (*Brachypterona vieirai*), six to the Madeira archipelago and the Canaries only (*Asianidia chrysanthemi*, *A. decolor*, *A. vallicola*, *Empoasca canariensis*, *Eupteryx capreola* and *Penthimia irrorata*), and one to the Azores, Madeira and the Canaries combined (*Balclutha pellucens*).

It is also worthwhile noting that a few previous records may have been misidentifications or even refer to species that may have become locally extinct, what calls for further checking.

Moreover, taking into account the geographical situation of these islands, the prevailing wind systems, and the dominant Palaearctic component of today's leafhopper fauna it is likely that Madeira has been mostly colonized from the Euro-African mainland through aerial dispersal.



Fig. 1 — Great Salvage, a couple of miles away (May of 1980, author's photograph)



Fig. 2 — Prof. Santos Júnior, plateau of the Great Salvage during the IXth Ornithological Expedition to the Salvages (September or 1971, author's photograph)

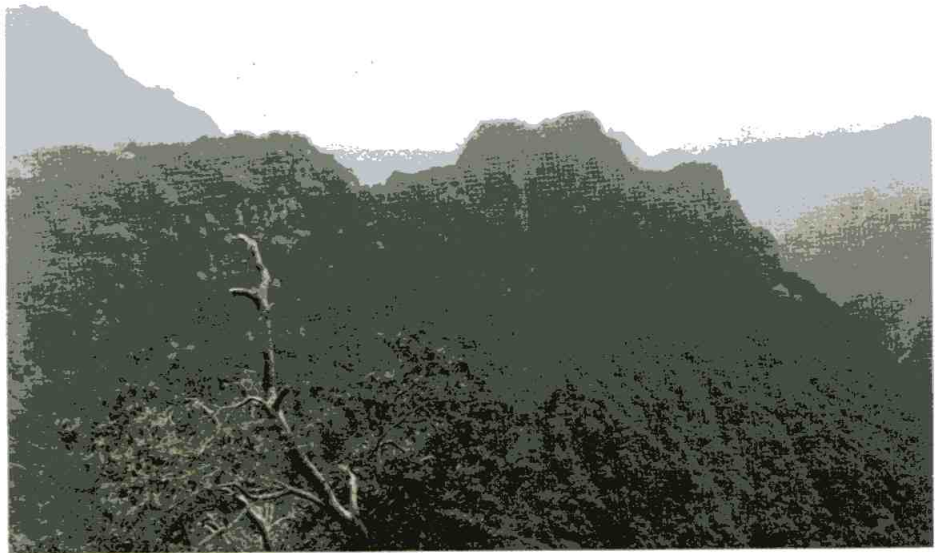


Fig. 3 — Madeira island: laurel and heath woodlands in the central mountains
(May of 1980, author's photograph)



Fig. 4 — Madeira island: view of a deep valley at Fajã da Nogueira with a luxuriant vegetation of heaths and laurels (May of 1980, author's photograph)

APPENDIX

1. List of leafhoppers recorded for Madeira island:

Aconurella prolixa (Lethierry, 1885).
Anoscopus albifrons (Linnaeus, 1758).
Anoscopus assimilis (Signoret, 1879).
Aphrodes bicincta (Schrank, 1776).
Aphrodes brachyptera (China, 1938).
Austroagallia hilaris (Horváth, 1909).
Balclutha pellucens Horváth, 1909.
Balclutha rosea (Scott, 1876).
Chloropelix canariensis Lindberg, 1936.
Cicadulina zeae China, 1926.
Exitianus capicola (Stål, 1855).
Irinula erythrocephala (Ferrari, 1882).
Macrosteles ossiannilssoni Lindberg, 1954.
Macrosteles ramosus Ribaut, 1952.
? Mocuellus collinus (Boheman, 1850).
Nesophrosyne cellulosa (Lindberg, 1927).
Opsius lethierryi Wagner, 1942.
Penthimia irrorata Horváth, 1909.
Psammotettix alienus (Dahlbom, 1850).
? Psammotettix striatus (Linnaeus, 1758).
Alebra albostriella (Fallén, 1826).
Asianidia albula (Lindberg, 1961).
Asianidia atlantica (China, 1938).
Asianidia chinai (Lindberg, 1961).
Asianidia chrysanthemi (Lindberg, 1954).
Asianidia decolor (Lindberg, 1936).
Asianidia insulana (Lindberg, 1961).
Asianidia madeirensis (China, 1938).
Empoasca canariensis Metcalf, 1955.
Eupteryx capreola Lindberg, 1954.

Eupteryx filicum (Newman, 1853).
Typhlocyba maderae Lindberg, 1961.

2. List of leafhoppers recorded for Porto Santo:

Aconurella prolixa (Lethierry, 1885).
Anoscopus assimilis (Signoret, 1879).
Circulifer haematocephus (Mulsant & Rey, 1855).
Euscelis ormaderensis Remane, 1968.
Exitianus fasciolatus (Melichar, 1911).
Macrosteles ossiannilssoni Lindberg, 1954.
Macrosteles ramosus Ribaut, 1952.
Psammotettix alienus (Dahlbom, 1850).
Asianidia atlantica (China, 1938).
Asianidia chrysanthemi (Lindberg, 1954).
Asianidia vallicola (Lindberg, 1954).
Eupteryx filicum (Newman, 1853).

3. List of leafhoppers recorded for the Desertas:

Anoscopus assimilis (Signoret, 1879).
Euscelis ormaderensis Remane, 1968.
Psammotettix alienus (Dahlbom, 1850).
Asianidia atlantica (China, 1938).

4. List of leafhoppers recorded for the Salvages:

Brachypterona vicirai Quartau, 1981.
Circulifer haematocephus (Mulsant & Rey, 1855).
Exitianus fasciolatus (Melichar, 1911).
Peragallia caboverdensis (Lindberg, 1958).

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