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FURTHER NOTES ON THE COLEOPTEROUS FAUNA OF THE AZORES, WITH SPECULATIONS ON ITS ORIGIN

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ABSTRACT. A list of some new records is given together with a few corrections and other remarks. Six species have not been recorded before from the archipelago. *Rhopalomesites azoricus* Méquignon was found to be inseparable from *R. tardyi* (Curtis): A hypothesis for explanation of some general features of the coleopterous fauna is advanced.

RESUMO. NOTAS ADICIONAIS SOBRE OS COLEÓPTEROS DOS AÇORES, COM COMENTÁRIOS SOBRE A SUA ORIGEM. É fornecida uma lista contendo novos assinalamentos e algumas correcções e outras observações. Seis espécies são assinaladas pela primeira vez para o Arquipélago. *Rhopalomesites azoricus* Méquignon foi considerado inseparável de *R. tardyi* (Curtis). É avançada uma hipótese explicativa de algumas características gerais da fauna de Coleópteros dos Açores.

INTRODUCTION

The base of the list presented below is material collected by my wife and me during an expedition in 1985 to four of the Azores Islands: Flores (31.vii - 8.viii), Pico (8 - 15.viii.), S. Miguel (24 and 25.vii, 15.viii), and S. Maria (26 - 30.vii).

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Nothng being stated to the contrary the species were known before from the archipelago but not from the respective island. The records are followed by a brief information on the general distribution of the species and of occurrence on Madeira and/or the Canary Is. if any.

After the list follows a chapter on some general features of the fauna with an attempt to provide an explanation of the present conditions.

LIST OF SPECIES, WITH CORRECTIONS AND OTHER REMARKS

Hydrophilidae

Cercyon depressus Stephens. Pico, Baixo Grande. West-Europe, North America.

Dactylosternum abdominale (Fabricius). Flores, S. Cruz. Cosmopolite, Madeira, Canary Is.

Ptiliidae

Actidium coarctatum (Haliday). S. Maria. Vila do Porto, swarming in the twilight from sea-weed on the sandy beach. West-Europe, Mediterranean region. Not recorded before from the archipelago.

Acrotrichis thoracica Waltl. Pico, Cabeções do Mistério, on carcass. West-Palaearctic region ; Madeira, Canaries.

Nephanes titan (Newman). Flores, S. Cruz. West-Europe ; Madeira, Canary Is. Not recorded before from the archipelago.

Staphylinidae

Phloeonomus pusillus (Gravenhorst). Pico, Cabeções do Mistério, under bark of a log of *Pinus*. Holarctic ; Madeira, Canary Is.

Carpelimus corticinus (Gravenhorst). Flores, Fajã Grande. Holarctic ; Madeira, Canary Is.

Philonthus politus (Linnaeus). Pico, Cabeções do Mistério. Holarctic ; Madeira.

P. rectangulus Sharp. Flores, S. Cruz. Palaearctic region ; Madeira, Canary Is.

Cafius xantholoma (Gravenhorst). Flores, Fajã Grande, Pico, Baixa Grande. West-Palaearctic. Not previously recorded from the archipelago.

Remus pruinosus (Erichson). Flores, Fajã Grande ; Pico, Baixa Grande ; S. Maria, Vila do Porto, 9.8.1983, s. n. *R. sericeus* Holme, Israelson (1984 : 145), misdetermination.

The species has long been regarded as a synonym of *sericeus* but, as shown by Coiffait (1974 : 189), though very closely related, distinguished by shining forebody and different structure of its aedeagus.

Southern West-Palaearctic region, North-America ; Madeira, Canary Is. Previously recorded from the archipelago but under the name of *sericeus*.

Creophilus maxillosus (Linnaeus). Pico, Cabeções do Mistério, Cosmopolite ; Madeira, Canary Is.

Quedius simplicifrons (Fairmaire). Pico, Cabeço do Redondo. West-Europe ; Madeira, Canary Is.

Tachyporus nitidulus (Fabricius). Pico, Cabeções do Mistério. Holarctic region ; Madeira, Canary Is.

Emplenota albopila (Mulsant & Rey). Pico, Baixa Grande. Mediterranean region.

Phloeopora teres (Gravenhorst). Pico, Cabeções do Mistério and Farrabo, under the bark of logs of *Pinus*. West-Palaearctic region ; Madeira, Canary Is.

Atheta nigra (Kraatz). Flores, S. Cruz, West-Palaearctic region, West-Ethiopias region. Canary Is.

A. fungi (Gravenhorst). Pico, Cabeço do Redondo. Palaearctic region ; Madeira, Canary Is.

A. dilutipennis (Motschulsky). Pico, Madalena. Old World tropical regions ; Madeira, Canary Is.

Xenusa sulcata (Kiesenwetter). Pico, Baixa Grande. West-Europe ; Madeira, Canary Is. ?

Heterota plumbea (Waterhouse). Pico, Baixa Grande ; S. Maria, Vila do Porto. West-Europe ; Canary Is.

Histeridae

Halacritus punctum (Aubé). S. Maria, Vila do Porto. Mediterranean region, West-Africa ; Canary Is. Not recorded before from the archipelago.

Carcinops troglodytes (Paykull). S. Miguel, Ponta Delgada. Therond's (1966 : 19) description fits this species but the species recorded by Therond himself from the Azores is *pumilio* (Erichson). South-America ; Madeira. Not previously mentioned from the archipelago.

Cucujidae

Monotoma longicollis (Gyllenhal). S. Maria, Aeroporto. West-Palaearctic region ; Madeira, Canary Is.

Ahasverus advena (Waltl). Pico, Quinta das Rosas. Cosmopolite ; Madeira ; Canary Is.

Laemophloeus (*Placonotus*) *donacioides* is not synonymus with *granulatus*, as was stated by Israelson (1984), but, according to Lefkovitch (1962 ; 183), a separate species not known from the Azores.

Buprestidae

Agrilus derasofasciatus Lacordaire. Pico, near Madalena, in a heap of cut-off twigs of a vine. West-Palaearctic region.

Anobiidae

Stegobium paniceum (Linnaeus). S. Maria, Vila do Porto, dead specimens in an ice-cream cornet. Cosmopolite ; Madeira, Canary Is.

Ptiniidae

Sphaericus gibboides (Boieldieu). Flores, S. Cruz. A general record without information about the island(s) was given by Horion (1961 : 258). Mediterranean.

Coccinellidae

Stethorus punctillum Weise. A *Stethorus*, from Faial and S. Maria, had already been given under the name of *Scymnus minimum* Rossi by Crotch (1867 : 380). Méquignon (1942 : 44) added a record from S. Miguel. After the recent taxonomic revisions which have not considered Azorean material there has been some uncertainty about the populations of the archipelago. Fürsch (1987) records *punctillum* from S. Miguel but with a question-mark because no male was available. I have males from both S. Miguel and S. Maria and therefore can confirm the determination as far as those islands are concerned.

Rodolia cardinalis Mulsant. Flores, S. Cruz. Introduced from Australia into many areas all around the globe ; Madeira, Canary Is.

Lindorus lophanthae (Blaisdall). Flores, S. Cruz. Distribution as foregoing.

Lathridiidae

Lathridius nodifer Westwood. Pico, Quinta das Rosas. Cosmopolite ; Madeira, Canary Is.

Tenebrionidae

Gnathocerus cornutus (Fabricius). Flores, S. Cruz, in the tunnels of larvae of *Hylotrupes bajulus* (Linnaeus) in a piece of board. Cosmopolite ; Madeira, Canary Is.

Cerambycidae

Nathrius brevipennis (Mulsant). S. Miguel, Ponta Delgada, Mediterranean ; Canary Is. Not recorded before from the Azores.

Crotchiella brachyptera Israelson. Pico, Cabeço do Redondo ; S. Miguel, Pico Longo, reared from wood of *Laurus azoricus*, collected 29. vii.1984. The specimens, all females, are all darker than the type form from S. Maria because the brown spots of the elytra are both more numerous and more extensive, indicating a beginning speciation. These finds, both in laurels, confirm the original assumption, in spite of the overwhelming majority in the type series of specimens reared from vine, that this long-horn beetle is a true representative of the old laurisilva fauna. Endemic of the Azores.

Curculionidae

Rhopalomesites tardyi (Curtis). Syn. nov. : *Rh. azoricus* Méquignon (1942a : 10). About *tardyi* Crotch (*op. cit.* : 377) writes : 'After a very careful comparison with English and Irish specimens, I am unable to detect any difference between them, improbable as such identity would at first appear to be.' Nevertheless Méquignon found it justified to describe his *azoricus* based on four specimens from S. Miguel. The characters given to keep the two species apart are however not very precisely defined or they are such as to show a considerable variation within some local populations. I have examined some 40 specimens of *azoricus* and 5 specimens of *tardyi* from Cumbria which were most obligingly placed at my disposal by Mr. R. W. J. Read, Cumbria. The conclusion was that no well-defined boundary line could be found. Mr. Read kindly informed me that a similar comparison carried out by him led him to the same result.

Consequently *azoricus* should be regarded as synonymous with *tardyi*.

Scolytidae

Hylastes attenuatus Erichson. Pico, Cabeções do Mistério, under the bark of a pine log of unknown provenance. Palaearctic region.

H. ater Paykull. Pico, Farrobo, under the bark of a pine log. Palaearctic region.

Hypothenemus eruditus Westwood. Pico, Madalena.

OBSERVATIONS ON THE ORIGEN OF THE FAUNA

In comparison with other Macaronesian archipelagos the coleopterous fauna of the Azores appears to be poor in species. Several more or less probable explanations of the poverty have been proposed. Lindroth (1960) points to the fact that the biotopes are less varied because of the very oceanic climate. The distance to the main sources of recruitment of the fauna, southwestern Europe and northwestern Africa, is greater. The absence of trade winds makes it more difficult for airborne

species to reach the Azores than the other archipelagos. All three factors no doubt exerted their influence. The devastating effects of earlier volcanic activities or flooding of the islands by a general instability of the sea level during Pleistocene glaciations could perhaps be neglected in this connection because these difficulties should have been encountered on the other islands likewise.

Another very striking feature is the poverty of endemics, both absolutely and relatively, indicating a low age of the fauna. But there seem to be exceptions. Lindroth divided his endemics into two groups: palaeo-endemics and neo-endemics. The former have no known closely allied species outside the archipelago and consequently could be supposed to be of high age. The neo-endemics had known close relatives on the other Macaronesian islands or/and the neighbouring continents, indicating a low age.

To the palaeo-endemics Lindroth, restricting himself to the carabids, assigned *Bembidion derelictum* Alluaud and *Agonum aptinoides* Tarnier. The following species of other families could be added: *Atheta aptera* Israelson, *Alestrus dolosus* (Crotch), *Tarphius wollastoni* Crotch with related species, *Crotchiella brachyptera* Israelson, *Neocnemis occidentalis* Crotch and *Acalles droueti* Crotch.

The ancestor of *Tarphius wollastoni* seems to have burst into a swarm of forms which all have the same characteristic nodular pattern. (The surface structure of the elytron is a character of major importance is the taxonomy of the genus.) So far six species have been described, together distributed from one end of the archipelago to the other; half of the species have been recorded from two or three islands. It is of interest that an abundance of *Tarphius* forms is characteristic of the Madeiran and Canarian archipelagos also, each with about a dozen species but it is most unusual that one and the same species occurs on more than one island.

Among the remaining palaeo-endemics no less than four are known, three of them exclusively so, from Flores, the westernmost of the islands, which therefore stands first in respect of representatives of this group.

The neo-endemics form a more numerous and rather heterogenous assemblage which has been rapidly growing during the past decade owing to intensified exploration. Some of them are "weak" species, only slightly differing from the closest relation, a few being classified as subspecies. Clear examples of speciation by isolation on different islands are not common but occur, such as in *Calathus.*

The palaeo-endemics could be supposed to be the poor remains of a once much richer fauna flourishing during one or more of the past interglacials but being nearly erased by particularly unfavourable conditions occasioned by some glaciation in between.

This seems probable simply by the fact that the Azores are the northernmost of the Macaronesian archipelagos and obviously should have

suffered most from the influence of the glaciations. Direct evidence is difficult to provide. Some support can be had from Bradley's (1989) textbook on palaeoclimatology. Of particular interest seems the information about the surface temperatures of the North-Atlantic which, in a zone in latitudes of about 40° - 50 N, were suggested to have been the subject of dynamic changes while, in a more southern zone, they were more stable. This condition would have persisted down to 18000 years BP (a short time in this connection) in the first place but is believed to have been characteristic of a much longer time.

It is not unlikely that the Azores in the interval of 37° - 40° N were situated in the northern zone but the Madeira Is. of 32° - 33° N and the Canary Is. of 27° - 29° N in the southern. This would offer a so far somewhat hypothetical explanation of the pecularíarities of the fauna of the former archipelago.

The arrival of man some five hundred years ago at the then well forested archipelago implied a continued loss of environments suitable for an unknown number of species. Some of those still survive but are more or less seriously threatened by complete eradication. *Agonum aptinoides, Neocnemis occidentalis,* and *Acalles droueti,* above regarded as palaeoendemics, are examples of species for which there seems to have been no record at ali for more than a century !

On the other hand growing international contacts have, mostly unintentionally, brought quite a number of species into the islands. Cedercreutz (1941) estimated the number of species of indigenous vascular plants to be only a third of the total flora, probably less. Though in this case many species have certainly been introduced on purpose, the figure could, at a guess, hold good for the beetle fauna also.

Several introduced insects have no doubt met with insuperable difficulties in their attempts to find a suitable niche for themselves and therefore as a rule left no trace. But a perhaps surprisingly large number of anthropochorous species from the four corners of the world managed to establish themselves and will remain for long times. Here only a single instance of a successful immigration will be mentioned. The originally South American flea-beetles *Epitrix cucumeris* Harris and *hirtipennis* Melsham are also in North-America well-known pests on potato- and tobacco-plants but they may also live on several other Solanaceae ; on the Azores they are found on *Solanum nigrum* and *Hyoscyamus niger,* probably also on some other species of the family which is represented by more than 20 species none of which is indigenous.

LITERATURE CITED

Bradley, S. S. :
1989. Quaternary paleoclimatology.

Coiffait, H. :
1974. Coléoptères Staphylinidae de la Région Paléarctic occidentale, II. *Publ. Nouv. Rév. Ent.* (*Suppl.*) IV, 4. 593 p.

Crotch, G. :
1867. On the Coleoptera of the Azores. *Proc. Zool. Soc. London* 1867:359-391.

Fürsch, H. :
1987. Die Scymninae der Kanaren, Azoren und Madeira (Coleoptera Coccinellidae. *Acta Coleopt.* 3:1-114.

Horion, A. :
1961. *Faunistik der Mitteleuropäischen Käfer,* 8:258 p.

Israelson, G. :
1984. Coleoptera from the Azores. *Bol. Mus. Mun. Funchal.* 36:142-161.

Lefkovitch, L. P. :
1962. A revision of African Laemophloeinae (Coleoptera ; Cucujidae). *Bull. Brit. Mus.* (*N. H.*), *Entom.* 12, 4:167-245.

Lindroth, C. H. :
1960. The ground-beetles of the Azores (Coleoptera : Carabidae) with some reflexions on over-seas dispersal. *Bol. Mun Mus. Funchal.* 12:5-48.

Méquignon, A. :
1942a. Diagnoses de Coléoptères nouveaux. *Bull. Soc. ent. Fr.* 1942 : 9-11.
1942b. Catalogque des coléoptères Acoréens. *Ann. Soc. ent. Fr.* 61:1-66.

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