

CONTRIBUTION TO THE COLEOPTEROUS FAUNA OF THE AZORES

By GÖSTA GILLERFORS *

ABSTRACT. The results of two excursions in 1983 and 1985 to the Azores are presented. Thirty-four species not previously found in the archipelago are recorded as well as some species new to individual islands. Biological data for certain species are given and the distribution of the novelities is discussed.

SUMARIO. São apresentados os resultados de duas excursões aos Açores em 1983 e 1985. Trinta e quatro espécies ainda não encontradas no arquipélago dos Açores são aqui assinaladas bem como algumas espécies novas para apenas algumas ilhas. São fornecidos dados biológicos de algumas das espécies e a distribuição das espécies agora assinaladas é discutida.

INTRODUCTION

During the summers of 1983 and 1985 the author, accompanied by his friend Dr. Anders Törnvall, made two excursions to the Azores, during the former also in company of Dr. Gunnar Israelson and his wife. In 1983 we visited the islands of S. Maria and S. Miguel, in 1985 also Pico, Faial and Flores.

The list worked out by Serrano (1982) and also the papers by Israelson (1984 and 1985) have been used as a basis to indicate novelities to the whole archipelago or to individual islands. Only species new to the entire archipelago or to individual islands are recorded, except the finds of two species of the Carabids *Trechus torre-tasso*i and *Calathus vicent-eorum*, which are of special interest because of their apparent great scarcity. Asterisks indicate species new to the whole archipelago. All material recorded in the list was collected by the author.

LIST OF SPECIES

Carabidae

Tachys micros Fischer. S. Maria: Vila do Porto, 2.8.1983. On a sandy bank of a small brook. — Covões, 10.8.1983.

* Maskrosstigen 23, S - 432 00 Varberg, Sweden.

T. inaequalis Kolenati. S. Maria: Vila do Porto, 2.8.1983. A single specimen together with the preceding species. Mainly a Mediterranean species.

Trechus torre-tassoii Jeannel. S. Miguel: Lagoa das Furnas, 8.6.1985. Two specimens collected by sifting debris on the lake shore. This species seems to be very rare. Probably not collected since Schatzmayr found the species at Sete Cidades 1935. Endemic.

Perigona nigriceps (Dejan). S. Maria: Pico Alto, 6.8.1983. Under dry cow droppings.

Harpalus rufipes (Degeer). Pico: Lajes do Pico, 25.6.1985.

Calathus vicenteorum Schatzmayr. S. Maria: Chão de João Tomé, 1.7.1985. Three specimens were collected under loose bark of fallen trunks in deciduous forest. Endemic.

* *Dromius notatus* Stephens. S. Maria: Aeroporto, 3.8.1983. Among debris under *Eucalyptus*. Palearctic.

Dytiscidae

Hydroporus guernei Rey. Pico: Lagoa do Caiado, 27.6.1985.

Agabus bipustulatus (Linnaeus). Pico: Lagoa do Caiado, 27.6.1985.

A. godmani Crotch. S. Miguel: Tronqueira, 30.7.1983.

Rhantus suturalis (Macleay) (*punctatus* Fourcroy). Pico: Lagoa do Caiado, 27.6.1985.

Hydrophilidae

Cercyon haemorrhoidalis (Fabricius). S. Maria: Pico Alto, 10.8.1983. — Faial: Horta, 20.6.1985.

* *Cercyon terminatus* (Marsham). S. Miguel: Ponta Delgada, 24.7.1983. In a heap of dung.

Scydmaenidae

* *Euconnus unicus lindbergi* Franz (det. Franz). S. Miguel: Ponta Delgada, 24.7.1983. In a heap of refuse. Faial: Horta, 21.6.1985. The species was described from Madeira.

* *Cephenium distinctum* Besuchet (det. Besuchet). Faial: Capeio, 23.6.1985. Collected by sifting debris and decaying leaves in deciduous forest. A Mediterranean species.

Corylophidae

Arthrolips piceus (Comolli). S. Miguel: Ponta Delgada, 30.7.1983.

Ptiliidae

Acrotrichis sericans (Heer). S. Maria: Pico Alto, 6.8.1983. — Faial: Horta, 20.6.1985.

Staphylinidae

Proteinus atomarius Erichson. Flores: Cedros, Alagoa, 14.6.1985.
Phloeonomus azoricus Fauvel. Pico: Near Lagoa do Caiado, 27.6.1985. Under bark of dead branches of *Euphorbia stygiana*.

Ph. punctipennis Thomson. S. Miguel: Furnas, 8.6.1985. Under bark of a *Pittosporum* trunk. — Flores: Lomba, Rib. Funda, 16.6.1985.

Carpalimus (Trogophloeus) corticinus (Gravenhorst). Flores: Cedros, Alagoa, 14.6.1985.

C. pusillus (Gravenhorst). Flores: Lomba, Rib. Funda, 16.6.1985.

Anotylus (Oxytelus) nitidulus (Gravenhorst). S. Maria: Pico Alto, 6.8.1983.

Platysthetus nitens (Sahlberg). S. Maria: Pico Alto, 30.6.1985. — Flores, Lomba, Rib. Funda, 16.6.1985.

Astenus longelytratus Palm. S. Maria: Pico Alto, 4.8.1983. — Flores: Lomba, Rib. Funda, 16.6.1985.

Rugilus (Stilicus) orbiculatus Paykull. S. Maria: Santana, 7.8.1983. — Flores: Fajã Grande, 17.6.1985.

Medon ripicola (Kraatz). S. Maria: Covões, 10.8.1983. Among wet debris and decaying leaves near a brook.

Hypomedon debilicornis Wollaston. Faial: Horta, 20.6.1985.

H. propinquus Brisout de Barneville. S. Maria: Aeroporto, 11.8.1983. In a heap of grass-cuttings. — Pico: Lajes do Pico, 25.6.1985. Same type of habitat.

Lithocharis (Pseudomedon) obscurella Erichson. S. Miguel: Lagoa das Furnas, 8.6.1985. Among debris on the lake shore.

* *Neobisnius lathrobioides* (Baudi) (cerutti Gridelli). S. Miguel: Tronqueira, 30.7.1983. — Lagoa das Furnas, 8.6.1985. Together with the preceding species.

Philonthus longicornis Stephens. S. Maria: Pico Alto, 6.8.1983.

Heterothops minutus Wollaston. Pico: Madalena, 26.6.1985. Among debris under *Tamarix*.

* *Trichophya pilicornis* (Gyllenhal). S. Miguel: Cerrado dos Bezerros, 26.7.1983.

Sepedophilus lusitanicus Hammond. Faial: Horta, 20.6.1985.

Tachyporus nitidulus (Fabricius). Faial: Horta, 19.6.1985.

* *T. chrysomelinus* (Linnaeus). Flores: Lomba, Rib. Funda, 16.6.1985. Swept on pasture-land. Europe and North America.

Coproporus pulchellus (Erichson). Faial: Horta, 19.6.1985.

Cypha (Hypocyptus) pulicaria (Erichson). Flores: Lomba, Rib. Funda, 16.6.1985. Swept on pasture-land.

Oligota parva Kraatz (det. Williams). S. Maria: Aeroporto, 29.6.1985.

O. pusillima (Gravenhorst) (det. Williams). Faial: Horta, 19.6.1985.

* *Gyrophana bihamata* Thomson. S. Maria: Chão de João Tomé, 1.7.1985. Among spongy debris in the deciduous forest near Pico Alto. Palearctic.

Heterota plumbea (Waterhouse). S. Maria: Praia, 3.8.1983. A halobiontic species probably spread on all the islands of the Azores in suitable localities together with *Remus sericus* Holme.

* *Myrmecopora lohmanderi* Bernhauer. S. Maria: Praia, 8.8.1983. Collected by sifting rotten leaves of *Agave* on a sandy beach. Halobiontic. Recorded from the coasts of the North Sea.

* *M. uvida* (Erichson). S. Maria: Praia, 8.8.1983. Together with the preceding species. Halobiontic. Recorded from the coasts of western Europe.

Amischa analis (Gravenhorst). Pico: Madalena, 26.6.1985.

Aloconota sulcifrons (Stephens). S. Maria: Covões, 10.8.1983.

Atheta (Microdota) amicula (Stephens). S. Maria: Pico Alto, 6.8.1983.

A. (Datomicra) nigra (Kraatz). S. Miguel: Ponta Delgada, 24.7.1983.

A. (Mocyta) laticollis (Stephens). Faial: Horta, 20.6.1985.

A. (Mocyta) fungi (Gravenhorst). S. Maria: Pico Alto, 4.8.1983. — Pico: Cabecinhos, 25.6.1985.

A. (Rhagocneme) zealandica Cameron (*maderense* Likovský). S. Maria: Covões, 10.8.1983. In cow dropping. — Aeroporto, 2.7.1985. In vegetable refuse. According to G. Benick *maderense* is a synonym of *zealandica* (Brinck 1977).

A. atramentaria (Gyllenhal). S. Maria: Pico Alto, 6.8.1983.

A. divisa (Märkel). Pico: Madalena, 26.6.1985. Under a dead thrush.

* *Phloeopora corticina* Wollaston. S. Maria: Monserate, 7.8.1983. Under bark of *Pinus*. — Flores: Lomba, Rib. Funda, 16.6.1985. Under bark of trunks of *Cryptomeria*. In his paper (1980) T. Palm has shown that *Ph. corticina* on the Canary Islands is a well-defined species. The nomenclature of the species within the genus has been very confused. Lohse (1984) has recently studied the genus and has been able to clarify the relationship between the species. It may be possible that some of the three species reported from the Azores (*angustiformis* Baudi, *teres* (Gravenhorst) and *corticalis* (Gravenhorst)) are to be referred to *corticina*.

Aleochara albopila Mulsant. Faial: Horta, 20.6.1985.

Pselaphidae

Pseudoplectus perplexus (Jacquelin du Val). S. Maria: Pico Alto, 4.8.1983.

* *Euplectus infirmus* Raffay (det. Besuchet). Faial: Capeio, 23.6.1985. Among debris and decaying leaves in deciduous forest. Palearctic, mainly southern Europe.

Histeridae

Carcinops pumilio (Erichson) S. Miguel: Ponta Delgada, 24.7.1983.

Saprinus subnitescens Bickhardt. S. Miguel: Ponta Delgada, 24.7.1983. — Pico: Madalena, 26.6.1985. — Faial: Horta, 20.6.1985.

Acritus nigricornis (Hoffmann). S. Maria: Aeroporto, 3.8.1983.

Throscidae

* *Trixagus elateroides* Heer. S. Maria: Aeroporto, 10.8.1983. Distributed mainly in southern Europe. *T. gracilis* Wollaston on the Canary Islands and Madeira is considered a synonym of *elateroides*.

Dryopidae

Dryops algericus Lucas. S. Miguel: Lagoa das Furnas, 28.7.1983. — S. Maria: Aeroporto, 2.8.1983.

Dermestidae

Dermestes frischii Kugelann. Pico: Madalena, 26.6.1985.

D. undulatus Brahm. Pico: Madalena, 26.6.1985. — Faial: Horta, 20.6.1985.

Nitidulidae

Carpophilus fumatus Boheman. Faial: Horta, 20.6.1985.

* *C. marginellus* Motschulsky. Pico: Lajes do Pico, 25.6.1985.

* *C. quadrisignatus* Erichson. S. Maria: Praia, 8.8.1983. Previously considered a subspecies of *hemipterus*, but easily distinguished from that species by the shape of aedeagus.

Meligethes aeneus (Fabricius). Pico: Madalena, 24.6.1985. — Faial: Horta, 19.6.1985. — Flores: Lomba, Rib. Funda, 16.6.1985.

Nitidula carinaria (Schaller). Pico: Lajes do Pico, 25.6.1985.

Omosita colon (Linnaeus). Pico: Lajes do Pico, 26.6.1985.

Cucujidae

Monotoma picipes Herbst. Faial: Horta, 20.6.1985.

Ahasverus advena (Waltl). S. Maria: Aeroporto, 11.8.1983.

Silvanus unidentatus (Fabricius). S. Maria: Covões, 10.8.1983.
Under bark of *Acacia*

Laemophloeus donacioides Wollaston. Pico: Cabecinhos, 27.6.1985. — Faial: Almoxarife, 27.6.1985. — Flores: Cedros, Alagoa, 14.6.1985.

Phalacridae

Stilbus testaceus (Panzer). S. Maria: Aeroporto, 2.8.1983. — Flores: Lomba, Rib. Funda, 16.6.1985.

Latridiidae

Metopthalmus occidentalis Israelson. Faial: Almoxarife, 22.6.1985. Under old bark of a stump of *Acacia*.

* *Corticaria elongata* (Gyllenhal). S. Miguel: Pico Longo, 12.6.1985. Among debris and decaying leaves. Palearctic.

* *C. fagi* Wollaston (*pietschi* Gangelbauer). S. Maria: Aeroporto, 11.8.1983. A single specimen was collected in a dry heap of grass-cuttings. The species was described from Madeira. A Palearctic and very rare species.

* *Migneauxia parvicollis* Peyerimhoff (det. Colin Johnson). S. Maria: Aeroporto, 29.6.1985. In a dry heap of grass-cuttings and leaves. A Mediterranean species, for instance in Algeria.

Colydiidae

Tarphius depressus Gillerfors. S. Maria: Pico Alto, 6.6.1983.

* *T. azoricus* Gillerfors 1986. S. Miguel: Furnas, 28.7.1983. — Pico: Lagoa do Caiado, 27.6.1985. — Flores: Lomba, Rib. Funda, 16.6.1985.

T. tornvalli Gillerfors. S. Miguel: Pico Longo, 8.8.1983. — Pico: Lagoa do Caiado, 27.6.1985. Under bark of dead branches of *Euphorbia stygiana*.

* *T. acuminatus* Gillerfors 1986. Pico: Cabecinhos, 27.6.1985.

* *Dodyronomus lusitanicus* Binaghi. S. Maria: Covões, 19.8.1983. Among debris and decaying leaves together with saw dust in deciduous forest. A Mediterranean species, also known from Madeira.

Cerylonidae

* *Anommatus duodecimstriatus* (Müller). S. Maria: Covões, 10.8.1983. Together with *D. lusitanicus*. — S. Miguel: Cerrado dos Bezerras, 28.7.1983. Widely spread in Europe and also in Madeira.

Coccinellidae

* *Nephus bisignatus* Boheman (det. Fürsch). S. Maria: Santana, 7.8.1983.

* *N. helgae* Fürsch (det. Fürsch). S. Maria: S. Lourenço, 5.8.1983. On *Tamarix*.

Scymnus interruptus (Goeze). Faial: Horta, 20.6.1985.

S. suturalis (Thunberg) (det. Fürsch). S. Maria: Aeroporto, 11.8.1983.

* *S. levaillanti* Mulsant (det. Fürsch, some part of them). S. Maria: Aeroporto, 3.8.1983. — S. Miguel: Ajuda, 27.7.1983. — Pico: Madalena, 24.6.1985. — Faial: Horta, 20.6.1985. — Flores: Fajã Grande, 17.6.1985. By earlier collectors probably confused with *subvillosus* (Goeze).

Myrrha octodecimmaculata formosa (Costa) (det. Fürsch). S. Maria: Aeroporto, 12.8.1983. According to Fürsch the Azorean specimens belong to the subspecies *formosa*.

Sphindidae

* *Sphindus dubius* (Gyllenhal). S. Maria: Monserrate, 7.8.1983. Under bark of the trunk of a fallen *Pinus*. Palearctic.

Cisidae

Atlantocis gillerforsi Israelson. Pico: Cabecinhos, 27.6.1985. Collected by sifting decaying branches of *Laurus* with fungi.

Anobidae

Anobium punctatum (Degeer). Faial: Horta, 21.6.1985. Indoors.

* *Ptilinus cylindripennis* Wollaston. S. Maria: Pico Alto, 30.6.1985. — S. Miguel: Pico Longo, 30.7.1983. — Pico: Cabecinhos, 27.6.1985. — Faial: Horta, 21.6.1985. — Flores: Lomba, Rib. Funda, 16.6.1985. Distributed on Madeira. Previously probably erroneously reported as *P. pectinicornis* (Linnaeus).

Ptinidae

Mezium sulcatum (Fabricius). S. Miguel: Ponta Delgada, 27.7.1983.

Ptinus fur (Linnaeus). S. Maria: Aeroporto, 29.6.1985. — Faial: Horta, 21.6.1985.

Oedemeridae

Nacerda melanura (Linnaeus). Faial: Horta, 20.6.1985. Flying in the streets.

Tenebrionidae

Gonocephalum rusticum Olivier. Faial: Horta, 20.6.1985.

Trachyscelis aphodioides Latreille. S. Miguel: Praia do Pópulo, 8.6.1985. In dune sand.

Phaleria cadaverina (Fabricius). Faial: Horta, 20.6.1985.

Scarabaeidae

Aphodius granarius (Linnaeus). Pico: Lagoa do Capitão, 25.6.1985.

Chrysomelidae

Chrysomela banksi (Fabricius). S. Maria: Vila do Porto, 9.8.1983.
— Flores: Santa Cruz, 14.6.1985.

Epithrix cucumeris Harris. Faial: Horta, 19.6.1985.

E. hirtipennis Melsham. S. Maria: Vila do Porto, 2.8.1983. — Pico: Madalena, 26.6.1985.

* *Mniophilosoma obscurum* Gillerfors 1986. Flores: Caldeira Comprida, 15.6.1985.

Bruchidae

Bruchus tristiculus Fahraeus. Pico: Madalena, 26.6.1985.

* *B. rufipes* Herbst. S. Maria: Aeroporto, 29.6.1985. Also in Madeira.

Bruchidius foveolatus (Gyllenhal) (det. Decelle). S. Maria: Aeroporto, 3.8.1983. Erroneously reported as *lividimanus* (Gyllenhal) by Israelson (1984).

Curculionidae

Apion radiolus Kirby (det. Dieckmann). Faial: Horta, 19.6.1985. According to Dieckmann (in litt.) the Azorean species is the genuine *radiolus*, not the subspecies *shalybeipenne* Wollaston and according to him the name *chalybeipenne* is probably superfluous and should be considered a synonym. Also a Maderan specimen examined by Dieckmann was *radiolus*.

* *Otiorhynchus singularis* (Linnaeus). S. Miguel: Cerrado dos Bezerros, 27.7.1983.

O. rugosostriatus (Goeze). S. Maria: Covões, 10.8.1983.

O. sulcatus (Fabricius). Flores: Caldeira Comprida, 15.6.1985.

O. trophonius azoricus Uyttenboogaart. Pico: Madalena, 26.6.1985.

Cathormiocerus curvipes (Wollaston). Faial: Capeio, 23.6.1985.

Sitona lineatus (Linnaeus). Flores: Fajã Grande, 17.6.1985.

S. puberulus Reitter (det. Dieckmann). Faial: Horta, 20.6.1985. — Flores: Lomba, Rib. Funda, 16.6.1985.

S. flavescens (Marsham) (det. Dieckmann). Flores: Lomba, Rib. Funda, 16.6.1985.

* *S. cinnamomeus* Allard (det. Dieckmann). S. Maria: Aeroporto, 2.8.1983. Previously considered a variety of *flavescens*. A Mediterranean species.

Pseudoechinosoma nodosum Hustache. Pico: Cabecinhos, 27.6.1985. — Flores: Caldeira Comprida, 15.6.1985.

Sphenophilus abbreviata (Fabricius). Faial: Horta, 20.6.1985. Under stones on sandy ground with sparse vegetation.

Rhopalomesites azoricus (Méquignon). S. Maria: Chão de João Tomé, 1.7.1985. — Pico: Cabecinhos, 27.6.1985.

* *Amaurorhinus monizianus punctipennis* Folwaczny. S. Maria: Praia, 8.8.1983. Among debris and small fallen branches under *Tamarix* at the beach. Found in exactly the same type of habitat on Madeira.

* *Brachytemnus porcatus* (Germar). S. Maria: Monserrate, 3.8.1983. Under the bark of a fallen *Pinus*.

Caulotrupodes aeneopiceus (Boheman). S. Maria: Covões, 10.8.1983. — Pico: Cabecinhos, 27.6.1985. — Flores: Lomba, Rib. Funda, 16.6.1985.

Pseudophloeophagus chopardi Méquignon. Flores: Cedros, Alagoa, 14.6.1985.

Ceutorhynchus assimilis (Paykull). Faial: Horta, 19.6.1985.

DISCUSSION

The faunal poverty of the Azores is well known. This poverty is partly due to the fact that the archipelago has been so poorly investigated. Israelson (1984, 1985) listed 45 species new to the archipelago. In the current list 32 species are recorded as new. Hence these 79 species present a considerable increase in number in the last few years.

Most of the species recorded as new to the area in this list, such as *Dromius notatus*, *Gyrophaena bihamata*, *Myrmecopora lohmanderi*, *M. uvida* and *Sphindus dubius*, are Palearctic, predominantly inhabiting North and Central Europe.

A number of species, such as *Tachys inaequalis*, *Cephennium distinctum*, *Trixagus elateroides*, *Migneauxia parvicollis*, *Doderonymus lusitanicus* and *Sitona cinnamomeus*, mainly inhabit the Mediterranean area.

A small number such as *Ecunnus unicus lindbergi*, and *Phloeopora corticina*, are genuinely Macaronesian, living also in Madeira.

A few, such as *Carpophilus marginellus*, *C. quadrisignatus* and *Monotoma picipes*, belong to the cosmopolitan group.

The number of indigenous species is still rather small but so far six endemic species of *Tarphius* are known and there are still good chances of finding more endemics.

Some of the more or less Mediterranean species, such as *Trixagus elateroides*, *Doderonymus lusitanicus* and *Annomatus duodecimstriatus*, have probably arrived at the Azores via the Canary Islands and Madeira.

The time when species first arrived in the archipelago is often impossible to tell but many not previously known from there must have been introduced quite recently even if earlier investigations were highly incomplete. The numbers of new records for individual islands amount to the following: S. Maria 55, S. Miguel 21, Pico 31, Faial 33 and Flores 25.

ACKNOWLEDGEMENT

I want to express my sincere thanks to my friends Anders Törnvall, Gothenburg, Dr. Gunnar Israelson and his wife for their pleasant company during my stay on the Azores. For their help with the determination of certain species, I am also most grateful to the following specialists: Dr. Cl. Besuchet, Geneva, Dr. J. Decelle, Tervuren, Dr. L. Dieckmann, Eberswalde, Prof. H. C. Franz, Mödling, Prof. H. Fürsch, Ruderting, Dr. Colin Johnson, Manchester, Dr. A. Williams, Dratford.

REFERENCES

Alluaud, C.:

1891. Coléoptères recueillis aux Açores par M. J. de Guerne pendant les campagne du yacht l'Hirondelle (1887-1888). Mem. Soc. Zool. France IV: 197-207.

Brink, P.:

1977. Staphylinidae (Coleoptera): *Atheta* from the Azores and Madeira. Bol. Mus. Mun. Funchal 31 (136): 84-86.

Colas, G.:

1939. Voyage de MM. L. Chopard et A. Méquignon aux Açores. (Aout — Septembre 1930) XII. Coléoptères: Carabidae. Ann. Soc. ent. France 108: 41-48.

Crotch, G.:

1867. On the Coleoptera of the Azores. Proc. Zool. Soc. London: 359-391.

Dajoz, R.:

1966. Étude du genre *Migneauxia* (Coléoptères, Lathridiidae) et description de trois espèces nouvelles. Rev. Ecol. Biol. Sol. T. III, 4: 625-629.

Fürsch, H.:

1966. Die Conccinelliden der Azoren. Bol. Mus. Mun. Funchal 20 (90): 29-33.

Gillerfors, G.:

1985. Two new species of the genus *Tarphius* Erichson from the Azores and redescription of *Tarphius wollastoni* Crotch (Coleoptera: Colydiidae). Bocagiana 85: 1-7.
1986. Two new species of *Tarphius* Erichson (Coleoptera, Colydiidae) and a new species of *Mniophilosoma* Wollaston (Coleoptera, Chrysomelidae) from the Azores. Bocagiana 98: 1-10.

Israelson, G.:

1984. Coleoptera from the Azores. Bol. Mus. Mun. Funchal 36 (161): 142-161.
1985. A new Macaronesian genus of Cisidae (Coleoptera). Ent. Blätter 81, H 1-2: 80-84.
1985. Notes on the coleopterous fauna of the Azores, with description of new species of *Atheta* Thomson (Coleoptera). Bol. Mus. Mun. Funchal 37 (165): 5-19.

Jeannel, R.:

1937. Nouveaux Trechinae paléarctiques. Bull. Soc. ent. France: 82-88.

Johnson, C.:

1970. Ptilidae (Coleoptera) from the Azores. Bol. Mus. Mun. Funchal 25: (111): 68-70.

Landin, B. O.:

1960. The Lamellicorn Beetles of the Azores (Coleoptera) with some reflexions on the classification of certain Aphodiini. Bol. Mus. Mun. Funchal 13 (32): 49-81.

Lindberg, H.:

1963. A contribution to the Study of Beetles in the Madeira Islands. Comm. Bol. Biol. Soc. Sci. Fenn. 25 (2): 1-156.

Lindroth, C. H.:

1960. The ground-beetles of the Azores (Coleoptera: Carabidae). With some reflexions on Over-seas dispersal. Bol. Mus. Mun. Funchal 13 (31): 5-43.

Lohse, G. A.:

1984. Phloeopora-Studien (ein nomenklatorischer Horror-Krimi). Ent. Blätter 80 (2-3): 153-162.

Lundblad, O.:

1958. Die Arthropodenfauna von Madeira 35. Die Käferfauna der Insel Madeira. Ark. Zool. (2) 11, 30: 461-524.

Méquignon, A.:

1942. Catalogue des Coléoptères Açoréens. Ann. Soc. ent. France 61: 1-66.

Palm, P.:

1980. Zur Kenntnis der Käferfauna der Kanarischen Inseln 25. Ann. Ent. Fenn. 46: 117-119.

Roudier, A.:

1965. Coléoptères Curculionides des Açores et de Madère. Bol. Mus. Mun. Funchal 19 (79): 37-49.

Serrano, A. R. M.:

1982. Contribuição para o conhecimento do povoamento, distribuição e origem dos Coleópteros do Arquipélago dos Açores (Insecta, Coleoptera). Bol. Mus. Mun. Funchal 34 (147): 67-104.

Smetana, A.:

1970. Staphylinidae (Coleoptera) from the Azores and Madeira. Bol. Mus. Mun. Funchal 25 (110): 53-67.

Svensson, B.:

1970. Dryopidae (Coleoptera) from the Azores and Madeira. Bol. Mus. Mun. Funchal 25 (108): 44-48.

1973. Palpicornia (Coleoptera) from the Azores and Madeira. *Ibid.* 27 (123): 90-93.

1977. Dytiscidae and Gyrinidae (Coleoptera) from the Azores and Madeira. *Ibid.* 31 (137): 87-99.

Uyttenboogaart, D. L.:

1947. Coleoptera (excl. Staphylinidae et Hydrophilidae) von den Azoren und Madeira. *Comm. Biol. Soc. Sci. Fenn.* 8: 1-15.