COLEOPTERA FROM THE AZORES

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With 13 figures

ABSTRACT. Some results from excursions in 1982 and 1983 on a few of the Azores islands are presented. Four species are described as new: *Metophthalmus occidentalis* (Lathridiidae), *Tarphius rufonodulosus* (Colydiidae), *Hypera multifida*, and *Acalles subcarinatus* (both Curculionidae), all being probable remains of an ancient forest fauna. *Tachyporus brevis* Har. Lindberg was found to be a younger synonym of *Coproporus pulchellus* (Erichson).

In all 34 species are added to the Azorean fauna which brings the total number of known species up to 400 approximately. Five of these species are also recorded for the first time from Madeira, twelve of them from Macaronesia. The origins of the additions are discussed.

SUMÁRIO. São apresentados alguns resultados de excursões em 1982 e 1983 nalgumas das ilhas dos Açores. Quatro espécies são descritas como novas para a ciência: *Metophthalmus occidentalis* (Lathridiidae), *Tarphius rufonodulosus* (Colydiidae), *Hypera multifida*, e *Acalles subcarinatus* (ambas Curculionidae), todas elas sendo provavelmente restos duma antiga fauna florestal. *Trachyporus brevis* Har. Lindberg veio a ser um sinónimo mais recente de *Coproporus pulchellus* (Erichson).

Ao todo 34 espécies são adicionadas à fauna dos Açores o que aumenta as espécies conhecidas para aproximadamente 400. Cinco delas são também assinaladas pela primeira vez para a Madeira e doze delas para a Macaronésia. São discutidas as origens destas espécies.

INTRODUCTION

At the end of June and the beginning of July, 1982, my wife and I spent a fortnight on the Azores. Our stay offered some opportunities of field studies of the coleopterous fauna on a few of the islands. Incidentally a survey of the previous history of the faunistic exploration together with a checklist was published by Serrano (1982) in the same year.

The result of our collecting activity was considered sufficiently promising for justifying another visit to the Azores which was performed

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at the end of July and beginning of August, 1983. This time we were accompanied by two more collectors.

In the following much of the faunistic and taxonomic outcome of our little expeditions is listed. Localities (islands) known for a species by Serrano are generally omitted. The presence of more detailed collecting data therefore implies that the species was previously unknown from the island in question. Asteriscs indicate novelties for the whole archipelago. Among the taxonomic systems currently in use the one employed by Serrano was believed to be the most practical because it facilitates comparison with his list. Nothing being stated to the contrary the material was collected by me with assistance of my wife.

LIST OF SPECIES

Carabidae

Harpalus rufipes (De Geer). S. Maria: Arrebentão, 9.7.82.

Acupalpus dubius Schilsky. S. Maria: Pico Alto, 4.8.83; Vila do Porto, 9.8.83.

Olisthopus inclavatus Israelson.

Described from a single specimen from S. Maria (Israelson 1983: 1). At our second visit, in 1983, this species was the commonest carabid encountered. In the vicinity of the Aeroporto it occurred everywhere in groves and forests among debris on the ground.

The body size was found to be 4.7-5.5 × 2.0-2.3 mm. Females are distinguished from males by the protarsal segments 1-3 not being dilated.

Dromius meridionalis Dejean. S. Maria: Aeroporto, under the bark of a dead branch, 3.8.83.

Hydraenidae

Ochthebius freyi d'Orchymont. S. Maria: S. Lourenço, 5.8.83; Vila do Porto, 9.8.83. Frequent in rock pools. — Endemic.

The apical portion of the penis is not quite as straight as drawn by Svensson (1973: fig. 1) which indicates a beginning diversification.

Hydrophilidae

* *Cercyon haemorrhoidalis* (Fabricius). S. Miguel: Fajã de Cima, 14.7.79 P. Oromí leg. Flores: Caldeira Funda, 2.7.82. — Holarctic. New to Macaronesia.

* *C. depressus* Stephens. S. Maria: Vila do Porto, 9.8.83. — Holarctic. New to Macaronesia.

C. obsoletus Gyllenhal. S. Maria: Pico Alto, 6.8.83.

Scydmaenidae

* *Stenichnus tythonus mesmini* Croissandeau. S. Maria: Aeroporto, 10.7.82. — Macaronesia.

In addition to its continental West-Mediterranean distribution *S. tythonus* Reitter is also reported to have some localities in the Madeiras and the Canaries. The Madeiran form was described as a separate species under the name of *mesmini*. According to Franz (1960: 288) this is a mere race of *guardanus* Reitter, later considered a synonym of *tythonus* (Franz, 1961: 20). I have had no opportunity to examine the types and follow Franz here. The sole Azorean specimen found is a brachypterous female with a spermatheca quite similar to that of the Madeiran and Canarian form as figured for «*guardanus*» by Israelson (1972 : fig. 6).

Corylophidae

Sacium densatum (Reitter). S. Maria: Aeroporto, 7.7.82; S. Lourenço. 9.7.82. See Marsden, 1970: 171.

Arthrolips piceus (Comolli). S. Maria, Aeroporto, 10.7.82.

Sericoderus lateralis (Gyllenhal). S. Maria: S. Lourenço, 9.7.82; Aeroporto, 4.7.82. Flores: Lajes, 1.7.1982.

* *Orthoperus nitidulus* Allen. S. Maria: Aeroporto, in vegetable refuse, 10.7.1982. — Described from Great Britain and rediscovered in the Canaries this species has a decidedly insular East-Atlantic distribution (cf. Allen, 1970: 118).

Ptiliidae

Ptenidium pusillum (Gyllenhal). S. Maria: Aeroporto, 10.7.82.

Acrotrichis sanctaehelenae Johnson. S. Maria: Velho, 8.7.1982.

* *A. insularis* (Mäklin). S. Miguel, Cerrado dos Bezerros, in a heap of grass-cuttings, together with the following species, 28.7.83. — This locality fills a gap between Nearctic from where the species has long been known and W.-Palearctic where numerous recent finds have been made and where there are records of increasing abundance indicating a successful immigration. New to Macaronesia.

A. fascicularis (Herbst). S. Maria: Pico Alto, 9.7.1982. Flores: Caldeira Funda, 2.7.82.

Staphylinidae

Phloeonomus pusillus (Gravenhorst). S. Maria: Pico Alto, 4.8.83; Mata de Monserrate, 7.8.83.

* *Ph. punctipennis* Thomson. S. Maria: Mata de Monserrate, 7.8.83. — W. Palearctic.

Trogophloeus bilineatus (Stephens). S. Maria: Pico Alto, 4.8.83.

T. corticinus Gravenhorst. S. Maria: Pico Alto, 4.8.83; Ribeira de Santana, 7.8.83.

Oxytelus sculptus Gravenhorst. S. Maria: Pico Alto, 6.8.83.

Hypomedon debilicornis (Wollaston). S. Maria: Aeroporto, 10.7.82.

* *Lithocharis nigriceps* (Kraatz). S. Miguel; Ponta Delgada, 24.6.83. — Cosmopolitan.

* *Remus sericeus* Holme. S. Maria: Vila do Porto, 9.8.83. — Holarctic.

Gabrius nigritulus (Gravenhorst). S. Maria: Pico Alto, 8.7.82.

* *Sepedophilus lusitanicus* Hammond. S. Maria: Aeroporto, 11.8.83. S. Miguel: Ponta Delgada, 24.7.83. — S. W. Palearctic. Perhaps this is the *Conosoma testaceum* of earlier authors.

* *Coproporus pulchellus* (Erichson). (= *Tachyporus brevis* Har. Lindberg, (1953: 5), n. syn. S. Maria: Aeroporto, 2.8.83. S. Miguel: Ponta Delgada, 20.7.83. In heaps of weeds and grass-cuttings. — Mainly Neotropical but reaching Nearctis in southern U. S. A. according to Campbell (1975: 187). Not recorded from outside America but the synonym was described from the Canaries (types in the Zoological Museum of Helsinki examined and appearing quite similar to American specimens determined by Campbell and standing in the collections of the National Museum of Natural History, Washington). I have also collected this species in Madeira: Funchal, from 1973. Obviously introduced into Macaronesia where it is now widely distributed and not uncommon but hardly found in more natural environments.

Oligota pusillima Gravenhorst. S. Maria: Aeroporto, 10.7.82.

Amischa analis (Gravenhorst). S. Maria: Pico Alto, 4.8.83.

Atheta coriaria Kraatz. S. Maria: Santana, 7.8.83.

* *A. divisa* (Märkel). S. Miguel: Furnas, 28.7.83. — Palearctic. First complex are as follows: weaker and reddish coloured nodules, shorter record for Macaronesia.

* *A. fungi* (Gravenhorst). S. Miguel: Furnas, 29.7.83.

A. laticollis (Stephens). S. Maria: Velho, 8.7.82.

A. nigra Kraatz (= *zosterae* auctt., nec Thomson). S. Maria: Aeroporto, 2.8.83.

Acrotona sordida (Marsham). S. Maria: Pico Alto, 4.8.83.

Phloeopora angustiformis Baudi. S. Maria: Mata de Monserrate, 7.8.83.

Aleochara puberula Klug. S. Maria: Vila do Porto, 9.8.83.

A. clavicornis Redtenbacher. S. Maria: S. Lourenço, 9.7.82.

A. albopila Mulsant et Rey. S. Maria: S. Lourenço, 9.7.82.

Histeridae

Saprinus subnitescens Bickham (= *semistriatus* auctt.). S. Maria: S. Lourenço, 9.7.82.

S. cuspidatus (Ihssen). S. Miguel: Furnas, 29.7.83. General record for the Azores by Marsden (l.c. : 177).

Dermestidae

Dermestes frischi Kugelann. S. Maria: Aeroporto, 1.7.82.

Nitidulidae

Carpophilus dimidiatus (Fabricius). S. Maria: Vila do Porto, 2.8.83.

* *C. fumatus* Boheman. S. Maria: S. Lourenço, several specimens netted from weeds near the beach, 9.7.82. — South Africa. General distribution unclear. Also found on Madeira; oldest specimen seen: Funchal, 13.11.1953, N. Gyllensvärd leg., in coll. T. Palm. These seem to be the first records from Macaronesia.

Redescribed with illustrations by Dobson (1955 : 398) on material of unmentioned provenance. The present material corresponds to Dobson's description. Externally the species can be separated from the very similar *mutilatus* Erichson by the presence at the inner base of the metafemur of a small gibbosity.

* *Meligethes aeneus* (Fabricius). S. Miguel: Ponta Delgada, 18.6.82. Flores: Lajes, 1.7.82. — Palearctic and W. Nearctic. New to Macaronesia.

Epuraea unicolor (Olivier). S. Maria: Pico Alto, 4.8.83.

Cucujidae

Monotoma spinicollis Aubé. S. Maria: Aeroporto, 10.7.82.

Laemophloeus donacioides Wollaston (= *L. granulatus* Wollaston). S. Maria: Mata de Monserrate, 7.8.83.

* *L. ferrugineus* Stephens. S. Maria: Praia, in dead branches of common vine, 8.8.83. — Cosmopolitan.

L. capensis (Waltl) (= *elongatus* Lucas). S. Maria: Aeroporto, 7.7. 82. Flores: Lajes, 1.7.82.

Erotylidae

Cryptophilus integer Heer. S. Maria: Aeroporto, 10.7.82.

Cryptophagidae

Ephistemus globulus Heer. S. Maria: Aeroporto, 10.7.82.

Phalacridae

* *Olibrus affinis* Sturm. S. Miguel: Ponta Delgada, 24.7.83. — W. Palearctic.

Lathridiidae

* *Holoparamecus caularum* Aubé. S. Maria: Aeroporto, 10.7.1982. — Cosmopolitan.

* *Metophthalmus occidentalis* ***n. sp.*** (Figs. 4-6).
Holotype: Azores, Santa Maria, Pico Alto, 500 m, 6.8.1983, G. Israelson, 14605; in author's collection. Paratype: 1, same locality, 4.8. 1983, G. Gillerfors; in collector's collection.

This species belongs to a rather uniform group which is widely distributed in Madeira and the Canaries, with in all five species described by Wollaston. These have the following characters in common: ten-semmented antennae, a two-segmented club included, body nearly glabrous, elytra eight-striate, basal antennal segment on the backside with an apical tooth.

Like the type species *asperatus* Wollaston of Madeira the new species is pronouncedly bicolorous but in the former the uneven elytral interstriae are not or feebly raised and not much broader than the even ones. The species is also narrower, more parallel-sided and the flanges of its body sides (head, pronotum, and elytra) are narrower. The details of the upper-side sculpture of the head and the pronotum are different in the two species. The remaining Macaronesian forms examined differ from the Azorean species by uniform body colour, broader prothorax, non-raised elytral interstriae, considerably smaller size, more convex elytra and/or in details of the upper-side sculpture.

Body as in Figs. 5 and 6. Length 1.4, breadth 0.6 mm. Moderately convex, shining, forebody yellowish red, appendages pale yellow, elytra brownish black. Nearly glabrous. Forebody indistinctly punctate.

Head subconical up to shortly behind antennal insertions, then subparallel to apex. Frons with two submedial nearly parallelsided, at base slightly diverging, moderately strong, longitudinal ridges, anteriorly being extensively interrupted. Sharp elevated ridge from anterior part of eye ending mediad of antennal insertion. Lateral side with a strong antennal furrow running below and beyond eye and limited by sharp ridges. Eyes small, oblique, twice as long as broad. Antennae ten-segmented. club two-segmented; basal segment with an apical tooth on backside (Fig. 4).

Pronotum 0.6 times as long as broad, broadest closely behind middle, front angles rectangular, hind angles obtuse with a fine protruding tooth. Disc with two short longitudinal ridges near anterior margin, connected in front and followed basad by a short semicircular ridge with a central, not very deep depression. Deep pit inside each angle.

Elytra eight-striated; striae 7 and 8 invisible from above; striae 4 and 5 as well as 3 and 6 united posteriorly; uneven interstriae strongly elevated except in front and behind; side-flange produced and rectangular at humerus, obsolete in posterior fourth, with edge non-rebordered and finely serrate.

Prosternum from outer part of coxal pit with a narrow longitudinal ridge bridging a deep transverse furrow. Process of abdominal segment 1 subquadratic, with anterior border strongly impressed and with a deep transverse furrow between coxae.

The holotype was sifted from litter in a deciduous forest.

Lathridius nodifer Westwood. S. Maria: Pico Alto, 8.7.82; Aeroporto, 10.7.82.

* *L. australis* Belon. S. Maria; Aeroporto, 2.8.83. S. Miguel: Ponta Delgada, 29.6.82 .— Australia, Europe.

Corticaria maculosa Wollaston. S. Maria: Aeroporto, 2.8.83.

Corticarina fulvipes Comolli. S. Maria: Aeroporto, 7.7.82; Pico Alto, 8.7.82; S. Lourenço, 9.7.82.

Mycetophagidae

Litargus pilosus Wollaston. S. Maria: Aeroporto, 2.8.1983.

Typhaea stercorea (Linné). S. Maria: Aeroporto, 10.7.82.

Colydiidae

Tarphius wollastoni Crotch. S. Miguel: Furnas, under the bark of dead trunks of *Pittosporum undulatum* and perhaps other species of broad-leaved trees, 28.7.83; Tronqueira, under the dead bark of a trunk of *Cryptomeria japonica,* 29.7.83. — Endemic.

This form corresponds tolerably well to previous descriptions by Crotch (1867: 386) and Dajoz (1977: 118) both illustrated. Like the following species it belongs to the subgenus *Atlantotarphius* Franz with several Madeiran and Canarian representatives. The Azorean forms are distinguished by the sculpture of their elytra. On the interstriae 3, 5, 7, and 9 they have three, three, two, and one nodules, respectively. The arrangement of the nodules is relatively regular as compared to most other nodular members of the subgenus.

In the present form the nodules are strong and their setae lanceolate and more elongate than in the following species, about four times as long as broad. Also the structure of the aedeagus is different (Fig. 1).

The aedeagus of this genus is formed by a basal piece and an apical piece, the latter composed of two parameres basally fused to a more or less abbreviated penis internally having a sort of flagellum which is an elongate, flat, and longitudinally movable sclerite, in the Azorean forms with an apical carina on the ventral side; this carina seems to be absent in the Canarian species at least. In the *wollastoni* form under discussion the free portion of the penis is very short and the flagellum nearly as long as the whole aedeagus and provided with a broad subapical dilation.

* *Tarphius rufonodulosus* ***n. sp.*** (Figs. 2 and 3).

Holotype, ♂: Azores, S. Maria, Pico Alto, 11.7.1982, G. Israelson, 14389. Paratypes: 9, same data as holotype; 10, ditto but 8.7. 1982; 12, as holotype but 4.8.1983. All in author's collection.

~~The main differences from the other known forms of the *wollastoni*~~

Body as in Fig. 3, length 2.2-4.0, breadth 1.05-1.95 mm. Central portions of head, pronotum, and elytra more or less extensively dark brown to black, elytral nodules and carinae as well as lateral portions reddish brown. Vestiture of pronotum and elytra mainly of yellow suboval scales about three times as long as broad, adpressed or on margins and nodules more or less erect; head and elytral interstriae with smaller, more insignificant, adpressed scales.

Pronotum 0.7 times as long as broad, front corners protruding, sharp, lateral edges strongly curved, straightened but hardly excised before hind corners, sides broadly explanate, disc with medial furrow more or less fading away apicad and with surface covered with dense flat tubercles with very narrow interstices, laterad tubercles less flattened with interstices as broad as diameter of tubercles.

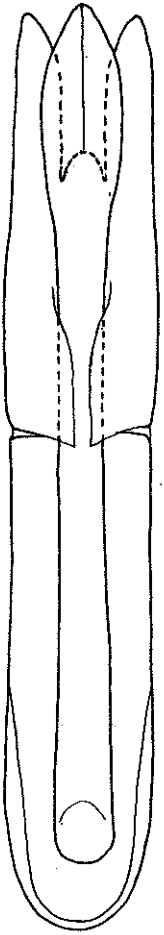
Elytra in maximum somewhat broader than pronotum but in front much broader than pronotum at base, 1.15 times as long as broad. Nodules weak, subapical nodule of interstriae 3 and basal one of interstriae 5 often somewhat indistinct. Surface feebly striate; strial punctures shallow, separated by a granule with a minute scale.

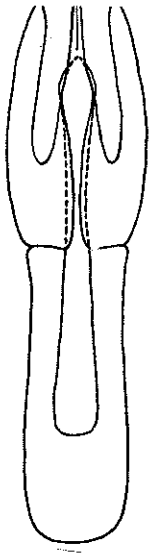
Aedeagus (Fig. 2). Free portion of parameres twice as long as remainder, also free portion of penis unusually long. Flagellum strongly

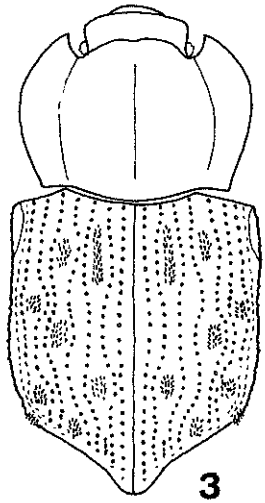
CORRECTION. On page 149, in description of *Tarphius rufonodulosus* n. sp., delete lines 3 and 4 and replace by:

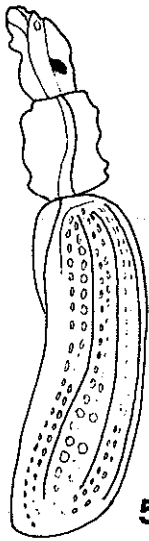
1982; 12, as holotype but 4.8.1983. All in authors' collection.

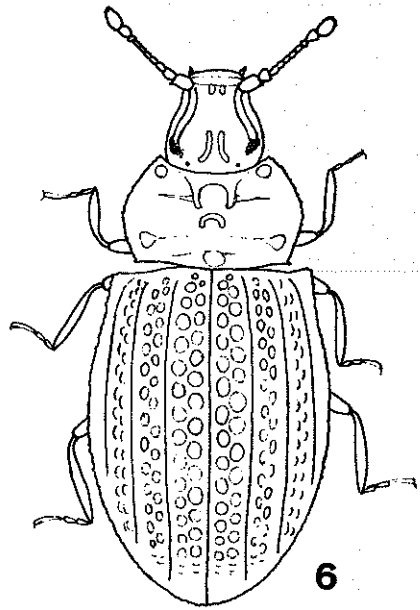
The main differences from the other known forms of the *wollastoni* complex are as follows: weaker and reddish coulered nodules, shorter setae, averagely smaller body and particular structure of the aedeagus.











Figs. 1-6 — 1. **Tarphius wollastoni** Crotch: aedeagus. (S. Miguel, Furnas) — 2-3. **Tarphius rufonodulosus** n. sp.: 2. Aedeagus, 3. Habitus (pubescence omitted except on elytral nodules). — 4-6. **Metophthalmus occidentalis** n. sp.: 4. Antenna, 5. Habitus, lateral view (appendages omitted), 6. Ditto, dorsal view.

tapering and narrowly pointed but with a distinct subapical dilation.

All specimens were knocked from dead branches of various introduced trees and of *Rubus ulmifolius*.

Coccinellidae

Rhyzobius litura (Fabricius). S. Maria: S. Lourenço, 9.7.82.

* *R. chrysomeloides* (Herbst). S. Miguel: Ponta Delgada, 28.6.82. — W. Palearctic. Not recorded before from Macaronesia but also found in Madeira: Cab.º dos Louros, 22.3.81.

* *Lindorus lophantae* Blaisdall. S. Maria: Pico Alto, 13.7.82; S. Lourenço, 1.7.82. S. Miguel: Ponta Delgada, 28.6.1982. — Australian but world-widely introduced. Evidently showing equal ability to adapt itself to the natural conditions in the Azores as in Madeira and the Canaries.

* *Myrrha octodecimguttata* (Linné). S. Maria: Aeroporto, on *Pinus*, 3.8.83. — Palearctic.

Bostrychidae

Scobicia barbata Wollaston. S. Maria: Praia, frequent in dead twigs of *Vitis vinifera*. collected 8.8.83.

Anobiidae

* *Lasioderma haemorrhoidalis* (Illiger). S. Maria: Aeroporto, on withered thistles, 10.8.83, G. Gillerfors leg. — W. Palearctic.

Anthicidae

Anthicus quadriguttatus (Rossi). S. Maria: Aeroporto, 10.7.82.

* *A. instabilis* Schmidt. S. Maria: Aeroporto, 10.7.1982. — Palearctic.

Scraptidae

Anaspis proteus Wollaston. This species has been previously recorded from seven out of the nine islands. In a Madeiran material Ermisch (1963) distinguished a form with certain sexual markings on the male abdominal sternites 1-3 which he named *A. imitator*. The sexual markings were stated to be absent in *proteus*. The numerous Azorean males examined by me all have the markings and therefore would be *imitator*. Examination of an equally large material from Madeira led to the same result. Ermisch found the proportion of *imitator* and *proteus* to be approximately 50/50.

On the other hand I have never found the markings characteristic of *imitator* in material from the Canaries. But *proteus* was described from

Madeira. There seems to be no need to change the name of the Azorean *proteus* for *imitator* until Wollaston's types have been reexamined and a lectotype has been picked out.

Tenebrionidae

Phaleria bimaculata (Linné). S. Miguel: Lagoa Furnas, 5.8.80, P. Oromí leg.

Cerambycidae

* *Arhopalus syriacus* (Reitter) (= *Criocephalus s.*). S. Maria: Mata de Monserrate, 7.8.83, copulating adults on a trunk of *Pinus* sp. S. Miguel: Furnas, one larva in a trunk of *Pinus*. — SW. Palearctic.

The larva of this species is easily distinguished from those of *rusticus* (Linné) and *ferus* (Mulsant) by the basally fused spines of abdominal segment 9 (Palm, 1978: 40).

Chrysomelidae

Epitrix azorica Gruev. S. Maria: Vila do Porto, 2.8.83. Flores: near Caldeira Comprida, 2.7.82. — Endemic ?

Heavy attacks were noticed on *Solanum nigrum* in S. Maria and S. Miguel. If this or any other suitable host-plant was available before the colonization by man seems doubtful. The sudden appearance and wide, often frequent occurence of this recently described species might therefore indicate that it is a late but successful immigrant.

Chaetocnema hortensis (Geoffrey). S. Maria: Pico Alto, 4.8.83.

Bruchidae

* *Bruchidius lividimanus* (Gyllenhal). S. Maria: Aeroporto, common on *Spartium junceum*, 3.8.83. — S. W. Europe.

Curculionidae

Apion r. chalybeipenne Wollaston. S. Miguel: Ponta Delgada, 28.6.82.

A. s. semivittatum Gyllenhal. Flores: Lajes, 1.7.82.

Sitona gressorius (Fabricius). S. Maria: Aeroporto, on *Cytisus scoparius*, 3.8.83.

S. puberulus Reitter (= *cambricus* auctt., nec Stephens). S. Maria: Pico Alto, 8.7.82.

* *S. puncticollis* Stephens. S. Maria: Pico Alto, 8.7.82. — W. Palearctic.

* *Hypera multifida* ***n. sp.*** (Figs. 7-11).

Holotype, ♂: Azores, S. Maria, Pico Alto, 500 m, 8.7.1982, G. Israelson, 14318; in author's collection. Paratypes: 3 ♂♂, same data but 4.8.1983.

The specific name refers to the structure of the ventral scales. A tendency towards trifid scales has been noticed in other species too but far less pronounced.

The species might be classified as a *Donus*, a genus sometimes detached from *Hypera* and consisting of apterous species with effaced, not subangulate shoulders. However, more or less complete absence of wings occurs in *Hypera* also (cf. Kippenberg 1983: 142). In *Donus* males and females are often distinguished by particular external characters; in the present species the female is unknown, unfortunately.

H. multifida shows some similarities to *H. dauci* (Olivier) indicating the probability of some relationship, such as regarding the vestiture of the upper side, the structures of the processes of the mesosternum and the first abdominal segment. However, the latter species — known from other Macaronesian groups of islands — is amply distinguished by a number of characters, e.g. larger size, subangulate shoulders, denser vestiture, transverse prothorax, presence of a distinct inside spine at apex of metatibiae.

Body 5.1-5.8 × 2.5-2.9 mm, convex, dark grey with a slight greenish or brownish tinge, pronotum with three longitudinal, paler strips, the outer of which being vague, uneven interstriae 1-7 with a series of inconspicuous blackish-brown tufts of short scales, legs with brown patches. Integument black, in antennae reddish-yellow except for club and distal part of scape being brown, in tarsi reddish but, particularly above, more or less infuscate. Spines of tarsal corbels black, on upper side of protarsi sometimes yellowish. Vestiture consisting of white, brown, or black hair-like setae and of golden, coppery or greenish scales. Setae of frons and upper side of rostrum mostly depressed and rather dense, those of pronotum and elytra scattered and half-erect. Upperside scales of pronotum and elytra (Fig. 7) normally adpressed, dense but not imbricate, rounded to subrectangular, apically truncate and usually finely dentate, with a broad impression. Scales of lateral sides and femora more or less deeply split, often trifid (Fig. 8), those of underside (Fig. 9) split to base or nearly so, bifid, trifid, quadrifid or, more rarely, pentafid.

Head finely and densely punctate with shining interstices. Rostrum twice as long as broad (side-view), two thirds as long as pronotum, slightly arcuate, from antennal insertions basad with a short medial furrow. Frons three-fourths as broad as base of rostrum, between eyes with a small pit. Temples with scales. Scape of antennae reaching middle of eye, funicular segment 1 hardly longer than 2, segment 2 nearly three times as long as broad, segments 3 and 4 at least as long as broad, 5 and 6 at least as broad as long, 7 transverse.

Pronotum very slightly broader than long, broadest before middle, lateral sides convex anteriorly, straight posteriorly, dorsally with indistinct medial impression, punctation fine, dense, largely subconfluent; with scattered half-erect, recurved setae not longer than antennal segment 3. Scutellum small, narrowly triangular.
setae, averagely smaller body and particular structure of the aedeagus.

Elytra 1.6 times as broad as pronotum, oval, with rounded, not protruding shoulders and largest breadth about middle, base strongly concave, humeral callus indistinct. Striae distinctly impressed with strong punctures each with an adpressed seta reaching halfway to base of following. Uneven interstriae, interstriae 1 excepted, broad, distinctly convex and with two irregular rows of raised and longer setae; even interstriae narrower, hardly convex and with a single row of setae. Brachypterous, wing perceivable but reduced into an insignificant scale. Tibiae slightly bisinuate on inner side. Protibiae strongly, mesotibiae less strongly arcuate apically, both with a small apical spine pointing inward. Metatibiae not arcuate and without spine.

Epimeres of mesothorax rather small, externally forming a not very strongly obtuse angle. Mesosternal process nearly parallel-sided between coxae, apex faintly concave. Abdominal sternite 1 with a strong, somewhat longitudinal impression, process about as broad between coxae as breadth of one coxa.

Aedeagus as in Figs. 10 and 11.

The host plant is unknown. All specimens were obtained by sifting debris and ground vegetation in fairly open terrain. A conspicuous element in this vegetation was *Lotus uliginosus.*

Hypera postica (Gyllenhal) (= *H. variabilis* auctt.). S. Maria: Aeroporto, 7.8.83.

Pseudoechinosoma nodosum Hustache. S. Maria: Pico Alto, sifted from leaf-litter in deciduous forest, 9.7.82. This endemic species was previously known from S. Miguel. Méquignon's records (1942: 54) indicate that his finds were made in open fields.

Pseudophloeophagus variabilis (Crotch). S. Maria: Pico Alto, 4.8.82.

Ceuthorhynchus nigroterminatus Wollaston. S. Maria: Almagreira, 11.7.82.

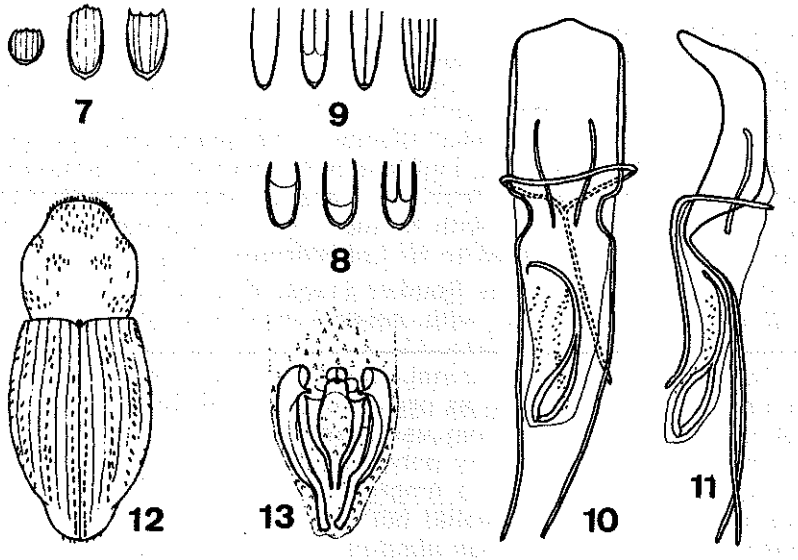
* *Acalles subcarinatus* ***n. sp.*** (Figs. 12 and 13).

Syn.: *Acalles wollastoni,* Uyttenboogaart, 1940: 270 and later authors of Azorean records; not Chevrolat.

Holotype, ♂: Azores, S. Maria: Pico Alto, 8.7.1982, 14324, G. Israelson, in author's collection. Paratypes: 10, same data as holotype; 2, same data as holotype except 11.8; 8, same data except 4.8.1983; same data except Aeroporto, 10.7.1982. S. Miguel: 1, Furnas, 19.21.V (1938, Frey & Storå), in the Zoological Museum of the University of Helsinki; 1, same locality, 13.7.1982, G. Israelson; 4, ditto, 8.8.1983; 1, Ponta Delgada, 6.7.

1982, G. Israelson, 1, Pico: Madalena, 6-9.VII (1938) Storå, in the Zoological Museum of the University of Helsinki. 4, Flores; Caldeira Seca, 2.7.1982, G. Israelson; 8, Lajes, 1.8.1982, G. Israelson. If not otherwise stated the paratypes are in author's collection.

In the previously known forms of *A. wollastoni* Chevrolat the uneven elytral interstriae bear a very regular single row of suberect setae. *A. subcarinatus* mainly differs in that the setal series are somewhat irregular. Those of interstriae 3 and 5 are usually double on the level of



Figs. 7-13. — 7-11. **Hypera multifida** n. sp.: 7. Scale types from upper side, 8. Ditto from lateral side of elytra, 9. Ditto from sterna. 10. Aedeagus from dorsal side. 11. Ditto from lateral side. — 12-13. **Acalles subcarinatus** n. sp.: 12. Scale clothing of upper side, 13. Terminal portion of inner aedeagal sac (in repose) with sclerites.

the post-median white fascia, sometimes also near the base. This is where most *Acalles* species possess more or less dense aggregations of setae adorning tubercles or carinae. Evidently the new species can be regarded as a primitive member of the *wollastoni* complex.

Male. Body subovate-oblong, 1.7-2.6 mm. Colour very variable, mainly determined by the distribution of white, yellow brown and black imbricate, round scales, to a lesser extent of more sparse, suberect scales, integument brownish. Commonly with a more or less apparent, postmedial, pale transverse elytral fascia, limited in front and behind by a dark fascia; dark front fascia often prolonged laterally; an anterior oblique pale fascia from shoulder sometimes traceable. Pronotum with lateral pale spots and on each side of median line with a dark basal spot, often prolonged, sometimes up to apex, rarely extended to comprise whole

disc. Tibiae ringed with black at base, femora often with black patch. Less highly coloured specimens may appear rather uniformly greyish. Punctation of pronotum and hind body only visible after removal of vestiture. Rostrum slightly curved; distal part from antennal insertion about twice as long as proximal part, moderately strongly punctured. Vestiture of proximal part nearly extended down to insertion.

Prothorax slightly longer than wide, with a strong subapical constriction, finely and densely punctured with very narrow interstices, untubercled.

Scutellum visible.

Elytra 1.5-1.65 times longer than wide and 1.75-2.0 times as long as prothorax; lateral sides somewhat convex with a preapical constriction; with punctate striae, each dorsal stria with about 11 punctures in anterior half. Interstriae narrower than diameter of punctures, uneven ones slightly broader than neighbouring, somewhat raised, with a mostly rather regular row of setae but on level of posterior pale fascia at least interstriae 3, sometimes also 5, with normally two, often denser setal rows; also in front setae often tend to be concentrated (Fig. 12). Apterous.

Aedeagus as drawn by Roudier (1954: figs. 5-7) for several forms of *wollastoni;* internal sac with several sclerites together forming a similar cordiform structure (Fig. 13).

Female like male but distal part of rostrum, from antennal insertion, more than twice as long as proximal part, with fine punctation; outer half of proximal part free from vestiture.

The new species is very polyphagous. It is true that it has so far been unquestionably proven to emerge from the wood of a single plant species only *(Euphorbia stygiana)* but it has now been captured on dead branches of *Ficus carica, Rubus ulmifolius* and still other ligneous species where it has certainly developed. Widely distributed within the archipelago without forming distinguishable races.

* *Acalles dromedarius* Boheman. S. Maria: Aeroporto, 10.7.82; S. Lourenço, 9.7.82. —S. W. Palearctic. Also new to Madeira: Ponta de S. Lourenço, 28.12.1972.

Scolytidae

Hylurgus ligniperda (Fabricius). S. Maria: Pico Alto, on the wings, 4.8.83; Mata do Monserrate, under the bark of dead trunks of *Pinus* sp., 7.8.83.

* *Liparthrum curtum* Wollaston. S. Maria: Aeroporto, 7.7.82; Pico Alto, 11.7.82; S. Lourenço, 9.7.82. S. Miguel: Ramalho, 12.7.82; Furnas, 13.7.82. Flores; Ribeiro da Cruz, 1.6.1983, R. Storă leg.; Lajes, 4.7.82. — Macaronesian. Polyphagous species, common in dead branches of *Ficus carica* but also attacking several other ligneous plants such as *Ceratonia siliqua* and *Rosa* sp.

The sole Ribeira da Cruz specimen is in the Zoological Museum of the University of Helsinki. It was recorded as *L. lowei* Wollaston by Uyttenboogaart (1947 : 10). Incidentally Uyttenboogaart's determination label reads «*Liparthrum loweanum* Wollaston». The two latter species live in *Euphorbiae* of the Canaries and the Cape Verdes respectively and do not exist in the Azores. Mequignon's (l.c.: 59) record of *L. mandibulare* Wollaston probably also refers to *L. curtum.*

Hypothenemus eruditus Westwood (= *aspericollis* Wollaston). S. Maria: Aeroporto, in *Spartium junceum,* 9.7.82, S. Miguel; Ramalho, in *Ficus carica* together with *Liparthrum curtum,* 12.7.82.

* *H. crudiae* (Panzer), S. Wood det. S. Maria: Aeroporto, with foregoing in branches of *Spartium junceum,* 9.7.82; Praia, reared from dead twigs of *Vitis vinifera* collected 10.8.83. — Of this polyphagous and widely distributed Neotropical species there are also a few records from southern U. S. A., some Pacific islands and from tropical Africa but none from the Palearctic region (Wood, 1982: 892).

* *Coccotrypes carpophagus* (Hornung). S. Maria: Vila do Porto, reared from fruits of an unspecified palm-tree, collected 12.8.83. S. Miguel: Ponta Delgada, 24.7.83, G. Gillerfors leg. — Cosmopolitan tropical and subtropical species known to have been introduced by commerce in Europe (Wood, l.c.: 892). Also new to Madeira and Macaronesia; first record: Porto Novo, 24.12.1974; later finds in Funchal.

SUMMARY AND DISCUSSION

The coleopterous fauna of the Azores has long been considered to be poor. Exact figures are not available because several records, older ones in particular, will need confirmation. A reasonable estimate seems to be that the number of presently known species amounts to 400 which is somewhat less than half that of Madeira and less than one-fourth that of the Canaries.

The reasons for the paucity may be various, e.g. geographic, volcanic, and climatic which were discussed by Lindroth (1960) and others. Insufficient exploration is perhaps not unimportant. The influence of human activity may have been negative in so far as indigenous species could have been exterminated but so far there is no proof. The positive effect, on the other hand, is obvious. Crotch (l.c.: 361) considers half of his 213 species to be almost certainly introduced. Later additions to the fauna will not have changed this proportion to the disadvantage of the introduced species.

The paucity of the Azorean fauna stands out still more markedly if the comparison is restricted to the endemics. Lundblad (1950: 53) found the latter to be 38% of the whole fauna of the Madeiras. Serrano enu-

merates 36 endemics from the Azores which is hardly 10% of the fauna. To some extent this difference can be explained by the considerable local diversification which undoubtedly occurred in several Madeiran genera. It is true that local diversification has been stated for the Azores too but so far the genus *Calathus* was the only known case. Now *Tarphius* proves to be another one though on a much smaller scale than in Madeira.

Of the 34 species listed in the foregoing as novelties to the archipelago four are described as new and therefore considered to be endemics. Lindroth (l.c.: 34) distinguishes two types of endemics: «neo-endemics», closely allied to species living in other areas, and «paleo-endemics», having no close allies among known species of other areas. The *Metophthalmus* and *Acalles* species described in this paper are clear neo-endemics in this sense. More or less this is also true for *Tarphius rufonodulosus. Hypera multifida,* on the other hand might perhaps qualify as a paleo-endemic.

Of the remaining species 22 occur in the continental part of Europe, some of them secondarily, by introduction. A few are more or less cosmopolitan. For *Carpophilus fumatus* the general distribution seems to be unclear because it may have been mistaken for the cosmopolitan *C. mutilatus.*

Stenichnus t. mesmini and *Liparthrum curtum* are strictly Macaronesian. *Orthoperus nitidulus* had been known before from the Canaries and from the British Isles.

The following, finally, certainly reached the archipelago from the west: *Coproporus pulchellus,* now widely distributed in Macaronesia, *Hypothenemus crudiae,* and *Coccotrypes carpophagus.* For the lastnamed there were previously a couple of European indoors records. All of these will have been introduced and confirm the presence of a trickle into the islands of American elements, Neotropical in particular. This trickle was early traced in the history of the coleopterological investigation of the Azores (Crotch, l.c.: 365). More enigmatic is *Acrotrichis insularis* described from North America but during the last two decades turning up in several European countries, also in fairly natural environments.

Five of the Azorean novelties are also mentioned for the first time from Madeira. Twelve species will be new to Macaronesia.

Among ecological groups the halobiotics will have remained practically unaffected by the dramatic environmental changes during five centuries of human activity. Two of the listed species belong in this category: *Cercyon depressus* and *Remus sericeus.* Their presence was not unexpected because they have been recorded from both sides of the North Atlantic.

The evergreen forests said to have covered the islands extensively before the colonization by man were certainly inhabited by a particular fauna more or less resembling that of the present remains of the laurel forest community of Madeira and the Canaries. Judging from comparison with the fauna of these remains many of the previously known Azorean

coleoptera, among them several endemics, were part of this fauna. Also the four species described above will belong in this group, the *Hypera* species possibly excepted because this genus is not represented in the laurel forests just mentioned. To be added are certainly some recently discovered species: *Olisthopus inclavatus, Caulotrupis parvus* Israelson (mscr.) and still others.

As regards the individual islands the faunal additions presented above are: Flores 9, São Miguel 20, and Santa Maria 80 species. These figures reflect approximately the time spent on the field work. The number for Santa Maria means an increase by more than 100% compared to Serrano's list and suggests that the hitherto found differences between the various islands in abundance of species may be unreliable because of un-uniform investigation.

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Dr. S. Wood, Provo, determined a *Hypothenemus* species.

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