

NOTES ON THE COLEOPTEROUS FAUNA OF THE AZORES, WITH DESCRIPTION OF NEW SPECIES OF ATHETA THOMSON (COLEOPTERA)

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With 25 figures

ABSTRACT. A list is given of new records of coleoptera for some of the Azorean islands. The following *Atheta* species are described as new: (*Notothecta*) *caprariensis*, (*Notothecta*) *dryochares*, and (*Geostibops* n. subgen.) *aptera*. In all 11 species are recorded for the first time from the archipelago, one of them also from Madeira. American *Epitrix* species, well-known pests on various Solanaceae, were found to be widely distributed and to cause some damage in potato fields. *E. azorica* Gruev is a new synonym of *E. cucumeris* Harris.

SUMÁRIO. É dada uma lista de novos assinalamentos de coleópteros para algumas das ilhas dos Açores. Descreve-se como novas as espécies de *Atheta* seguintes: (*Notothecta*) *caprariensis*, (*Notothecta*) *dryochares*, e (*Geostibops* n. subgen.) *aptera*. Ao todo assinalam-se 11 espécies pela primeira vez para o arquipélago, uma delas também para a Madeira. Verificou-se que espécies americanas de *Epitrix*, bem conhecidas como pragas de várias Solanáceas, têm uma larga distribuição e causam algum prejuízo em plantações de batata. *E. azorica* Gruev é um sinónimo novo de *E. cucumeris* Harris.

INTRODUCTION

In 1984 additional material was obtained during some excursions on São Miguel, Pico, and Flores at the end of July and the first half of August. The result is listed below together with some still unpublished records from previous field-work (Israelson 1984). Nothing else being stated the material was collected by me, with assistance of my wife.

Species previously known from the respective island are not mentioned in the list. Novelties to the Azorean archipelago in general are indicated by an asterisc.

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LIST OF SPECIES

C a r a b i d a e

* *Aepus gracilicornis* Wollaston. Flores, Fajã Grande, under stones on the tideland, 8.8.84. — Described from Madeira proper. The present material fits Jeannel's (1926) redescription tolerably well. Colas and Mateu (1958) described a ssp. *desertarum* from the Deserta Islands of the Madeira group.

Harpalus stictus Stephens. Pico, Madalena, 10.8.84.

Anisodactylus binotatus (Fabricius). Pico, Quinta das Rosas, 12.8.84.

Acupalpus dubius Schilsky. Flores, Fajã Grande, 8.8.84.

Dromius meridionalis Dejean. Pico, Madalena, 14.8.84.

H y d r o p h i l i d a e

Sphaeridium bipustulatum Fabricius. Pico: Quinta das Rosas, 13.8.84.

Cercyon lugubris (Olivier). Syn. *C. obsoletus* (Gyllenhal). Flores, Caldeira Branca, 6.8.84.

C. haemorroidalis (Fabricius). Pico, Quinta das Rosas, 13.8.84.

C. nigriceps (Marsham). Syn. *C. atricapillus* (Marsham). Pico: Quinta das Rosas, 13.8.84.

S c y d m a e n i d a e

Stenichnus t. mesmini (Croissandeau). Pico, Quinta das Rosas, 12.8.84.

C o r y l o p h i d a e

Sericoderus lateralis (Gyllenhal). Pico, Madalena, 10.8.84. — As in many other areas this species is the commonest member of its family and one of the commonest beetles on the whole in the archipelago. Only females have been found and there is every reason to believe that the propagation is parthenogenetical.

P t i l i i d a e

Ptenidium pusillum (Gyllenhal). Pico, Madalena, 10.8.84. Flores, S. Cruz, 7.8.84.

Acrotrichis sanctaehelenae Johnson. Pico. Quinta das Rosas, 13.8.84. Flores, S. Cruz, 7.8.84.

A. sericans (Heer). Pico, Quinta das Rosas, 13.8.84.

Staphylinidae

Phloeonomus azoricus Fauvel. S. Miguel, Furnas, under the bark of a dead *Pittosporum* trunk, 31.7.84. — Previously known from *Euphorbia stygiana* on Flores.

Oxytelus nitidifrons Wollaston. Flores, S. Cruz, 31.7.84.

Stilicus orbiculatus (Paykul). Pico, Quinta das Rosas, 12.8.84. Flores, S. Cruz, 31.7.84.

Hypomedon debilicornis Wollaston. Pico, Quinta das Rosas, 12.8.84.

Lithocharis nigriceps (Kraatz). Flores, S. Cruz, 7.8.84.

Gyrohypnus fracticornis (Müller). Syn. *G. punctulatus* (Paykull). Flores, Caldeira Branca, 6.8.84. — The Azorean material examined, also including specimens from S. Miguel and Pico, is very uniform and not unambiguously referable to any of the two species. Coiffait (1972) is convinced that they are synonymous.

Philonthus pachycephalus Nordman. Syn. *Ph. sordidus* (Gravenhorst). Flores, S. Cruz, 7.8.84.

* *Heterothops minutus* Wollaston. S. Miguel, Ponta Delgada, 28.7.84. Known from Madeira and sparsely from W. Europe (Israelson 1979).

Sepedophilus lusitanicus Hammond. Pico, Quinta das Rosas, 12.8.84.

Cilea silphoides (Linnaeus) (= *Leucoparyphus* s.). Pico, Quinta das Rosas, 13.8.84.

Coproporus pulchellus (Erichson). Pico, Quinta das Rosas, 12.8.84.

* *Cypha pulicaria* (Erichson) (= *Hypocyptus* p.). S. Maria, Praia, 10.8.83. Pico, Madalena, 14.8.84. — Not recorded before from Macaronesia.

Cordalia obscura (Erichson). Pico, Madalena, 19.8.84.

Nehemitropia sordida (Marsham) (= *Atheta* s.). Pico, Quinta das Rosas, 13.8.84.

Atheta luridipennis (Mannerheim). Flores, Fajã Grande, 4.8.84.

A. coriaria (Kraatz). Pico, Madalena, 10.8.84.

A. laticollis (Stephens). Pico, Madalena, 10.8.84.

* *Atheta (Notothecta) caprariensis* n. sp. Figs. 1, 4, 7, 9, 11, 13, 18, 21-23.

Lectotype, ♂: Azores, São Miguel, Furnas, 31.7.1984, G. Israelson, in author's collection. Paratypes: 4 ♂♂, 3 ♀♀, same data as holotype; 1 ♀, same data, except 28.7.1983, 2 ♂♂, 1 ♀, same data, except G. Gillerfors leg. and coll.; 1 ♂, ditto, in author's coll.

Name derived from Capraria, an old name of the island of S. Miguel.

Length 2.6-3.3, abdomen excepted 1.3-1.5 mm. Black, often with pronotum and elytra dark-brown, abdominal segment VI and hind half of

V brownish yellow, appendages brownish yellow except antennae brown from outer half of segment III, segment XI slightly paler than preceding. Head and pronotum rather mat, elytra and abdomen slightly shining.

Head slightly transverse with greatest width in posterior half, frons flattened. Punctuation insignificant, of scattered, large but shallow punctures. Microreticulation strong, isodiametric. Pubescence scattered, hairs pointing forward at sides, inward on disc. Anterior cervical carina reaching well beyond hind margin of eye, posterior carina joining anterior towards middle (Fig. 9). Labrum hardly emarginate at front. Mandibles (Fig. 1) and maxillae normal, maxillary palpus as in Fig. 4. Labial palpi not prolonged, broadest near apex (Fig. 13). Eyes distinctly somewhat shorter than temples, very slightly protruding. Antennae $1.8 \times$ as long as pronotum, segments II and III of about equal length, V as broad as long, VI-X increasingly more transverse, XI as long as IX and X combined.

Pronotum $1.15 \times$ as broad as head and $1.15 \times$ as broad as long, broadest before middle, less strongly narrowed apicad than basad, in ♂ with a broad impression, in ♀ posteriorly flattened. Punctuation, reticulation and pubescence like those of head, medial hairs pointing backward, submedial hairs somewhat obliquely so. Lateral setae of moderate length.

Elytra $1.2 \times$ as wide as and at sides as long as median line of prothorax, $1.5 \times$ as wide as long, hind margin strongly excised. Punctuation distinctly deeper than on pronotum, reticulatum as on pronotum but somewhat weaker, pubescence pointing backward, in inner half obliquely so except near suture. Alae well developed.

Abdomen subparallel, tergites III-V with strong, VI with distinct but weaker basal impression, ♂ tergite VIII with hind edge very slightly convex with a short longitudinal carina on each side and between carinae with 8 distinct teeth (Fig. 11). Sternite VIII slightly produced, more narrowly rounded behind, in ♀ tergite VIII broadly rounded and towards middle truncate, sternite VIII like that of ♂. Punctuation and pubescence sparse and fine, reticulation as on forebody but apicad stronger.

Legs slender, longest seta of mesotibia slightly longer than width of tibia.

Prosternum posteriorly with a fine medial carina. Mesosternal process narrow, sharply pointed, about reaching middle of mesocoxal cavities. Shortest distance between mesocoxal and metacoxal cavities about equalling metacoxal length.

Aedeagus as in Figs. 21-23. Inner armature with a copulatory piece embraced by a large sclerite (suspensorium?) on each side and followed distad by two very elongate and narrow apophyses: near apex with a structure containing two paramedian apophyses and prolonged basad on ventral side. Spermatheca as in Fig. 18.

Chaetotaxy as follows (for terminology see Yosii and Sawada 1971 and Sawada 1972). Labrum with one setaceous sensilla and 3 secondary setae on each side. Prementum (Fig. 13) with distal setae emerging closely

together, median area narrow with 3 pseudopores, lateral area with 10 pseudopores, all in inner half. Mentum with seta v of normal length but placed straight laterad of seta u. Labial palpus (fig. 13) with seta h on level with median pore, sensilla δ indistinct and γ posterior to seta b. Macrochaetal formula of tergites II-VIII: 01-22-22-22-23-33-22. Flabellum of ala with 6 setae (Fig. 7). Lateral lobe of paramere (Fig. 23) with setae in outer half; seta a very elongate.

Closely related to the following species but amply distinguished by its larger size among several other characters.

Sawada's keys (Yosii and Sawada 1976) to selected Palearctic Aleocharinae, and largely based upon the chaetotaxy, bring this and the following species to subgenus *Notothecta* of the *Atheta*-complex. By the keys of Bennick and Lohse (1973) to the Middle-European Callicerini, and mainly based on other characters, one will be taken to their Mixed group II. It is of some interest that that group contains several of Sawada's *Notothecta* species. The inner armature of the penis of the present species seems to be rather weak for a member of this subgenus but may have been reduced, still more so in the following species.

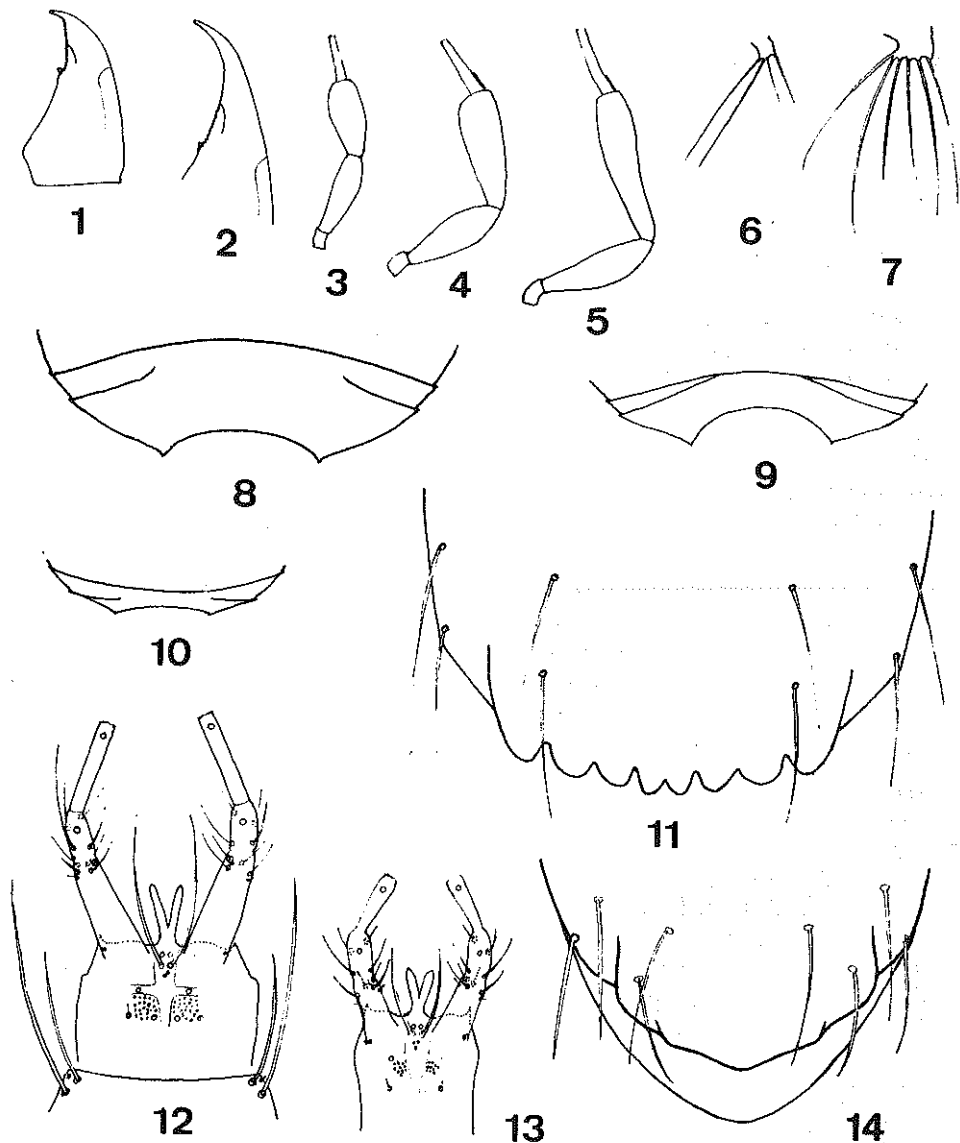
Found under the bark of a dead trunk of *Pittosporum undulatum*.

* *Atheta (Notothecta) dryochares* n. sp. Figs. 3, 6, 10, and 14.

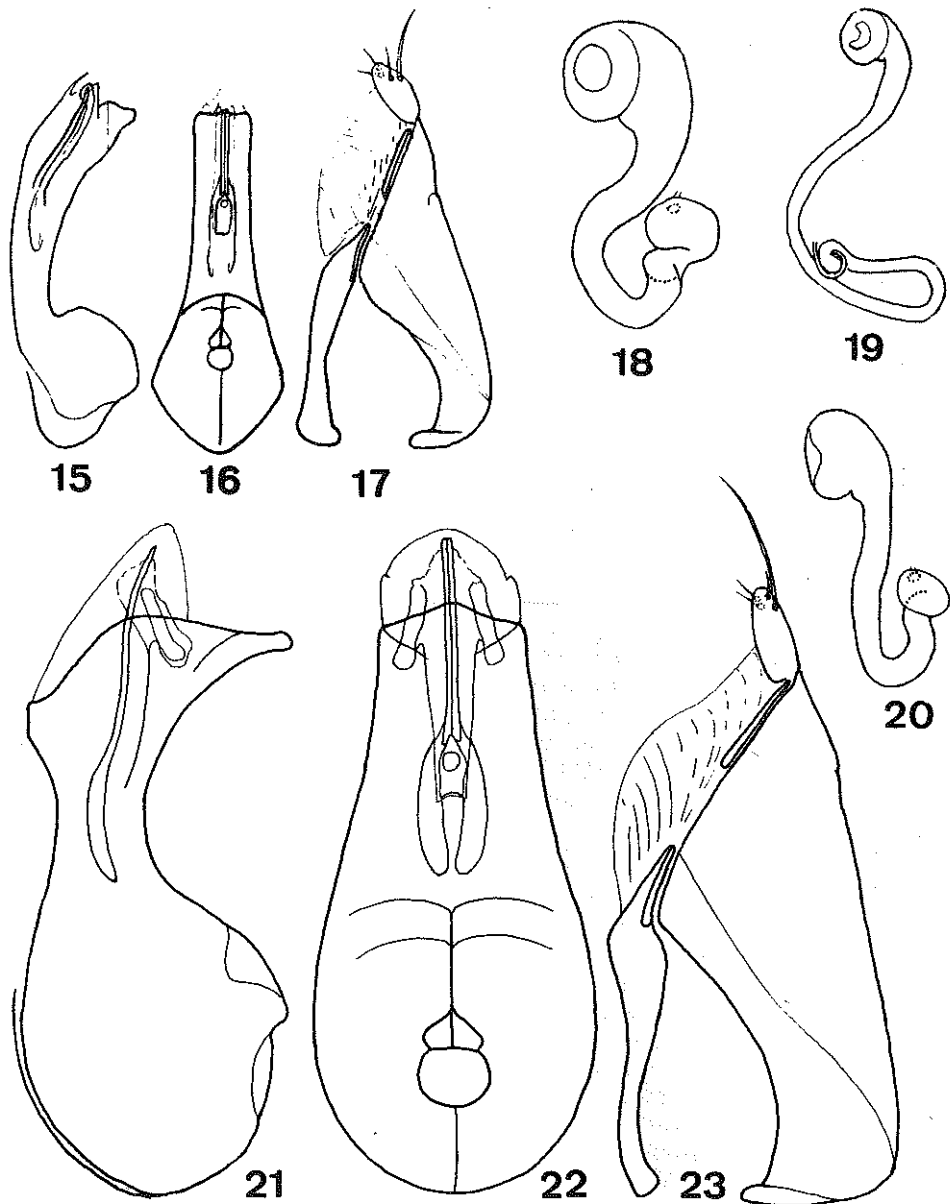
Holotype, σ : Azores, S. Miguel, Furnas, 31.7.1984, G. Israelson, in author's collection. Paratypes: 1 σ , S. Maria, Pico Alto, 11.7.1982; 1 σ , 1 φ , same locality, 4.8.1983; 1 σ , 2 φ , S. Miguel, Ponta Delgada, 27.7.1983, all author leg. and coll.

Length 1.8-2.2, abdomen excluded 0.9-1.25 mm. Black, pronotum and elytra sometimes blackish brown, tergite VIII yellowish brown, appendages yellow with a brownish tinge except antennae brown from outer portion of segment III. Head and pronotum rather mat, elytra and abdomen more shining.

Head slightly transverse with greatest width in posterior half. Upper side flattened. Punctuation insignificant, of remotely scattered, large but very shallow punctures, microreticulation strong, isodiametric. Hairs pointing forward at sides, mainly inward on disc. Anterior cervical carina reaching beyond hind margin of eye, posterior carina interrupted at middle (Fig. 10). Labrum slightly emarginate in front. Mandibles and maxillae normal; palpus as in Fig. 3. Labial palpi with segment III broadest near apex. Eyes distinctly somewhat shorter than temples, very slightly protruding. Antennae about 1.8 \times as long as pronotum, segment III about as long as II, V as broad as long, VI-X successively more transverse. Pronotum about 1.3 \times as broad as long and 1.2 \times broader than head, largest width before middle, less strongly narrowed apicad than basad, disc broadly flattened in σ , very slightly convex in φ , lateral setae of moderate length. Punctuation and reticulation as on head, medial hairs pointing backward, submedial ones slightly obliquely so. Elytra 1.2 \times as wide as



Figs. 1-14. — *Atheta* spp. — 1, 4, 7, 9, 11, 13. *A. caprariensis* n. sp. 3, 6, 10, 14. *A. dryochaeres* n. sp. 2, 5, 8, 12. *A. aptera* n. sp. — 1, 2. Right mandible. 3-5. Maxillary palpus. 6, 7. Elytral flabellum. 8-10. Cervical carina. 11, 14. ♂ abdominal tergite VIII. 12. Labium and anterior part of mentum. 13. Labium. 14. ♂ abdominal sternite VIII. — (Corresponding organs drawn to scale).



Figs. 15-23. — *Atheta* spp. — 18, 21-23. *A. caprariensis* n. sp. 15-17, 20. *A. dryochares* n. sp. 19. *A. aptera* n. sp. 15, 21. Penis, lateral view. 16, 22. Penis, ventral view. 17, 23. Paramere. 18-20. Spermatheca. — (Corresponding organs drawn to scale).

and at sides $1.25 \times$ as long as pronotum; punctation and reticulation like those of pronotum; hind margin distinctly excised. Pubescens pointing backwards, in inner half obliquely so except near suture. Alae well developed. Abdomen subparallel, tergites 3-5 with strong, tergite 6 with distinct but weaker basal impression. Tergites rather sparsely punctate and pubescent, with reticulation as on forebody but apicad stronger. ♂ tergite VIII (Fig. 14) with hind margin slightly produced at middle into a short obtuse-angled point and on each side with a short and broad, flattened, longitudinal impression; hind margin of sternite VIII (Fig. 14) prolonged, narrowly rounded apically, in ♀ hind margins of tergite VIII and sternite VIII about semicircularly rounded. Punctation and pubescence rather sparse and fine, reticulation as on forebody but apicad more deeply impressed.

Legs slender, tibial setae about as long as width of tibia.

Prosternum posteriorly with a fine medial carina. Mesosternal process narrow, sharply pointed, about reaching middle of coxal cavities. Shortest distance between mesocoxal and metacoxal cavities as long as metacoxae.

Aedeagus as in Figs. 15-17. Inner armature more poorly sclerotized than in foregoing species but otherwise similar. Spermatheca as in Fig. 20.

Chaetotaxy as follows. Labrum with a setaceous sensilla and 3 secondary setae on each side. Prementum with distal setae emerging close to each other, median area with 4 pseudopores, lateral area with some 10 pseudopores, all in inner half. Labial palpus with seta h on level with median pore, sensilla δ indistinct and γ posterior to seta b. Mentum with seta v normal but placed lateral of seta u. Macrochaetal formula of tergites II-VIII: 01-12-22-22-23-23-34-22. Flabellum of ala with 4 setae (Fig. 6). Distal segment of lateral lobe (Fig. 17) setose in outer third, seta a very long.

It appears that the similarities in chaetotaxy to the foregoing species are striking though not total. Also in respect of more traditional characters the two species show interesting similarities but they are quite well distinguished.

An Azorean species of similar size and colour as *dryochares* is (*Hummleriella*) *azorica* Bernhauer (1936 : 315), described on a single female. According to the description the latter would differ from the former by its abnormally large head, very small eyes, only being a third as long as the temples, furthermore by the antennal structure (segment III much shorter than II) and by the abdominal tergite VI being provided with a very weak basal impression. The species was omitted (overlooked?) in a list pretended to contain all known Azorean staphylinids (Bernhauer 1940).

The holotype was collected together with the foregoing species under the bark of a dead trunk of *Pittosporum undulatum*. The paratypes were beaten from dead branches of an unknown broad-leaved tree and of *Rubus* or sifted from twig litter on the ground in a park.

Atheta, *Geostibops* n. subgen.

Type species: *Geostibops aptera* n. sp.

In general appearance somewhat reminiscent of a giant *Geostiba* but not closely related to that genus.

Mandibles and palpi (but not remaining appendages) conspicuously prolonged, eye reduced, alae completely absent, elytra small with rounded shoulders, metasternum strongly abbreviated.

The macrochaetal pattern of the abdominal tergites is of Sawada's O ω O type indicating his *Datomicra* group where it is difficult, however, to find a suitable subgenus for the type species. Nor are the keys of Bennick and Lohse helpful. On the other hand there are notable similarities to the two just described species in chaetotaxy, pubescence of the forebody, structures of prosternum and mesosternum, antennae, surface of the body, spermatheca etc.

It is assumed therefore that the three species have a common origin far back in time and that they evolved in different directions probably in connection with adaptation to different habitats. The differences from *Notothecta* seem to be sufficiently great to justify the establishment of a new subgenus.

* *Atheta (Geostibops) aptera* n. sp. (Figs. 2, 5, 8, 12, and 19.)

Holotype, ♀: Azores, Flores, Fajã Grande, 4.8.1984, G. Israelson, in author's collection.

Length 3.5, abdomen excluded 1.5 mm. Forebody, abdominal segments V behind, and VI yellowish red, remainder brown, appendages yellow except antennal segments III (apex) - XI brown, XI slightly paler than X. Head and pronotum rather mat, elytra and abdomen more shining.

Head somewhat transverse with greatest width in posterior half, upper side flattened. Punctuation of scattered, large but shallow punctures, microreticulation strong, isodiametrical. Pubescence scattered, hairs pointing forward on sides, inward on disc. Anterior cervical carina nearly reaching level of hind margin of eye; posterior carina (Fig. 8) interrupted at middle. Labrum hardly excised at front. Mandibles (Fig. 2) with prolonged point. Maxillae normal but palpi prolonged with outer side of segment III slightly concave (Fig. 5). Labial palpi with terminal segment parallel-sided (Fig. 12). Eye half as long as temple, hardly protruding. Antennae $1.8 \times$ as long as pronotum; segments II and III of about equal length, V as broad as long, VI-X successively somewhat more transverse.

Pronotum about $1.2 \times$ broader than head, $1.1 \times$ wider than long, except anteriorly with a weak medial depression. Punctuation and reticulation as on head. Pubescence pointing backward at midline, mainly

outward laterad. Marginal setae of moderate length. Scutellum visible but reduced.

Elytra transverse, $0.8 \times$ longer and $1.1 \times$ wider than pronotum, broadest at posterior angles, from there converging forward with completely rounded shoulders; posterior margin strongly excised. Punctuation much coarser than on pronotum but reticulation appearing less conspicuous. Pubescence mainly pointing somewhat obliquely backward.

Abdomen subparallel, slightly broader than forebody, tergites III-V with strong, VI with weaker but still distinct basal impression. Punctuation and pubescence fine and scattered, reticulation as on pronotum, posteriad stronger. Hind margin of tergite VIII broadly rounded, at middle third subtruncate with a very slight medial excision and very fine, irregular crenulation; sternite VIII somewhat prolonged, less broadly rounded.

Legs slender. Longest tibial setae somewhat longer than width of tibia.

Prosternum posteriorly with a blunt medial keel. Mesosternal process narrow, sharply pointed, reaching half-way to posterior margin of mesocoxal cavity. Shortest distance between mesocoxal and metacoxal cavities one fourth the length of metacoxa.

Spermatheca as in Fig. 19.

Chaetotaxy as follows. Labrum with a setaceous sensilla and 3 secondary setae on each side. Prementum (Fig. 12) with distal setae emerging close together, median area narrow with 2 pseudopores, lateral area with about 20 pseudopores, all crowded in inner half. Labial palpus (Fig. 12) with seta h on level with median pore, sensillae β and δ indistinct, sensilla γ posterior to seta b, mentum with seta v very much reduced and located straight laterad of u. Macrochaetal formula of tergites II-VIII: 01-01-12-22-22-23-22.

♂ unknown.

The type specimen was sifted from wet debris and moss near the margin of a river.

Aleochara (Polystoma) albopila. Flores, Fajã Grande, 8.8.84.

Histeridae

Beckmanniolus dimidiatus (Illiger). S. Miguel, Ribeira Grande, 1.8.84.

Elateridae

Heteroderus azoricus Tournier. Pico, Madalena, 14.8.84.

Melanotus dichrous Erichson. Flores, S. Cruz, 7.8.84.

Dermestidae

Dermestes frischi Kugelann. Flores, S. Cruz, 3.8.84.

N i t i d u l i d a e

* *Stelidota geminata* (Say). Flores, S. Cruz, 1 specimen in a compost heap, 7.8.84. — Reminiscent at the first glance of an *Amphotis* because of its elytral costae but considered to be more closely related to *Epuraea*. Neotropical and eastern Nearctic. Not recorded before for Palearctic.

C u c u j i d a e

Monotoma spinicollis Aubé. Pico, Quinta das Rosas, 12.8.84. Flores, S. Cruz, 7.8.84.

Ahasverus advena (Walt). Flores, S. Cruz, 7.8.84.

Cryptomorpha desjardinsi (Guérin). Pico, Quinta das Rosas, 7.8.84.

Laemophloeus capensis Waltl. Pico, Madalena, 10.8.84.

E r o t y l i d a e

Cryptophilus integer (Heer). Pico, Quinta das Rosas, 12.8.84.

C r y p t o p h a g i d a e

Ephistemus globulus (Paykull). Pico, Quinta das Rosas, 12.8.84. Flores, S. Cruz, 7.8.84.

L a t h r i d i i d a e

Corticarina fulvipes (Comolli). Pico, Quinta das Rosas, 12.8.84. Flores, Mosteira, 3.8.84.

M y c e t o p h a g i d a e

Litargus pilosus Wollaston. Pico, Madalena, 10.8.84.

Typhaea stercorea (Linnaeus). Pico, Madalena, 10.8.84.

E n d o m y c h i d a e

Mycetaea hirta (Marsham). Flores, S. Cruz, 7.8.84.

C o c c i n e l l i d a e

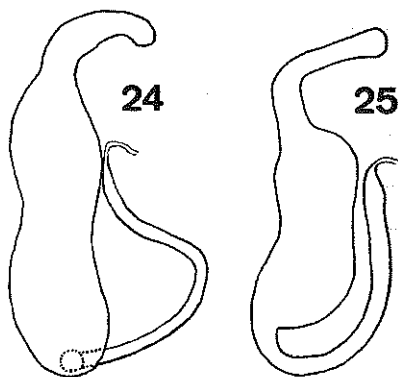
Scymnus interruptus (Goeze). Pico, Madalena, 10.8.84. Flores, S. Cruz, 7.8.84.

C h r y s o m e l i d a e

* *Epithrix cucumeris* Harris. **Syn. nov.** *E. azorica* Gruev. Pico, Madalena, 10.8.84. — Previously published under the latter name. Specimens

determined as *cucumeris* by G. Scherer were compared to one of Gruev's ♂ paratypes and found to be the same species. The penis, figured by Gruev (1981), is very sharply pointed. Also the spermatheca of the Azorean form is characteristic. It is here figured (Fig. 24) and, for comparison, also the spermatheca of the European *pubescens* (Koch) (Fig. 25). It appears that the «tail» (upside) and the «body» are both clearly different and that the connections between the body and the spermathecal duct are also different in the two species.

E. cucumeris is a well-known American pest on cultivated Solanaceae (the black potato flea beetle). It proved to be very common in the three Azorean potato fields examined: in Ponta Delgada and Povoação on S. Miguel and S. Cruz on Flores.



Figs. 24, 25. — Spermatheca of *Epitrix* spp. — 24. *E. cucumeris* Harris, Azores. 25. *E. pubescens* (Koch), Sweden.

The first *Epitrix* recorded from the archipelago was *pubescens* taken from *Pittosporum* and *Myrica* on S. Jorge (Marsden 1970). Incidental occurrence in summer on plants other than those attacked is in fact rather characteristic of *cucumeris* on the Azores. It can be guessed that adults spread in great numbers after the early potato harvests and concentrate on suitable Solanaceae, as it seems *Solanum nigrum* in the first place, but that, for lack of proper nutritive plants, many individuals have to take a rest at other places. In any case *cucumeris* belongs to the commoner beetles in the summer months. It seems not to have been reported before from outside America.

* *E. hirtipennis* Melsham. S. Miguel, Ponta Delgada and Povoação, on *Datura stramonium*, *Solanum nigrum*, and *S. tuberosum*, first record 29. 7.84. — Always collected together with the foregoing but more sparsely. Can also be expected to live on *Nicotiana* because this is the American «tobacco flea beetle». Easily separated from *cucumeris* by the colour al-

ready: black in fully coloured *cucumeris*, light brown with a darker fascia across the elytra in *hirtipennis*. An illustrated description of the latter was given by White and Barber (1974). Both species should perhaps be looked for also in Madeira in the first instance, but at least *hirtipennis*, being distributed nearly all over the United States, should have possibilities of survival in more eastern areas also. Recorded before from outside America?

Bruchidae

Acanthoscelides obtectus Say. S. Miguel, Ponta Delgada, 27.7.84.

Curculionidae

Apion s. semivittatum Gyllenhal. Pico, Madalena, 10.8.84.

Pselactus spadix Herbst. Pico, Madalena, 10.8.84.

Pseudophloeophagus chopardi Méquignon. S. Maria, Praia, 10.8.83.

* *Tychius cuprifer* (Panzer). S. Miguel, Ponta Delgada, 27.7.84. — W. Palearctic. Reported from *Trifolium* species. New to Macaronesia.

* *Ceuthorhynchus assimilis* (Paykull). S. Miguel, Ponta Delgada, sparse on *Diplotaxis*, — This is a well-known pest on various cultivated Cruciferae and widely distributed in W. Palearctic and N. America (introduced). Also found in Madeira; first known record: Cancela, on cabbage plants, 17.3.81. New to Macaronesia.

Scolytidae

Liparthrum curtum Wollaston. Pico, Madalena, 10.8.84. — There is every reason to believe that this species can be obtained from any fig-tree in the whole archipelago and at any season of the year. It is of no commercial interest because only dying or dead branches are attacked.

Xyleborus saxeseni (Ratzeburg). Flores, Mosteira, 5.8.84.

DISCUSSION

Among 11 species recorded for the first time from the Azores the three *Atheta* species described above are considered endemics.

A. caprariensis and *A. dryochares* live subcortically. Perhaps they were commonly distributed in vast forests once covering large areas of the islands. These forests were destroyed by man and as far as hitherto known the two species now live on introduced ligneous plants only. Being predators they may have had comparatively good chances of adapting themselves to somewhat altered conditions. Subcortical *Atheta* species seem to be unknown in other Macaronesian archipelagos.

A. aptera — so far poorly known — seems to be specialized for life in entirely different, well aerated, wet environments connected with

streaming water. This type of environments was certainly often completely destroyed during colonization but if preserved it can be expected to be of high age and therefore might offer possibilities of survival for suitably adapted paleoendemics. Nor are in this case any corresponding species of the genus known from other parts of Macaronesia.

The presence of the just discussed *Atheta* species, as well as some other recently discovered coleoptera of probable relict type (Israelson, manuscripts), evidence that there are more survivors from pre-historic environments than might be concluded from previous records.

Aepus gracilicornis lives in the tidal zone, a perfectly natural environment practically unaffected by human activity.

The remaining species are certainly all more or less recent introductions as evidenced by their occurrence in close connection with thoroughly cultivated surroundings. *Heterothops minutus*, *Cypha pulicaria*, *Tychius cuprifer*, and *Ceuthorhynchus assimilis* all come from Europe. The first and the last species are known from Madeira and may have made an intermediate landing on that island. Three species, a relatively high number, are immigrants from America: *Stelidota geminata*, *Epithrix cucumeris*, and *E. hirtipennis*.

A few of the introduced species are potential pests on commonly cultivated and commercially important crops: the *Ceuthorhynchus* and, above all, the *Epithrix* species.

Numbers of new records for separate islands are: S. Maria 3, S. Miguel 8, Pico 36, and Flores 22, indicating that much faunistic work still remains to be done.

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ADDENDUM

Epitrix cucumeris Harris pretended above to be identified for the first time from the Azores was recently recorded from São Miguel by M. C. Carneiro (Pragas das culturas na Ilha de S. Miguel. — *Bolm Soc. port. Ent.* 7, suppl. A : 53-69, 1982). The species was determined in 1977 and is considered to be of minor importance economically.