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**TWO NEW CAVERNICOLOUS SPECIES OF THE GENUS
TRECHUS CLAIRV. FROM THE AZORES
(COLEOPTERA, CARABIDAE)**

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With 4 figures

SUMÁRIO. Neste trabalho são descritas duas novas espécies para a Ciência, do género *Trechus* Clairville, *T. picoensis* n. sp. e *T. terceiranus* n. sp., colhidas nas furnas e grutas vulcânicas nos Açores.

An expedition of Dr. P. & Mrs. M. Ashmole (University of Edinburgh) and Dr. P. Oromí and J. L. Martín (University of La Laguna), sponsored by the National Geographic Society was undertaken in September 1987 to study the fauna of recent lava flows and caves in the Azores. Two new *Trechus* species were captured and I would like to express my gratitude to the collectors for sending them to me for description. Holotypes and paratypes are preserved in the University of La Laguna (Department of Animal Biology), other paratypes in the Museo Insular de Ciencias Naturales (Santa Cruz de Tenerife), in the Museo de Zoología of Barcelona, in the British Museum (N.H.) and in my collection.

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Trechus (s. str.) picoensis n. sp. (Figs. 1, 2)

Type locality : Island of Pico, Azores.

Type material : holotype ♂ Furna dos Montanheiros (Pico) VIII-1987
P. Oromi leg!. Paratypes : 5 ♂♂, 11 ♀♀ same locality Oromi, Martin &
Ashmole leg!.

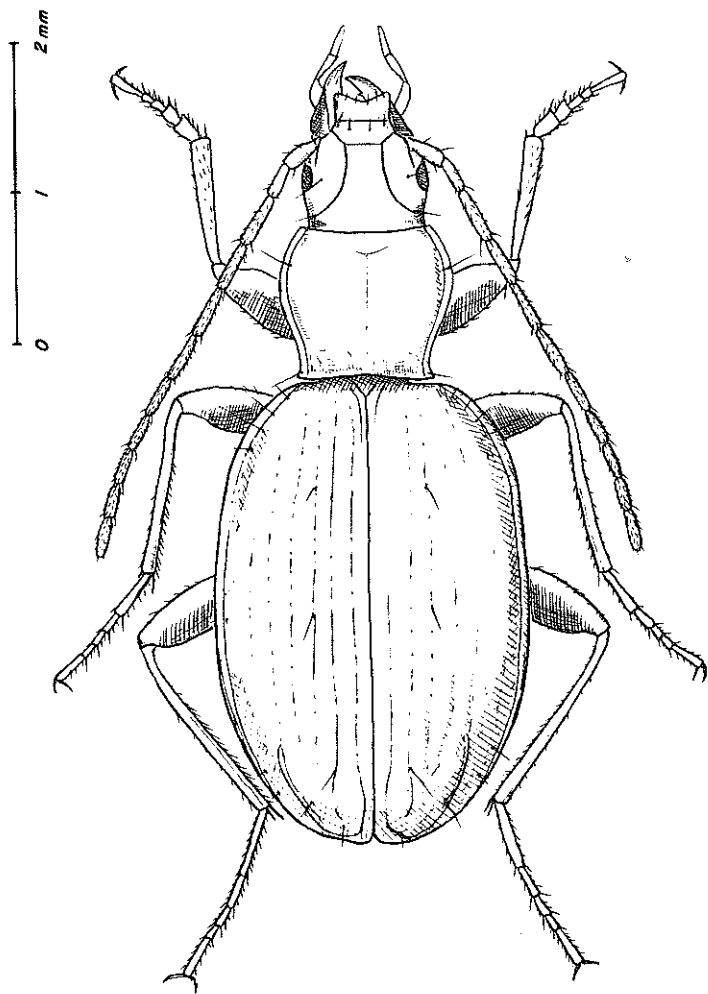


Fig. 1. — *Trechus picoensis* n. sp., imago.

Description : Large size, length 4.5 - 5.4 mm, width 1.8 - 2.1 mm. Abdomen convex and broader than fore-body (= incipient physogastrica). Rather depigmented, colour reddish-testaceous, appendages yellowish. Teguments subnitidous, reticulation in head and pronotum isodiametric, transverse and feebler in the elytra. Wingless.

Head small and narrow, narrower than prothorax. Eyes small, almost flat, same length as temples; the latter slightly curved and convergent, with microchaetae; frons convex, frontal furrows deep, curved; anterior margin of labrum concave; mandibles strong, elongate and sharp-pointed, with a tri-tuberculate retinaculum (two visible big teeth), fig. 2C; palpi slender and long; mentum bifid. Antennae very long (2.0 - 3.1 mm) and slender; the 3rd antennomere clearly longer than the 2nd (1.4 ×).

Pronotum slightly convex and transverse, about 1.16 × as broad as long; side-margins curved in front markedly narrowed backwards in slightly curved lines up to sharp and conspicuous protruding corners; basal margin moderately emarginated and sinuated. Lateral fovea developed but

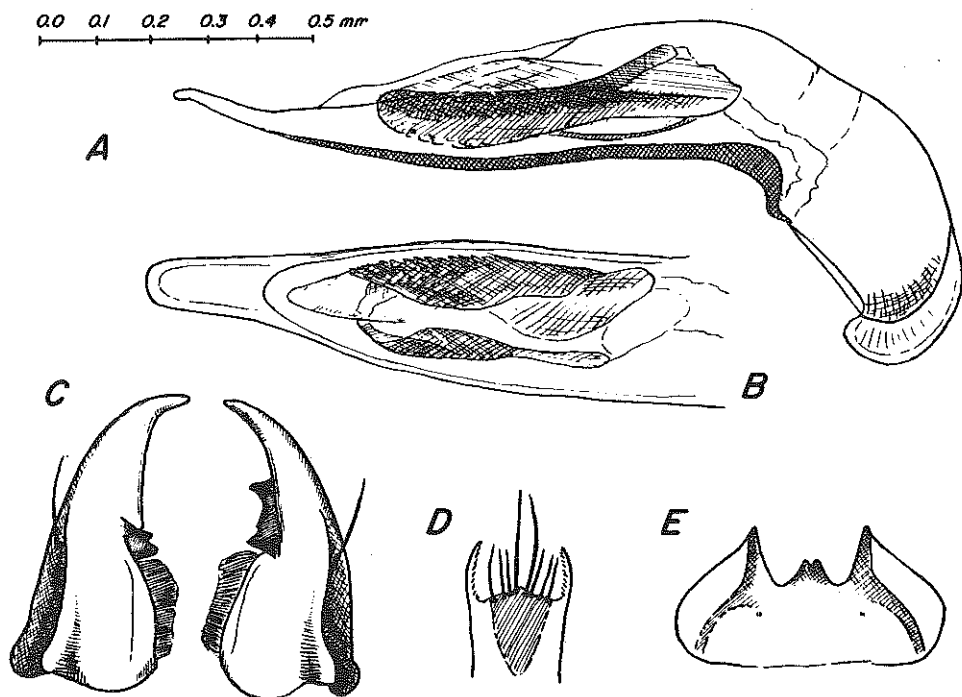


Fig. 2. — Penis of *Trechus picoensis* n. sp. A. — Penis in lateral view. B. — *Idem* in dorsal view. C. — Mandibles. D. — Lingua. E. — Mentum.

not very deep, micro-granulated; lateral furrows broad and somewhat reflexed. Median impression fine.

Elytra ovate with completely rounded shoulders, almost twice as wide as prothorax ($1.9 \times$) and $1.4 \times$ as long as broad; markedly convex (in some $\delta \delta$, subglobose and with depressed anal field in discus). Elytral apex rounded. Lateral furrows moderately canaliculate; striae conspicuous, indistinctly punctured, the external ones more superficial; interstriae more or less convex. Recurrent stria short, connected to the 5th. Elytral setae as in *Trechus* s. str.; hind puncture of stria 3 situated slightly before middle; preapical puncture closer to the suture than to the apex.

Legs long and slender, thin femurs, setae yellowish and feeble; protibiae not carinated, with pilosity on its inner face; protarsal segments 1 and 2 clearly enlarged and spiny in $\delta \delta$, segment 4 with well developed lamellated ventral appendage.

Penis as in fig. 2; apex of lamella slightly blunt.

***Trechus* (s. str.) *terceiranus* n. sp. (Figs. 3, 4)**

Type locality : Island of Terceira, Azores.

Type material : holotype δ Gruta do Coelho (Terceira) VIII-1987, P. Oromí leg!; paratypes, 10 $\delta \delta$, 20 $\delta \delta$ same locality, P. Oromí and J. M. Martín leg!; 1 δ 2 $\delta \delta$ Gruta dos Balcões VII-1987 J. Martín leg!.

Description : Medium size, length 3.6 - 4.3 mm, width 1.5 - 1.7 mm; subconvex, oblongus. Colour reddish-testaceous, depigmented, elytra and antennae in some specimens more or less infuscated; appendages yellowish. Teguments nitidous, with isodiametric reticulation on head and pronotum, transverse and more superficial on elytra. Wingless.

Head normal, ovate, frontal furrows deep and curved; eyes small, subconvex, as long as temples, latter curved, with microchaetae. Mandibles as in previous species, long and sharp. Antennae (2.1 - 2.2 mm) normal, reaching the first third of elytra; 2nd antennomere almost as long as 3rd.

Pronotum subconvex, transverse, $1.22 \times$ as broad as long; side-margins little curved and convergent backwards, with no prebasal sinuation; hind angles obtuse with very small protruding corners. Base moderately emarginate, lateral fovea weakly developed, with microrugosity; marginal furrow narrowly canaliculate. Median impression fine.

Elytra oblong, subconvex, with moderately rounded shoulders; $1.5 \times$ longer than wide and $1.49 \times$ broader than prothorax. Apical angle sharp, apex of elytra forming a small protruding point; lateral furrow moderately canaliculate. Striae rather conspicuous all over, indistinctly punctured; interstriae more or less convex. Elytral setae as in previous species.

Legs slender, of normal length; setae yellowish and feeble; protibiae not carinated, with pilosity on its anterior face; protarsal segments 1 and 2 clearly enlarged and spiny in $\delta \delta$, segment 4 with well developed lamellate ventral appendage.

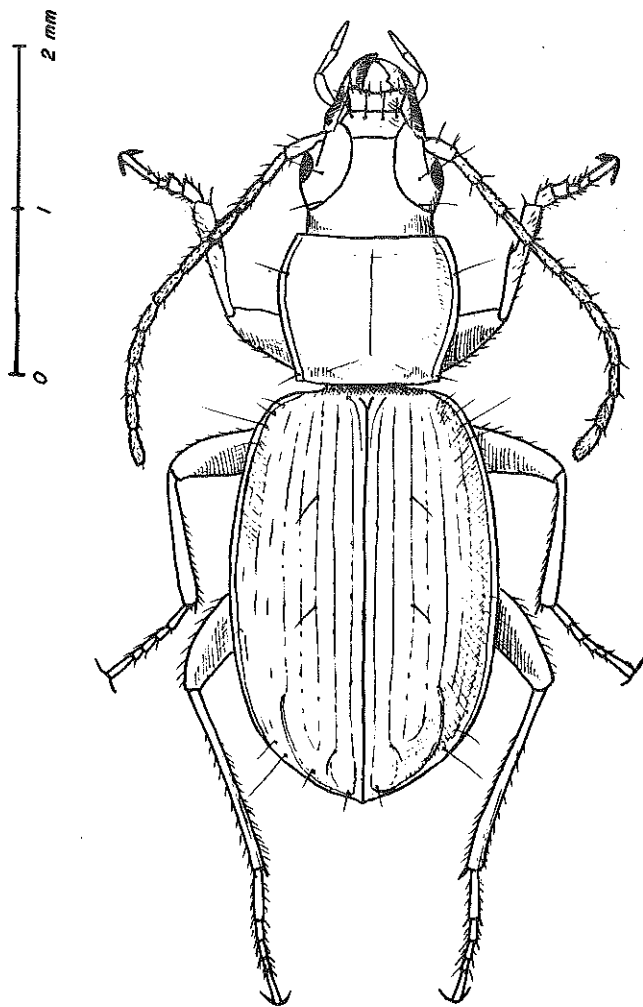


Fig. 3.—*Trechus terceiranus* n. sp., imago.

Penis as in fig. 4; apical lamella prolonged and spatulate; apex slightly curved downwards (hook).

COMMENTS

Trechus picoensis n. sp. resembles very much a small *Iberotrechus bolivari* Jeannel (1927, p. 105, fig. 487, size 6 mm), which inhabits caves in Northern Spain and is representative of a monotypic genus which keys

out (Casale & Laneyrie, 1982) by two main characters: presence of pilosity in the anterior face of protibiae and tridentate mandibulae. The first case is valid for *T. picoensis*, and by quick examination, the mandibles may look tridentate; in fact, three teeth are very conspicuous. However, a detailed analysis (fig. 2C) shows that the third big tooth belongs to the retinacle which has also a smaller incipient third tooth (trituberculate retinacle) and cannot be considered as the premolar tooth of the "tridentate" condition in *Trechinae*, *sensu* Jeannel. Other characters confirm its separation from *Iberotrechus*: the labrum is not rectangular, mentum bifid (fig. 2E) instead of single-toothed, lingua (fig. 2C) not particularly protruding, the maxillary palpi have no cover of microchetæ, etc.. Their similarity in body shape is probably due to a convergent cave adaption.

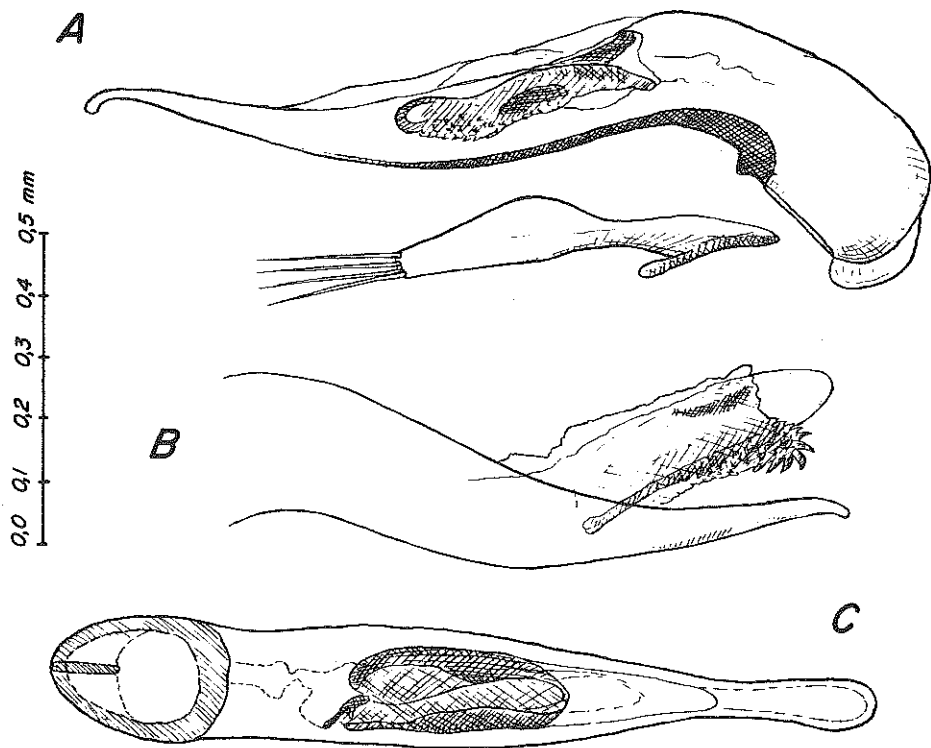


Fig. 4.—*Trechus terceiranus* n. sp. A. — Lateral view. B. — Internal sac evaginated. C. — Dorsal view.

Pilosity in the anterior face of protibia is not a character exclusive to *Iberotrechus*, *Duvalius*, *Anophthalmus* and other mostly cavernicolous

Trechini, as remarked by Jeannel (*op. cit.*). In fact, this pilosity is well developed in *Trechus picoensis* n. sp. and *T. terceiranus* n. sp. and is also found in *Trechus minioculatus* Machado, although much more reduced. The latter is a hypogeous endemism living in the interstices of lava covered by earth and in lava-tubes in the mountainous regions of the island of Hierro, in the Canaries (Machado, 1987).

Both the described species are cavernicolous. The similarity in mouthparts and penis structures (internal sac, basal bulb, etc.), reflect a relationship which also includes *Trechus torre-tassoii* Jeannel, the only described *Trechus* species from the Azores (v. Serrano, 1982) which I know only from the description and figures of Jeannel (1937, p. 84, figs. 2-4). *T. torre-tassoii* has been found only in São Miguel, *T. terceiranus* n. sp. in Terceira and *T. picoensis* n. sp. in Pico, three separate islands. They all belong to the *tingitanus* group which is well represented in the Atlantic archipelagos of the Canaries, Madeira and Azores.

However, in the entrance of the Furna dos Montanheiros — a skylight in the lava tube — a pigmented *Trechus* was captured in a trap together with specimens of *Bradycellus* and *Agonum*. Obviously these animals dropped in the skylight accidentally. This demonstrates that at least in Pico there is an epiedaphic *Trechus*, from which the cavernicolous species may have derived. The single specimen at hand fits Jeannel's detailed description of *T. torre-tassoii* well. However, the description and figure indicate some differences in the shape of elytra and size of animal. Unfortunately the specimen collected is a female and a definite conclusion should include an examination of the male genitalia. It is clearly related to *T. torre-tassoii* (= apterous), but it may belong to a different subspecies or even species. Similar situations exist in islands of the Madeiran and Canarian archipelagos. For lack of further evidence, one may accept the idea of an insular lineage of epiedaphic *Trechus* from which the cavernicolous species derived. *T. picoensis* n. sp. shows a stronger morphological adaptation to cave life (elongate appendages, incipient physogastric, etc.) than *T. terceiranus* n. sp.. Until further taxa are known, phylogenetical analysis of elytral characters may only suggest that *T. picoensis* n. sp. is more closely related to *T. torre-tassoii*, than to *T. terceiranus*.

It seems evident to me that more epiedaphic *Trechus* should appear in other islands, at least in Terceira as well as in São Jorge which lies between the latter and Pico. Nature has been heavily transformed and surface species may be extinct, but entomological prospection has also been very poor, *T. torre-tassoii*, for instance, is known only from 4 specimens (Lindroth, 1960). The possibility of finding more subterranean or cavernicolous species should not be disregarded.

For separation of the described *Trechus* species of the Azores the following key may be used:

- 1 (4) Apical angle of elytra rounded
- 2 (3) Length 4.5 - 5.4 mm, depigmented; lateral margins pronotum markedly sinuated before base *Trechus picoensis* n. sp.
- 3 (2) Length 3.0 - 3.2 mm, dark brown; lateral margins of pronotum hardly sinuated before base *Trechus torre-tassoii* Jeannel
- 4 (1) Apical angle of elytra sharp, forming a small protruding point. Size 3.6 - 4.3 mm, depigmented *Trechus terceiranus* n. sp.

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