Dolichoioius typhlops Ceuca, 1973, in Canarian caves
(Diplopoda, Julida, Julidae)

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RESUMEN: Se cita el milípedo Dolichoioius typhlops Ceuca, 1973 en cuevas de El Hierro y La Palma, islas Canarias. Hasta ahora la especie era conocida en cuevas y suelo del sur de España.
Palabras clave: milípedos, Myriapoda, Diplopoda, islas Canarias.

ABSTRACT: The millipede Dolichoioius typhlops Ceuca, 1973, is recorded from caves on El Hierro and La Palma, Canary Islands. The species was hitherto known from caves and soil in southern continental Spain.
Key words: Millipede, Myriapoda, Diplopoda, Canary Islands.

INTRODUCTION

Out of the 80 species of millipedes (Diplopoda) known from the Canary Islands (Vicente & Enghoff, 1999; Golovatch & Enghoff, in prep.), more than half (46 species) belong to the genus Dolichoioius (Enghoff, 1992; Enghoff & Báez, 1993). Only ten Dolichoioius species are known from elsewhere: Maderia, Porto Santo, Salvage Islands, Cape Verde Islands, Morocco, Spain and Italy. Three of the Canarian species are cave-adapted (blind, pale, long appendages) and have been found in caves on Tenerife; a further species with reduced eyes has been found in a cave on El Hierro.

Several specimens of blind, pale Dolichoioius have recently been collected in caves on La Palma and El Hierro. Since all Canarian Dolichoioius species except one occur on only one island, the suspicion that these specimens would represent two further, undescribed species, lay near. However, it was impossible to find any morphological characters to distinguish the specimens from D. typhlops Ceuca, 1973, a species hitherto known only from several sites in southern continental Spain.
MATERIAL AND METHODS

The Canarian specimens were collected by "Grupo de Investigaciones Espeleológicas de Tenerife" (GIET) forwarded by Dr. Pedro Oromí, Departamento de Zoología, Universidad de La Laguna, Tenerife (DZLL) where most of the specimens are deposited. A few duplicates are kept in the Zoological Museum, University of Copenhagen (ZMUC).

For each specimen, the body length (L), the midbody vertical body diameter (H), the ratio L/H, and the number of body rings is indicated. The "body ring formulae" are x+y+T where x = number of podous rings, y = number of apodous rings, and T = telson, cf. Enghoff et al. (1993).

Scanning electron micrographs were made with the Zoological Museum's Jeol JSM840.

TAXONOMIC ACCOUNT

Dolichoïulus typhlops Ceuca, 1973

Figs 1-5.


La Palma (Canary Islands): 3♂♂, Cueva del Ratón, sector 2, 7.xii.2000, GIET leg. (DZLL).

Description of Canarian specimens

El Hierro:

♂: L 8 mm, H 0.70 mm, L/H 11, 30+2+T body rings
♂: L 9 mm, H 0.68 mm, L/H 13, 30+2+T body rings
♂: L 10½ mm, H 0.72 mm, L/H 15, 30+(1-2)+T body rings
♂: L 10½ mm, H. 0.77 mm, L/H 14, 32+1+T body rings
♀: L 8 mm, H 0.73 mm, L/H 11, 30+1+T body rings

La Palma:

♂: L 6½ mm, H 0.58 mm, L/H 11, 26+2+T body rings
♂: L 8 mm, H. 0.57 mm, L/H 14, 28+3+T body rings
♂: L 11½ mm, H. 0.75 mm, L/H 15, 40+1+T body rings

See also Fig. 1.

Colour: Body and legs uniform pale whitish. Defence glands visible by transparency as dark spots.
Dolichoioulus typhlops

![Graph showing midbody vertical diameter (mm) vs. no. of podous rings]

Fig. 1. Size diagram of *Dolichoioulus typhlops*.

Head: No eyes. 4 supralabral setae. Setae on gnathochilarial stipes: 3 apical, 2-4 (♂)/ 0/ 0 (♀) nonapical. Antennae long: 161-168% of H in ♂, 130% of H in ♀.

Body: Prozonites smooth. Metazonites distinctly, but not dramatically vaulted, with ca. 10 indistinct striae per dorsal quarter. Ozopores ca. 1/6 metazonite length behind suture. Limbus cell length ca. 1.5 X width.

Legs: length 86-93% of H in ♂, 77% of H in ♀. Claw: length 6-9% of leg, length/height 3.2-4.3. Accessory claw 0.2 X shorter than claw.

Preanal ring: without a projection, pilosity marginal.

Male sexual characters:

Mandibular stipites without lobes.

Legs: ventral pads from second pair to past midbody. Second pair with coxal pores.

Gonopods indistinguishable from those of continental specimens of *D. typhlops*. Also indistinguishable from those of other *Dolichoioulus* species from El Hierro. Anterior gonopods with shaft ca. half as broad as bowl; ridge with a terminal process; lateral prominence an inconspicuous ridge; bowl subtriangular; two distinct apical processes. Posterior gonopods (Figs 2-5) with a rather short mesal membrane; mesomerite ca. 2/3 as long as opisthomericite, slender, pointed, partly hidden behind opisthomericite in mesal
view; opisthomerite straight, anterior process triangular, its lateral edge crossing finger-shaped, smooth-edged posterior process.

Female sexual characters:

Receptaculum seminis a stalked sphere as in *D. typhlops* and several Canarian congeners (Enghoff, 1992: fig. 48).

**DISCUSSION**

Enghoff (1992) discussed the variability of *D. typhlops* which is quite larger than usually seen in *Dolichoiolus*. Especially, the variability in preanal pilosity, relative length of limbus cells and degree of development of tibial pads on male legs were mentioned and it was suggested that the variability might be a function of size.

The Canarian specimens referred to *D. typhlops* are much smaller than those recorded from the continent, but the relationship between body ring number and body diameter (Fig. 1) is compatible with the idea that they are conspecific. The size range exhibited by *D. typhlops* under this interpretation is wide, by not wider than that seen in several congeners (e.g., Enghoff, 1992: figs 86, 183).

The Canarian specimens have marginal preanal pilosity, like the smaller continental ones. The limbus cells in the Canarian specimens are markedly shorter than in the continental specimens (1.5 X width, versus 3-6 X width), but this could easily be a function of size.

The specimens from La Palma do not exhibit the apomorphic condition in the posterior gonopods shared by the two endemic congeners from La Palma (Enghoff 1992, character 16: lateral ridge of anterior process starting well behind anterior margin of opisthomerite).

It is a problem that the similarity between the new Canarian specimens and continental *D. typhlops* is entirely due to plesiomorphisms (except for the troglomorphic characters: blindness, paleness, long appendages). The possibility therefore remains that the Canarian specimens actually do represent endemic species, but further (molecular) studies would be needed to prove this.

For the time being, the occurrence of *Dolichoiolus* in caves in El Hierro and La Palma must be ascribed to anthropochorous dispersal of *D. typhlops* from continental Spain where the species has been collected not only in caves but also in soil outside caves. It may therefore be expected that *D. typhlops* may also be found in soil in the Canary Islands.

The same applies to the Iberian, non-troglobitic millipede *Polydesmus dismiulus* Berlese, 1891 (Polydesmidae), which was recently found in a cave on Tenerife although it has never been found in the open on any Canarian island (Golovatch & Enghoff, in prep.).

The commonest millipede species in Canarian caves, *Blaniulus guttulatus* (Fabricius, 1798) (Blaniulidae) is also introduced. In Europe (region of origin) as well as in the Canarey Islands, it occurs both in and outside caves.
Figs. 2-5. Posterior gonopods of a specimen of *Dolichoioulus typhlops* from La Palma. – 2. right gonopod, mesal view. – 3. do., tip. – 4. left gonopod, lateral view. – 5. do., tip.
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REFERENCES


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Note added in proof:

Additional material of D. typhlops from La Palma has very recently become available: 1 male, 3 females and one fragment from the locality “La Pared”, 21.II.-6.III.2002, E. Arndt leg. (ZMUC). The specimens were collected in soil samples, not in caves. This find fulfills the prediction in the main text and supports the conclusion that D. typhlops is introduced to the Canary Islands, strengthening the parallel with Blaniulus guttulatus. I am grateful to Dr. Erik Arndt, Anhalt University, Germany, for these specimens.