

**A new subterranean amphipod from Cephalonia, Greece,
and taxonomic status of *Metahadzia* STOCK 1977**

(Crustacea: Gammaridae).

By

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With 2 figures.

Abstract: *Metahadzia helladis* n. sp. is a phreatic subterranean species from the Island of Cephalonia, Greece. Since it shows differences in comparison to the only other known species of *Metahadzia* STOCK 1977, the diagnosis of the genus is emended.

In the course of our research on the biology of the phreatic underground waters of Greece (PESCE et al., in press), a fairly large number of amphipods of the genus *Metahadzia* STOCK 1977 were obtained from fresh-water wells on the Island of Cephalonia. This material is referable to a new species here described.

The discovery of this species from Greece brings the total number of the species of *Metahadzia* to two, the other one being *M. tavaresi* (MATEUS & MATEUS 1972) from subterranean waters of Portugal.

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***Metahadzia helladis* n. sp.**

Figs. 1-2.

Holotype: ♀, dissected and mounted on coverlips in Faure solution (Coll. PESCE at Zoological Institute, University of L'Aquila, GK 63.1), Greece, Ionic Islands, Cephalonia, freshwater wells along the main road Assos—Argostolion, about 1 km from the village of Assos, at sea level, 2. V. 1977, leg. PESCE, MIRANDA & MAGGI.

Paratypes: 1♂ 2♀, partly dissected and mounted on coverlips, remainder in alcohol 70% (Coll. PESCE, Zool. Inst., Univ. L'Aquila, GK 63.2-4), 1♂ 3♀ 1 juv., preserved in alcohol 70% (SMF 8981), same data as holotype. — 1♂ 2♀, dissected and mounted on coverlips (SMF 8982-4), same locality as the holotype, 3. IV. 1978, leg. PESCE, MAGGI & SILVERII.

Diagnosis: A middle-sized (body length 4.3-6.3 mm, antenna 1: 3.2-5.1 mm) phreatic species without eyes and pigments. Antenna 1 longer than .

antenna 2 and about as long as 0.8 times the length of the body; peduncle segment 3 long and about 0.4 times the length of the segment 2; primary flagellum with up to 24 segments; accessory flagellum with two segments, the distal one reduced. Antenna 2, flagellum with 6-7 segments.

Upper lip regularly rounded.

Mandibles subequal, with developed incisor and lacinia mobilis; palp well developed, 3-segmented; first segment long; second segment 1.1 times as long the segment 1 and armed with one subdistal seta; third segment with unarmed ventral margin and with 4-5 distal setae (E-setae, according to STOCK 1977).

Maxilla 1: Inner plate rather broad, with 10-12 apical plumose setae; outer plate with 8-10 apical serrate spines; palp segment 2 with 5-6 setae (left palp) and five stout spines and one seta distally (right palp).

Maxilla 2: Inner plate with a row of about 10-12 obliquely placed setae on inner margin; apexes of inner and outer plates with numerous setae, some plumose.

Maxilliped: Inner plate with 3-4 thick spines and several coarse setae; outer plate with 5-7 thick spines and some setae (two plumose); palp articles 2 and 3 very setulose, article 4 unguiform, apical nail well developed.

Lower lip with small, distinct inner lobes.

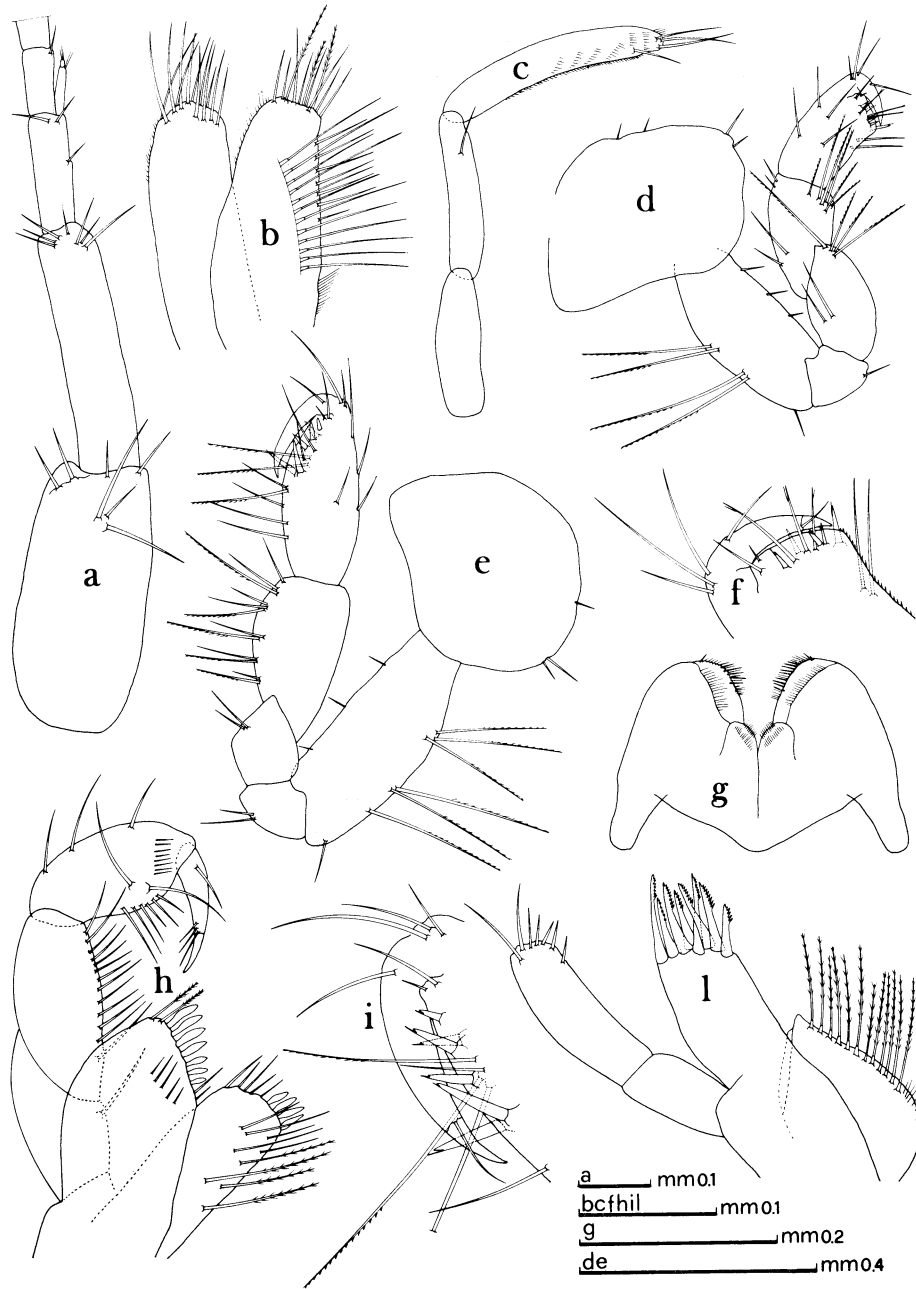
Gnathopods sexually dimorph and of different size, the first much smaller than the second one. Gnathopod 1 (♀): propod small, palm very short and armed with 3-4 spines of different length and 2-3 long spinose setae; posterior margin longer than palm, with 5-6 long setae; dactylus long and recurved. Gnathopod 1 (♂) differing from that of ♀ by more spines on the palm of the propod. Gnathopod 2 (♀): propod elongated, about 2.4 times longer than large; palm oblique, armed with three stout spine teeth and 7-8 long setae on outside, three spines and some setae on inside; posterior margin long and armed with 4-5 setae; dactylus with a long dorsal seta and a small seta at the base of the nail; carpus without marked posterior lamellar expansion. Gnathopod 2 (♂) differing from that of the ♀ by the palm of the propod, armed with more inside as well outside spines (15-16 at all), by the longer dactylus and, at least, by the presence of 6-7 setose spines on the inner margin of the same dactylus.

Pereopods 6 and 7 subequal in length; coxal plate 4 about as long as large, without distinct posterior emargination. Dactylus of all pereopods short. Bases of pereopods 5-7 enlarged, anterior and posterior margin each bearing 3-4 small spines. Coxal gills subovate, with a well developed stalk.

Brood plates of sexually mature ♀ small and narrow. The ♀ holotype bears a small embryo filling the brood pouch, to indicate that only one egg could be carried by mature ♀.

Pleonal plates 2 and 3 longer than the first one, posterior margin of 1 and 2 nearly straight, that of 3 slightly convex; two coupling hooks and one slender

Fig. 1. *Metabadzia belladis* n. sp. — a) Paratype (Coll. PESCE, GK 63.3), antenna 1, peduncle and accessory flagellum. — b-l) Holotype (Coll. PESCE, GK 63.1); b) Maxilla 2; c) Mandible palp; d) Gnathopod 1; e) Gnathopod 2; f) Upper part of gnathopod 1; g) Lower lip; h) Maxilliped; i) Upper part of gnathopod 2; l) Maxilla 1 (left).



seta are distally on the inner margin of the peduncles; rami of pleopods 3 not sexually dimorph.

Uronites not fused. Uropods 1 with subbasal spine. Uropods 2 not sexually dimorph. Uropods 3 biramous, with elongated rami (L/l about 5.5-6.0); outer ramus 2-segmented, second segment much shorter than the first; inner ramus about 0.9 as long outer ramus.

Telson cleft to base, lobes elongated, 2.7 times longer than large; outer margins of each lobe armed with two spines; inner margins of the lobes each

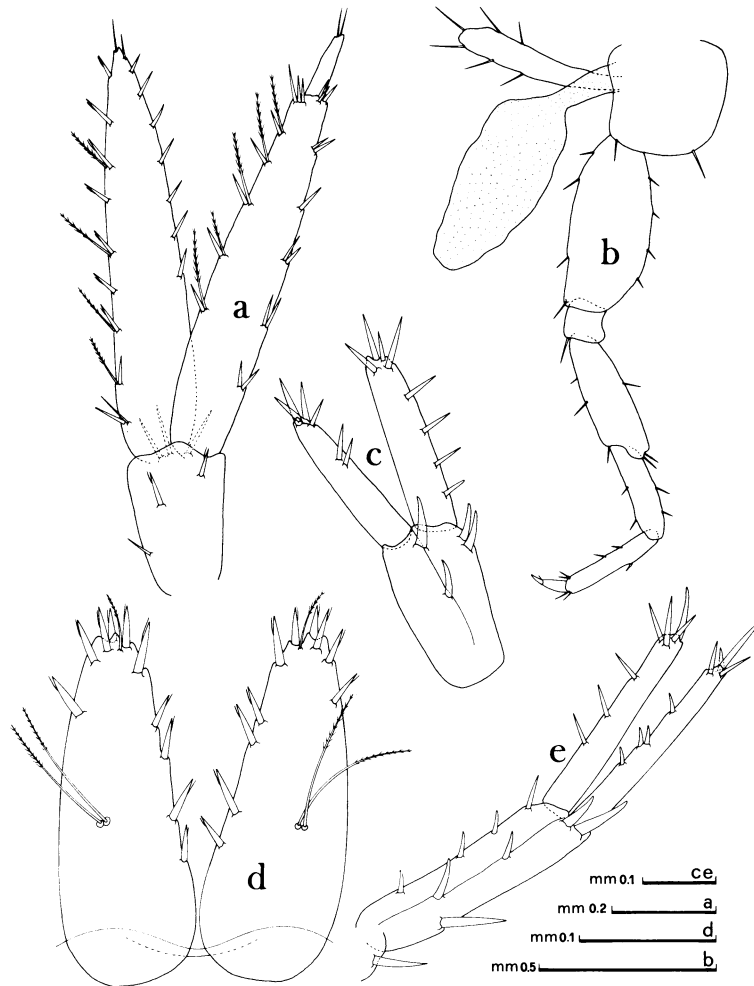


Fig. 2. *Metahadzia belladis* n. sp. — a) Holotype (Coll. PESCE, GK 63.1), uropod 3; b) Paratype (Coll. PESCE, GK 63.3), pereopod 7; c) Holotype, uropod 2; d) Holotype, telson; e) Holotype, uropod 1.

armed with 4-5 spines; apexes of lobes, each with three spines and one slender plumose seta; two long plumose setae are placed on the dorsal margins of the lobes.

Distribution and ecology: *Metahadzia belladis* n. sp. is at present known only from its type-locality, Assos, NW part of the Island of Cephalonia.

The new species lives in underground phreatic fresh-waters (water level from the soil surface, in the examined wells: 6.0-6.5 m; water depth: 0.5-0.6 m; temperature of H₂O: 15.0-15.4°C; pH: 7.2; salinity: 0.2‰; bottom sediment composed of thin organogenic sandstone) in association with other amphipods as *Salentinella angelieri* RUFFO & DELAMARE DEBOUTTEVILLE 1952 and *Niphargus orcinus* s.l. JOSEPH 1882, as well with cyclopoid copepods [*Eucyclops serrulatus* (FISHER 1851), *Thermocyclops stephanidesi* KIEFER 1938, *Diacyclops languidoides zschokkei* (GRAETER 1910), *Halicyclops* cf. *troglodites* KIEFER 1954], asellid isopods [*Proasellus coxalis* (DOLLFUS 1892), *Microcharon latus latus* KARAMAN 1934], ostracods, oligochaetes, gastropods, water mites and some mosquito larvae.

Remarks: The genus *Metahadzia* STOCK 1977 was described to accommodate the species *M. tavaresi* (MATEUS & MATEUS 1972) from Portugal, and presumably the species *Hadzia minuta* RUFFO 1947 from S-Italy, which showed characteristics both of the genus *Hadzia* KARAMAN 1932 and *Metaniphargus* STEPHENSEN 1933. *Metahadzia belladis* n. sp. also, is intermediate between *Hadzia* and *Metaniphargus*, and for its main morphological characteristics (construction of the antenna 1, armature of 3rd segment of the mandibular palp, absence of sexual dimorphism in the pleopods, etc.) fits well in the genus *Metahadzia* as defined by STOCK 1977.

However, *M. belladis* n. sp. differs from other known species of the genus by the absence of sexual dimorphism on the uropods 2, the elongation of the mandibular palp segment 1 and, at least, the armature of the telson, e. g. the presence of external spines on its lobes.

In this last regard, since the presence or absence of spines on the outer margins of the lobes of the telson can be considered as a variable character, often differing even among related species in most gammarids (see HOLSINGER 1974), and considering other differences between the new species and the generotype, *M. belladis* n. sp. can be included in *Metahadzia* only by widening the definition of this genus. Therefore, I propose the following new diagnosis for the genus:

***Metahadzia* STOCK 1977.**

Subterranean amphipods with intermediate characteristics between *Hadzia* KARAMAN 1932 and *Metaniphargus* STEPHENSEN 1933, similar to *Hadzia* s. str., except for the following characteristics: third peduncle segment of antenna 1 long; accessory flagellum 2-segmented; first segment of the mandible palp shorter than the second; second segment of mandibular palp unarmed or with only one subapical seta, third segment with unarmed ventral margin and with setae (E and D-setae, according to STOCK 1977) crowded on the tip of the article. Posterior margin of carpus of the gnathopod 1 straight, almost as long

as the propodus. Carpus of gnathopod 2 without swollen lobe and with marginal setation. Coxal gills with demarcated stalks. Uropod 2 sexually dimorph or not dimorph. Lobes of telson with or without lateral spines.

Distribution: subterranean waters in S-Portugal and Greece (Island of Cephalonia).

Zusammenfassung.

Ein Amphipode aus unterirdischen Gewässern der Insel Kephallinia (Griechenland) wird als *belladis* n. sp. in die Gattung *Metahadzia* STOCK 1977 gestellt. Die neue Art ist verschieden von *tavaresi* (MATEUS & MATEUS 1972), Gattungs-Typus und einzige bisher bekannte Art; die Unterschiede erfordern eine Emendation der Originaldiagnose von *Metahadzia*.

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