

A new *Nitocrella* from phreatic  
subterranean waters of Rhodes, Greece  
(Crustacea Copepoda, Harpacticoida)

by

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With 8 figures

ABSTRACT

*Nitocrella rhodiensis* n. sp., from phreatic subterranean waters of the island of Rhodes, Greece, is described. The new species belongs to the "chappuisi-group" of species sensu PETKOVSKI (1976) and differs from the other species by the armature of both the endopod of leg 2 and the caudal rami. The genus *Nitocrella* is for the first time reported from Rhodes.

During a recent investigation on the stygofauna of Rhodes, Greece, carried out by the Zoological Institute of the University of l'Aquila, Italy (PESCE, in press), numerous samples of an undescribed *Nitocrella* sensu PETKOVSKI 1976 were collected from some fresh-water wells along the northern and southern coasts of the island.

Following PETKOVSKI's (1976) recent revision of the genus *Nitocrella*, the above species, here described as *Nitocrella rhodiensis* n. sp., belongs to the "chappuisi-group", which includes species with five setae or spines on the terminal segment of the exopod of the leg 4.

The present find, which represents the first record of the genus for the island of Rhodes, enlarges the total number of *Nitocrella* s. str. from Greece, as well as it suggests that this genus is more widespread in this country than previously thought.

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## Family AMEIRIDAE sensu Lang 1936

Genus *Nitocrella* sensu Petkovski 1976*Nitocrella rhodiensis* n. sp.

**Diagnosis.** (female) — A blind, unpigmented, middle-sized *Nitocrella* with body slender and gradually tapering posteriorly. Endopod of legs 2-4 elongated and 2-segmented. Endopod of leg 2, second segment with 1 inner seta. Leg 4, exopod with 5 spines or setae on the terminal segment. Leg 5, basiendopod with 3 plumose spines and a slender outer seta; exopod subovoidal and armed with 4 setae. Anal operculum with 9-11 teeth. Caudal rami short, slightly longer than broad, each with 1 short seta on the inner distal corner, two long, principal terminal setae (innermost longest), two setae on lateral distal and subdistal corners and 1 long, dorsal seta. Male unknown.

**Materials.** Holotype (♀), dissected and mounted on coverlips in Faure's medium (coll. Museum d'Histoire Naturelle de Genève, Suisse), Greece, island of Rhodes, fresh-water well along the main-road Rhodes-Kamiro, cross road to Tolos, about 100 m from the sea; 3.VI.1981; coll. G. L. Pesce and B. Cicolani.

**Paratypes:** 7 ♀♀, dissected and mounted on coverlips in Faure's medium, 2 ♀♀, in alcohol 70° (coll. Pesce at the Zoological Institute of the University of L'Aquila, Italy), same data as holotype; 2 ♀♀, dissected and mounted on coverlips in Faure's medium (coll. Museum d'Histoire Naturelle de Genève), Greece, Rhodes, fresh-water well at Cremasti, near the International Airport; 3.VI.1981; coll. G. L. Pesce and B. Cicolani; 1 ♀, dissected and mounted on coverlips in Faure's medium (coll. Museum d'Histoire Naturelle de Genève), Greece, Rhodes, fresh-water well along the road Rhodes-Lindos, at Ladikò; 1.VI.1981; coll. G. L. Pesce, B. Cicolani and U. Hurtig.

**Description.** General shape of the form usual in the genus. Body length, based on mature females, excluding antennae, antennulae and furcal setae, 0.40 to 0.47 mm. Rostrum small and not well defined.

Abdominal segments, each with a posterior row of small hair-like setules, the last one with more rows of setules; segments 1 and 2 not fused dorsally. Genital field as in fig. 5. Anal operculum slightly convex, armed with 9-11 teeth along the medial margin and 5-7 longer spines on each lateral corner.

Antennula 8-segmented, aesthetasc on segment 4 much longer than the following articles together.

Antenna, exopod subtriangular, 1-segmented, armed with 3 apical stout spines.

Mouthparts without particular characteristics as compared to those of the other species of the genus.

**P<sub>1</sub>** — Both rami 3-segmented and subequal in size. Exopod: article 1 with 1 outer subdistal spine; article 2 with 1 outer subdistal spine and 1 inner seta; article 3 with 2 outer subdistal spines and 2 apical, long setae. Endopod: article 1 short, reaching about the ½ of the second article of the exopod, and armed with 1 inner seta; article 2 naked; article 3 armed with 3 apical setae, the inner one very short.

**P<sub>2</sub>** — Exopod 3-segmented, longer than the endopod; article 1 armed with 1 outer subdistal spine, article 2 with 1 outer subdistal spine and 1 inner seta, article 3 with 2 outer spines and 2 long, terminal setae. Endopod 2-segmented, slightly shorter than

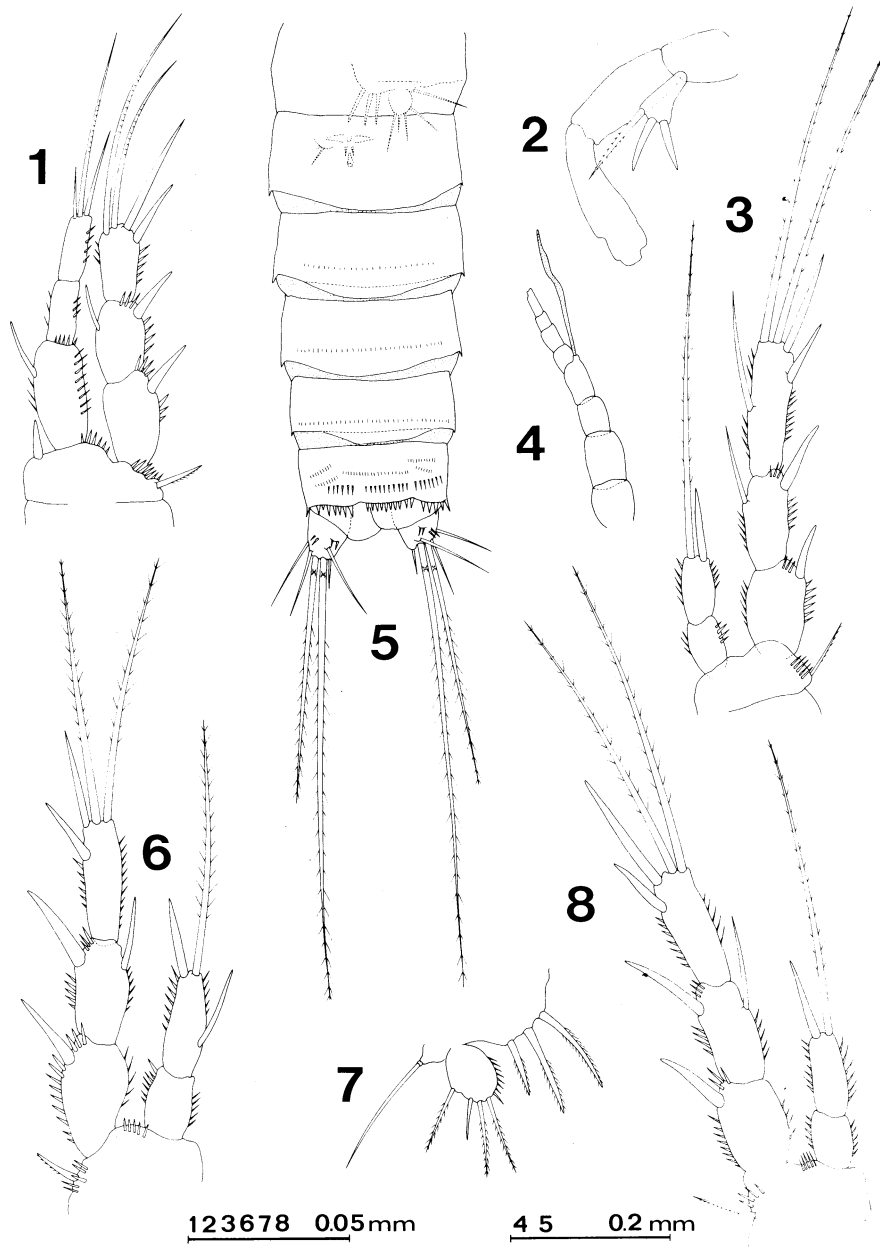


FIG. 1-8.

*Nitocrella rhodiensis* n. sp. 1. leg 1; 2. antenna 2; 3. leg 4; 4. antenna 1; 5. abdomen and furcal rami, dorsal view; 6. leg 2; 7. leg 5; 8. leg 3.

the first two articles of the exopod together; article 1 without spines or setae, article 2 about twice longer than the first one, and armed with 1 inner seta and 1 spine and 1 long plumose seta distally.

$P_3$  — Exopod 3-segmented, longer than the endopod; endopod 2-segmented, reaching about the  $\frac{1}{2}$  of the second article of the exopod. Armature of both the endopod and exopod, except the absence of the inner seta on the terminal article of the endopod, as in the leg. 2.

$P_4$  — Exopod 3-segmented, longer than the endopod; article 1 with 1 outer spine, article 2 with 1 outer spine and 1 inner seta, article 3 with 2 outer spines, 2 long terminal setae and 1 inner seta. Endopod 2-segmented, with subequal articles, reaching about  $\frac{1}{2}$  the length of the second article of the exopod; article 1 naked, article 2 with 1 spine and 1 long terminal seta.

Setal formula of  $P_1$ - $P_4$  as follows:

	exop.			end.		
$P_1$	0	1	022	1	0	120
$P_2$	0	1	022	—	0	120
$P_3$	0	1	022	—	0	020
$P_4$	0	1	122	—	0	020

$P_5$  — Basiendopod with 3 inner plumose spines and 1 outer seta; exopod ovoidal, about 1.2 times longer than broad, and armed with 4 setae.

Furcal rami subconical, short ( $L/l = 1.25-1.30$ ); outer margin of each ramus armed with 1 long seta; dorsal margin with 1 long seta, more than twice longer than each furcal ramus; apically there are 4 elements of different length; the inner seta more than twice shorter than the outer one, the medial distal setae the longest and of different length, the inner about 1.70-1.75 longer than the outer one.

Distribution and ecology. At present time *Nitocrella rhodiensis* n. sp. is known only from phreatic waters of the island of Rhodes, Greece. The new species lives in man-made wells along the northern and the southern coasts of the island (water level from the soil surface: 4.5-5.5 m; water depth: 4.5 m; temperature of  $H_2O$ : 14.9°C-15.1°C; pH: 7; bottom sediment composed of thin organogenic sand) in association with the following other groups: cyclopid copepods (*Eucyclops serrulatus*); asellid isopods (*Asellus aquaticus*, *Proasellus coxalis*); microparasellid isopods (*Microcharon ullae*); amphipods (*Bogidiella* cf. *longiflagellum*, *Niphargus* sp.); ostracods; gastropods; water mites; oligochaetes; turbellarians; nematods and some mosquito larvae.

Affinities. According to the PETKOVSKI's (1976) subdivision of the genus *Nitocrella* s. str. in three-species groups (viz. "hirta-group", with 3-4 setae on the terminal segment of the  $P_4$  exopod; "chappuisi-group", with 5 setae on the terminal segment of the  $P_4$  exopod and "vasconica-group", with 6 setae on the same segment), *Nitocrella rhodiensis* n. sp. is a member of the "chappuisi-group", due to the presence of 5 setae or spines on the terminal segment of the  $P_4$  exopod.

Within this group, the new species is close to *N. stammeri* Chappuis (Italy, Turkey and continental Greece) and to *N. achaiae* Pesce (Greece, Peloponnesus) due to the armature of the terminal segment of the  $P_4$  endopod and to the armature of the terminal

segment of the  $P_1$  exopod, and to *N. neutra* Kiefer (Yugoslavia) due to the armature of all the exopods and of the basiendopod of  $P_5$ .

From all these species, *N. rhodiensis* n. sp. differs as follows:

- from *N. stammeri* due to the inner seta on the terminal segment of the endopod of leg 2, the longer furcal rami, the length of the inner, outer and dorsal setae on the furcal rami and, at last, due to the different armature of the basiendopod of  $P_5$ .
- from *N. achainae* in having inner seta on the terminal segment of the endopod of leg 2, shorter caudal rami, a different armature of the anal operculum and a different number of spines on the basiendopod of leg 5.
- from *N. neutra* it differs in the quite different armature of all the endopods and of the terminal segment of the exopod of leg. 1.

#### RIASSUNTO

Viene descritta *Nitocrella rhodiensis* n. sp., di acque sotterranee freatiche dell'isola di Rodi, Grecia. La nuova specie, per la particolare armatura dell'ultimo articolo dell'esopodite del quarto paio di arti, rientra nel gruppo "*chappuisi*" secondo la recente revisione del genere proposta da PETKOVSKI (1976).

*N. rhodiensis* n. sp. si distingue agevolmente dalle altre specie di questo gruppo, come pure da tutte le altre, per la peculiare armatura dell'endopodite del secondo paio di arti e per la forma ed armatura dei rami furcali.

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