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NITOCRELLA MORETTII N.SP. FROM PHREATIC WATERS OF CENTRAL ITALY, AND

UP-TO-DATE KEY TO THE SPECIES OF *NITOCRELLA* SENSU PETKOVSKI

(CRUSTACEA, HARPACTICOIDA: AMEIRIDAE) ¹⁾

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ABSTRACT

Nitocrella morettii n.sp. from phreatic subterranean waters of Umbria, central Italy, is described. Following Petkovski's recent revision of the genus *Nitocrella*, the new species belongs to the *hirta*-group of species being close to *N. psammophila* Chappuis, 1955. A key to all the species of *Nitocrella* sensu Petkovski, 1976, is presented.

Our continuing research on the stygofauna of central and southern Italy has yielded large samples of harpacticoid copepods from some fresh-water wells south of Perugia (Umbria, central Italy). Among this material, an undescribed species of the genus *Nitocrella* Chappuis sensu Petkovski, 1976, was identified. This species is herein described as *Nitocrella morettii* n.sp. The new species belongs to the *hirta*-group of species according to Petkovski (1976), being very close to *N. psammophila* Chappuis, 1955, from interstitial waters of northern Italy, from which, as well as from the other species making up the group, it differs in the male P₅ exopod setation and in the structure

and armature of the furcal rami.

A revised key to all the species of the genus *Nitocrella* sensu Petkovski, 1976, is presented.

Fam. AMEIRIDAE sensu Lang, 1936,

subfam. AMEIRINAE Lang, 1948

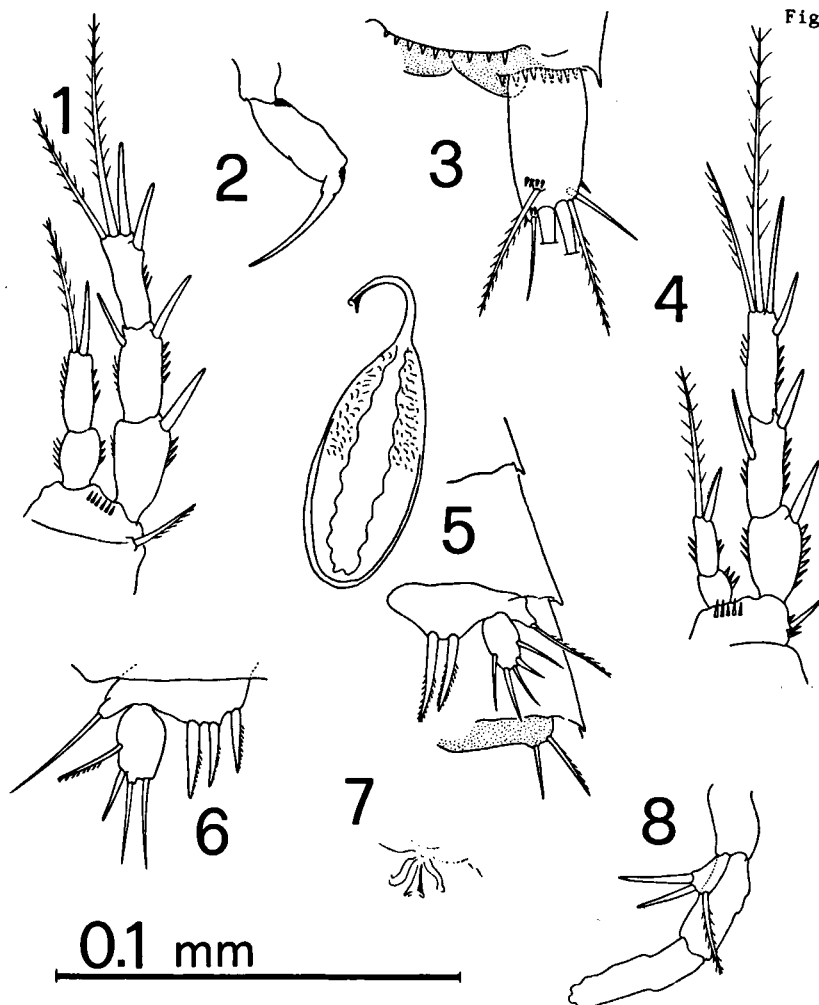
Genus *NITOCRELLA* sensu Petkovski, 1976

Nitocrella morettii n.sp.

Material.-

4 ♀♀, 1♂. Holotype, dissected and mounted on coverlips in Faure's medium, 2 paratypes in alcohol 60°, author's collection, Zoological Institute, University of L'Aquila, Italy, No. U31.H1-3; 2 paratypes, dissected and mounted on coverlips in Faure's medium, in the collection of the Zoölogisch Museum, Amsterdam,

¹⁾ Contribution to knowledge of the underground water fauna in central and southern Italy: XXVII.



Figs. 1-8. *Nitocrella moretti* n.sp. 1. P₂; 2. Maxilliped; 3. Furcal ramus and anal operculum, dorsal view; 4. P₄; 5. Spermatorphora, P₅ and P₆ (male); 6. P₅ (female); 7. Genital field; 8. Antenna.

the Netherlands. All specimens were collected at the type-locality, a fresh-water well (water-level from the soil surface: 8.5 m; water depth: 5.5 m; temperature: 14.9°C; pH: 6.9; bottom sediment composed of sandstone and clay) at Gualdo Tadino, Perugia (central Italy); 30.VII.1983; coll. Pesce, Teté, Galassi and Di Francescantonio. From the same locality, the harpacticoid copepod *Atheyella crassa*, the cyclopoid copepods *Diacyclops languidoides hypnicola* and *Eucyclops subterraneus*, and the following other stygobionts were collected: amphipods (*Niphargus longicaudatus*, *Salentinella angelieri*); asellid isopods (*Proasellus* sp.); syncaerids; ostracods and water mites.

Description.-

Female: Body slender, gradually tapering posteriorly; total body length, excluding antennae, antennulae and furcal setae, 0.48 to 0.55 mm. Distal of thoracic segments without

spines or denticulations; abdominal segments, dorsal margin without spines; ventral margin with a row of small spinules posteriorly, last abdominal segment with a row of 10-12 spines at the basis of each furcal ramus. Genital field as in fig. 7. Anal operculum slightly convex and armed with 9-10 spines.

Furcal rami long, about twice as long as wide ($L/l = 1.90$ to 1.95) and armed as follows: 4 apical setae, the outer about twice longer than the inner one; 1 long, subapical external seta; dorsal seta about as long as the outer one.

Antenna 1, 8-segmented, aesthete on the 4th segment overreaching the last segment.

Antenna 2, exopod 1-segmented and armed with 3 plumose setae. Mouthparts without particular characteristics.

Leg 1, both exopod and endopod 3-segmented; legs 2-4, endopod 2-segmented and exopod 3-segmented. Setal formula of legs 1-4 as follows:

	Exp.			Enp.		
P ₁	0	1	022	1	0	020
P ₂	0	1	022	-	0	020
P ₃	0	1	022	-	0	020
P ₄	0	1	022	-	0	020

Leg 5: basiendopod short, armed with 3 (in 1 specimen: 3 on the left and 4 on the right side) spines and 1 outer slender seta; exopod ovoidal, 1.75 to 1.80 times longer than wide, and armed with 4 setae.

Male: Body length, excluding furcal setae, antennae and antennulae, 0,53 mm. Antenna 1, transformed. Leg 5, basiendopod with 2 spines and 1 outer seta; exopod ovoidal (as in the female) and armed with 5 setae. Leg 6 consisting of a chitinous lamella bearing 2 setae of different length, the outer the longest.

Affinities.-

Nitocrella morettii n.sp., on account of the setation of the last segment of exopod of leg 4, belongs to the *hirta*-group of species, according to Petkovski's recent revision of the genus *Nitocrella*. Within this group the new species is close to *N. psammophila* Chappuis by the armature of legs 2-4 endopod and by the anal operculum armed with spines; from the above species *N. morettii* n.sp. is easily distinguished by numerous characteristics, viz. the structure and the armature of furcal rami, the length of all the setae on the endopods of legs 2-4, and the setation of male leg 5 exopod.

Etymology.-

Named after Prof. Giampaolo Moretti, Director of the Zoological Institute of the University of Perugia, who promoted faunistical research in Umbria.

Key to the species of

Nitocrella sensu Petkovski, 1976

1. Last segm. Exp. P₄ with 3 setae or spines *N. tonsa* Mikhailova
- Last segm. Exp. P₄ with more setae or spines..... 2
2. Last segm. Exp. P₄ with 4 setae or spines 3
- Last segm. Exp. P₄ with more setae or spines..... 12
3. Last segm. Enp. P₄ with 3 setae.....
- *N. hofmilleri* Brehm
- Last segm Enp P₄ with 1-2 setae..... 4
4. Last segm. Enp. P₃-P₄ with 2 setae..... 5
- Last segm. Enp. P₃-P₄ with 1 seta.....
- *N. calcariipes* Damian & Botosaneanu
5. First segm. Enp. P₁ with inner seta..... 6
- First segm. Enp. P₁ without inner seta... 7
6. Anal operculum armed with spines..... 9
- Anal operculum unarmed.....
- *N. slovenica* Petkovski
7. Enp. P₁ longer than Exp.; Exp. P₅ (♀) with 3-4 spines..... 8
- Enp. P₁ as long as Exp.; Exp. P₅ (♀) with 5 spines..... *N. omega* Hertzog
8. Exp. P₅ (♀) with 4 spines.....
- *N. hirta* (Chappuis)
- Exp. P₅ (♀) with 3 spines.....
- *N. hirta tirolensis* Kieter
9. Furcal rami as long as wide.....
- *N. skvrensis* Pesce
- Furcal rami about twice longer than wide.
- 10
10. Exp. P₅ (♂) with 4 setae; inner furcal seta longer than the external one.....
- *N. psammophila* Chappuis
- Exp. P₅ (♂) with 5 setae; inner furcal seta shorter than the external one.....
- *N. morettii* n.sp.
11. Last segm. Enp. P₂ with 2 setae.....
- *N. juturna* Cottarelli
- Last segm. Enp. P₂ with 1 seta.....
- *N. maggi* Pesce
12. Last segm. Exp. P₄ with 5 spines or setae 13
- Last segm. Exp. P₄ with 6 spines or setae 26
13. Last segm. Enp. P₄ with 3 setae..... 14
- Last segm. Enp. P₄ with 1-2 setae..... 15
14. Last segm. Enp. P₃ with 3 setae; Exp. P₅ (♀) with 2 setae..... *N. delayi* Róuch
- Last segm. Enp. P₃ with 4 setae; Exp. P₅ (♀) with 3 setae..... *N. chappuisi* Kiëfer
15. Last seg., Enp. P₄ with 2 setae..... 16
- Last segm. Enp. P₄ with 1 seta..... 17
16. First segm. Enp. P₂-P₄ with inner seta... .. 18
- First segm. Enp. P₂-P₄ without inner seta 21
17. Last segm. Enp. P₂-P₃ with 1 seta; furcal rami twice longer than the anal segment..... *N. africana* Chappuis
- Last segm. Enp. P₂-P₃ with 2 setae; furcal rami shorter than the anal segment... .. 25
- Last segm. Enp. P₂-P₃ with 1 and 2 setae respectively..... 19

18. Last segm. Enp. P₂-P₃ with 2 setae..... 20
 -. Last segm. Enp. P₂-P₃ with 3 setae.....
 *N. kyzylkumica* Borutzky
19. Benp. P₅ (♀) well developed, with 3 setae
 *N. petkovskii* Pesce
 -. Benp. P₅ (♀) rudimentary, with 1 outer
 seta only..... *N. hypogaea* Shen & Tai
20. Furcal rami about 4 times longer than
 wide..... *N. asiatica* (Sterba)
 -. Furcal rami about as long as wide.....
 *N. sterbai* Borutzky
21. Benp. P₅ (♀) well developed..... 22
 -. Benp. P₅ (♀) rudimentary).....
 *N. japonica* Miura
22. First segm. Enp. P₁ without inner seta...
 *N. cubanorum* Petkovski
 -. First segm. Enp. P₁ with inner seta..... 23
23. Last segm. Enp. P₂ with 3 setae.....
 *N. rhodiensis* Pesce
 -. Last segm. Enp. P₂ with 2 setae..... 24
24. Exp. P₅ (♂) with 4 setae.....
 *N. stammeri* Chappuis
 -. Exp. P₅ (♂) with 5 setae.....
 *N. achaiatae* Pesce
25. Benp. P₅ (♀) with 3-4 setae.....
 *N. neutra* Kiefer
 -. Benp. P₅ (♀) with 2 setae.....
 *N. kosswigi* Noodt
26. Last segm. Exp. P₁ with 5 setae or spines
 27
 -. Last segm. Exp. P₁ with 4 setae or spines
 28
27. Last segm. Enp. P₃ with 4 setae.....
 *N. dussarti* Chappuis & Rouch
 -. Last segm. Enp. P₃ with 3 setae.....
 *N. gracilis* Chappuis
28. Benp. P₅ (♀) armed with spines..... 29
 -. Benp. P₅ (♀) unarmed..... 38
29. First segm. Enp. P₂-P₄ with inner seta...
 30
 -. First segm. Enp. P₂-P₄ without inner seta
 33
30. Last segm. Enp. P₂ with 3 setae..... 32
 -. Last segm. Enp. P₂ with 2 setae..... 31
31. Benp. and Exp. P₅ (♀) with 1 and 3 setae
 respectively..... *N. jankovskajae* Borutzky
 -. Benp. and Exp. P₅ (♀), each with 5 setae.
 *N. aestuarina* Coull & Bell
32. Furcal rami long; Exp. P₅ (♀) with 4
 setae..... *N. monchenkoii* Borutzky
- . Furcal rami short; Exp. P₅ (♀) with 3
 setae..... *N. kirgizika* Borutzky
33. Anal operculum with spines..... 35
 -. Anal operculum unarmed..... 34
34. Last segm. Enp. P₂ and P₄ with 1 seta....
 *N. mara* Löffler
 -. Last segm. Enp. P₂ and P₄ with 2 setae...
 *N. negreat* Petkovski
35. Furcal rami twice longer than wide..... 37
 -. Furcal rami slightly longer than wide.... 36
36. Last segm. Enp. P₂-P₄ with 2 setae.....
 *N. caraioti* Petkovski
 -. Last segm. Enp. P₂-P₄ with 1 seta.....
 *N. paceae* Pesce
37. Benp. P₅ (♀) with 3 spines; anal opercu-
 lum with 3 spines..... *N. vasconica* Chappuis
 -. Benp. P₅ (♀) with 1 spine; anal opercu-
 lum with numerous spines.....
 *N. unispinosa* Shen & Tai
38. First segm. Enp. P₂-P₄ with inner seta...
 40
 -. First segm. Enp. P₂-P₄ without inner seta
 39
39. Exp. P₅ (♀) with 3 setae; furcal rami
 more than twice longer than wide.....
 *N. yokotai* Miura
 -. Exp. P₅ (♀) with 4 setae; furcal rami
 slightly longer than wide
 *N. motasi* Petkovski
40. Furcal rami more than twice longer than
 wide; last segm. Enp. P₂ with 3 setae....
 *N. afghanica* Sterba
 -. Furcal rami at most twice longer than
 wide; last segm. Enp. P₂ with 1-2 setae..
 41
41. Last segm. Enp. P₂ with 2 setae; anal
 operculum unarmed..... *N. nana* Sterba
 -. Last segm. Enp. P₂ with 1 seta; anal
 operculum with 7-8 spines
 *N. stetinai* Sterba

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