

Diacyclops iranicus n. sp.,
a phreatic cyclopid from subterranean
waters of Iran (Crustacea: Copepoda)

by

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With 1 figure

ABSTRACT

The new species *Diacyclops iranicus* n. sp. is described from a phreatic aquatic system of north-west Iran. The species seems to be related with *D. skopljensis* Kiefer from interstitial waters of Yugoslavia and *D. fontinalis* Naidenow from subterranean waters of Bulgaria.

Recent field investigations in phreatic aquatic systems of north-west Iran, carried out by the Zoological Institute of the University of L'Aquila (Italy), revealed an interesting fauna of cyclopid copepods (Pesce, in press; Dussart, 1981).

Among these, numerous specimens of an undescribed species of *Diacyclops* gr. *crassicaudis* (Sars) were identified. This species is described below as *Diacyclops iranicus* n. sp.

We are indebted and grateful to Prof. Bernard Dussart for his advice and valuable suggestions regarding the systematics of the "*crassicaudis*" group, and to Miss Raffaella Pace for collecting the new species.

***Diacyclops iranicus* n. sp. (fig. 1)**

Material — 3 ♀♀, 1 ♂ and 2 juv. (cop. IV), fresh-water well (IR. 2) at Kelar-Abad, Chalus, Caspian Sea (water level on 4.5 m; water depth 2.2 m; temperature 26° C; pH 7.9; bottom sediment: organogenic sandstone detritus; accompanying fauna: rotifers); August 30; 1977; coll. Pace and Ali; 2 ♀♀ and 1 ♂, fresh-water wells (IR. 21-IR. 22) at Shahr-e-Kord, Highland of Isfahan, 2.200 m a.s. l. (water level on 3.8-4.0 m; water depth 2.0-2.2 m; temperature 15.1° C; pH 7.3; bottom sediment: plant and sandstone detritus; accompanying fauna: *Diacyclops bisetosus* (Rehenberg), ostracods, water mites

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and collembols); September 20, 1977; coll. Pace and Rahim; 4 ♀♀, 2 ♂♂ and 3 juv. (cop. III-IV), fresh-water wells (IR. 34-IR. 35) at Farrochà, Highland of Isfahan, 2.200 m.a. s.l. (water level on 30.5-35.0 m; water depth 2.2-2.5 m; temperature 17.5° C; pH 7.5; bottom sediment; sandstone and clay detritus; accompanying fauna: *Eucyclops serrulatus* (Fischer), *Paracyclops fimbriatus* (Fischer), *Nitocrella petkovskii* Pesce, 1980, *Attheyella crassa* (Sars); ostracods (Candoninae); water mites and collembols); May 5,

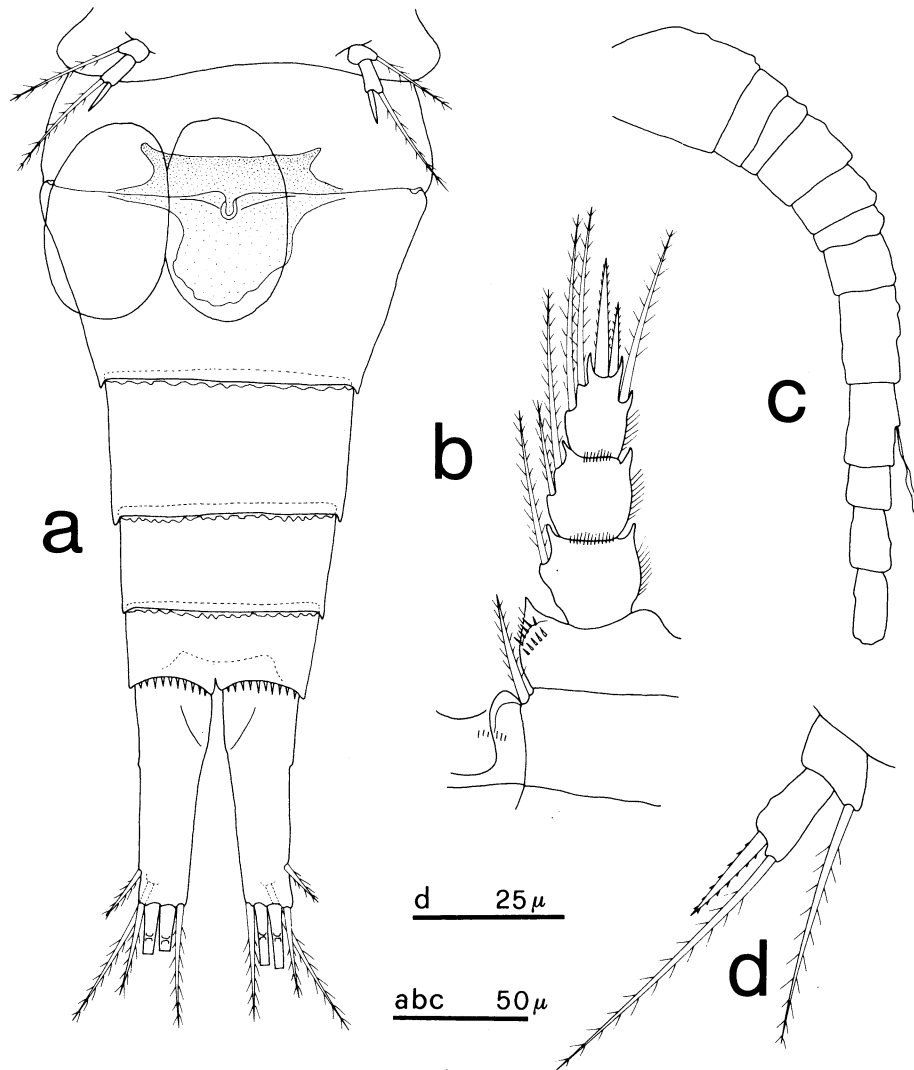


FIG. 1.

Diacyclops iranicus n. sp.:

a) abdomen and furcal rami, ventral view; b) endopod of P₄; c) antennula; d) P₅.

1978; coll. Pace; 1 ♀, fresh-water well (IR. 41) at Cialestore, Highland of Isfahan, 2000 m a.s.l. (water level on 12.1 m; water depth 3.1 m; temperature 17.5° C; pH 7.6; bottom sediment: sandstone and clay detritus; accompanying fauna: *Diacyclops languidoideus* s.l. (Lilljeborg), *Acanthocyclops* sp., *Attheyella crassa*; ostracods (Candoninae); microparasellid isopods (*Microcharon raffaellae* Pesce, in press); oligochetes (*Nais elinguis* (Müller)); water mites (Hidracnellae); collembols; mosquito larvae); May 26, 1978; coll. Pace.; 4 ♀♀, 1 ♂ and 2 juv. (cop. IV), fresh-water well (IR. 39) at Cialestore, Highland of Isfahan, 2000 m a.s.l. (water level on 12.5 m; water depth 3 m; temperature 18.1° C; pH 7.5; bottom sediment: sandstone and plant detritus; accompanying fauna: *Paracyclops fimbriatus* (Fischer), *Attheyella crassa* (Sars); cladocerans; ostracods (Candoninae); microparasellid isopods (*Microcharon raffaellae*); oligochetes (Tubificidae, cocoons), mosquito larvae); May 26, 1978; coll. Pace.

Types — 1 ♀ (holotype) and 1 ♀ (paratype), completely dissected and mounted in Faure-solution on microscope slides are deposited at the "Museum d'Histoire naturelle", Genève; other materials (paratypes), some dissected and mounted in Faure-solution on microscope slides, other preserved in alcohol 60°, are deposited at the Zoological Institute of the University of L'Aquila (author's collections) and at the "Muséum d'Histoire naturelle de Genève".

Description — (femelle) — Body length between 788 and 855 microns, not including furcal setae and antennulae. Cephalothorax about as long as large. Genital segment about as long as large; "receptaculum seminis" slightly enlarged posteriorly and with 2 small anterior lateral corners. Antennula 12-segmented, shorter than the cephalothorax; aesthete on the article 9 well overreaching the article 10. Antenna 4-segmented. Other mouthparts without particular characteristics.

P₁-P₃ without particular differences as compared to those of other species of the same group, excluding *D. antrincola* Kiefer.

P₄: endopod article 3 longer than large (L/1 = 1.36-1.48); apical spines of different length, the outer 0.63-0.70 times shorter than the inner one; spine about 1.45 times longer than the article 3; both inner setae and outer one well overreaching the inner apical spine; coxal plate with well developed lateral lobes.

Spines and setae formula of the article 3 of the exopods P₁-P₄: 2 3 3 3; 4 4 4 4.

Setae formula of the inner margin of the exopods and endopods of P₁-P₄ as follows:

	P ₁	P ₂	P ₃	P ₄
art. 1	1/1	1/1	1/1	1/1
art. 2	1/1	1/2	1/2	1/2
art. 3	4/4	4/4	4/4	4/2

P₅: spine on the distal article about as long as the article.

P₆ armed with an outer plumose seta and two inner small chitinous spines.

Furcal rami subparallel, about 4.6-5.0 longer than large (L = 83-90 microns, l = 17.5-18.0 microns; L/l = 4.7-5.0); apical inner seta 1.37-1.45 times longer than the outer one and 0.55-0.60 times shorter than each furcal ramus; medial apical setae

long, the inner about 2 times longer than the outer one; dorsal seta slightly longer than the inner apical one; lateral seta implanted at the $\frac{1}{3}$ distal of furcal rami.

Analoperculum without particular characteristics.

No particular characteristics were pointed out in males as compared to females.

Affinities — Among the species of the “*crassicaudis*” group, which are characterized by a 12-segmented antennula, *D. iranicus* n. sp. is close to *D. skopljensis* Kiefer, 1932 from interstitial waters of Yugoslavia and *D. fontinalis* Naidenow, 1969 from subterranean waters of Bulgaria.

With the above species *D. iranicus* n. sp. shares the inner apical setae on furcal rami longer than the outer ones and the morphology of the article 3 of the endopod of P_4 .

From these species, the new species differs as follows:

- from *D. skopljensis* in having shorter genital segment, “receptaculum seminis” with well developed anterior lateral lobes, longer furcal rami and different ratio between the inner and the outer apical furcal setae.
- from *D. fontinalis* in having antennula shorter than the cephalotorax (versus antennula well overreaching the posterior margin of the cephalotorax), well developed anterior lateral lobes on the “receptaculum seminis” (versus “receptaculum seminis” with no developed lobes), slightly shorter furcal rami, a different ratio between the inner and the outer apical setae on furcal rami, the inner apical spine of the article 3 of the endopod P_4 much shorter than the outer.

RÉSUMÉ

On décrit *Diacyclops iranicus* n. sp. des eaux souterraines phréatiques de l'Iran. La nouvelle espèce appartient au groupe polytypique des *Diacyclops crassicaudis* s.l. et se rapproche de *D. skopljensis* Kiefer, 1932 des eaux interstitielles de la Jugoslavie et de *D. fontinalis* Naidenow, 1969 des eaux souterraines de la Bulgarie. Elle se différencie de celles-ci par la morphologie du « receptaculum seminis », l'armature du dernier article de l'endopodite du P_4 et, en fin, par les différents rapports entre les soies terminales internes et externes des branches furcales.

RIASSUNTO

Si descrive *Diacyclops iranicus* n. sp. delle acque sotterranee dell'Iran. La nuova specie rientra nel gruppo politipico dei *Diacyclops crassicaudis* s.l., risultando affine a *D. skopljensis* Kiefer, 1932 delle acque interstiziali di Jugoslavia e a *D. fontinalis* Naidenow, 1969 delle acque sotterranee di Bulgaria. Da queste due specie *D. iranicus* n. sp. si differenzia per la morfologia del « receptaculum seminis », per l'armatura dell'ultimo articolo dell'endopodite di P_4 ed, infine, per i diversi rapporti tra le setole terminali interna ed esterna delle branche furcali.

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