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## A NEW CYCLOPID FROM GROUNDWATER OF SOUTH ITALY:

### *DIACYCLOPS BICUSPIDATUS LUCANUS* N.SSP.

(CRUSTACEA: COPEPODA)<sup>1)</sup>

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#### ABSTRACT

*Diacyclops bicuspidatus lucanus* n.ssp. is described from the phreatic freshwater network of Lucania (South Italy). Among the members of the "*bicuspidatus*" complex, the new subspecies is closely related to *D. bicuspidatus odessanus* (Schmankevitch, 1875) by the structure and the armature of the antennula of the female. From this subspecies, as well as from the others in the same group, *D. bicuspidatus lucanus* n.ssp. differs mainly by the remarkably elongated caudal rami and the unusual length ratio between innermost and outermost furcal setae.

During recent faunistic investigations on groundwaters (wells) of Lucania, South Italy, to our surprise a new cyclopid copepod of the complex of *Diacyclops bicuspidatus* (Claus, 1857) was discovered. This new subspecies is described herein as *Diacyclops bicuspidatus lucanus* n.ssp.

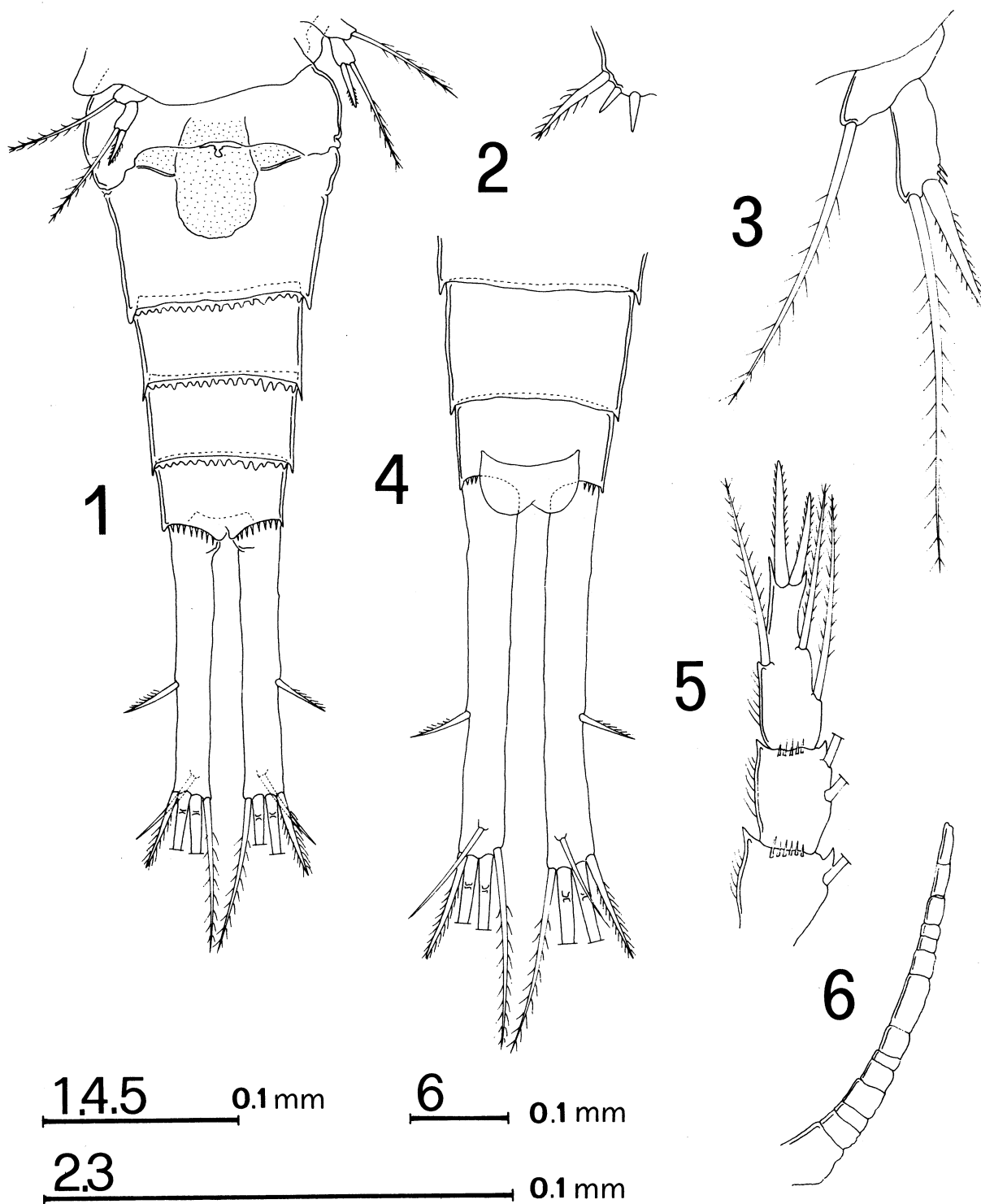
*Diacyclops bicuspidatus lucanus* n.ssp.  
(figs. 1-6)

#### Material.-

Holotype (♀), completely dissected and mount-

ed on slides in Faure's medium, st. LU. 12, freshwater well at Sasso di Castalda (Potenza, Lucania) (type-locality); depth to the water surface nearly 3.5 m, depth to the bottom 7.5 m; water temperature 14.9°C; pH: 6.9; accompanying fauna: harpacticoids, ostracods, amphipods and water mites; May 28, 1983; coll. L. D'Addario.- 4 ♀♀ (paratypes), collecting data as above.- 3 ♀♀, 1 ♂ (paratypes), completely dissected and mounted on slides in Faure's medium, st. LU.1/7, freshwater wells at Pergola (Potenza); depth to the water surface 2.5 m, depth to the bottom 6.0 m; water temperature 14.5°C; pH: 7.0; accompanying fauna: harpacticoids, ostracods, oligochaetes, Diptera larvae, May 28, 1983; coll. L. D'Addario.- 3 ♀♀ (paratypes), preserved in alcohol, st. LU. 36, freshwater well at Noliterno (Potenza); depth to the water surface 5.8 m, depth to the bottom 9.6 m; water temperature 14.5°C; pH: 7.1; accompanying fauna: harpacticoids, ostracods, asellid isopods, water mites and oligochaetes, June 30, 1983; coll. L. D'Addario.- 7 ♀♀, 2 ♂♂, preserved in alcohol, st. LU. 28/30, freshwater wells in the neighbourhood of the village of Tito (Potenza); depth to the water surface 4.0 m,

<sup>1)</sup> Contribution to knowledge of the underground water fauna in central and southern Italy: XXIX.



Figs. 1-6. *Diacyclops bicuspidatus lucanus* n.ssp. 1, abdomen and caudal rami, ventral view; 2, P6 (♀); 3, P5 (♀); 4, caudal rami, dorsal view; 5, endopod P4; 6, antennula.

depth to the bottom 8.5 m; water temperature 15.0°C; pH: 7.1; accompanying fauna: harpacticoids, cyclopids, asellid isopods, amphipods, water mites and oligochaetes; June 29, 1983; coll. L. D'Addario.- 3 ♀♀, completely dissected and mounted on slides in Faure's medium, st. LU. 50, freshwater well at Balvano (Potenza); depth to the water surface 5.5 m, depth to the bottom 10.0 m; water temperature 14.3°C; pH: 6.9; accompanying fauna: harpacticoids, cyclopids, amphipods, water mites; July 2, 1983; coll. L. D'Addario.- 2 ♀♀, completely dissected and mounted on slides in Faure's medium, st. LU. 58, freshwater well at Filiano (Potenza); depth to the water surface 3.5 m, depth to the bottom 6.0 m; water temperature 14.8°C; pH: 7.0; accompanying fauna: harpacticoids, cyclopids, asellid isopods, oligochaetes and water mites; May 28, 1983; coll. L. D'Addario.- 2 ♀♀, completely dissected and mounted on slides in Faure's medium, st. LU. 61, freshwater well at S. Giorgio Pietragalia (Potenza); depth to the water surface 2.2 m, depth to the bottom 5.5 m; water temperature 13.9°C; accompanying fauna: harpacticoids, cyclopids, asellid isopods, amphipods and water mites; July 2, 1983; coll. L. D'Addario.

Holotype and 3 paratypes preserved in the collections of the Zoölogisch Museum, Amsterdam (ZMA); other paratypes in the first author's collections at the "Istituto di Scienze Ambientali", L'Aquila, Italy (GPC).

#### Description.-

Female: Body elongated and slender; total length, excluding antennulae and furcal setae 0.90 to 1.85 mm (average of 23 specimens 1.37 mm). Posterior margin of thoracic segments protruding slightly laterally. Cephalothorax slightly longer than large. Genital segment larger than long and gradually tapering posteriorly; receptaculum seminis not much enlarged posteriorly. Antennula 14-segmented, reaching about the posterior margin of cephalothorax; antenna 4-segmented. Mouthparts without particular characteristics.

Swimming legs 1 to 3 as in the type-species. Leg 4, endopod elongated ( $L/l = 2.9$  to  $3.2$ ), with two apical spines of different length, the outer slightly longer than the inner one. Spine formula: 2333. Leg 5, distal segment elongated ( $L/l = 2.5$  to  $2.7$ ) and armed with a strong spine, which is longer than the segment, and 1 long plumose seta. Leg 6 consisting of a chitinous lamella bearing two stout, short spines and 1 spiniform seta.

Caudal rami perfectly parallel and very elongate ( $L/l = 8.9$  to  $10.1$ ), much longer than the last 3 abdominal segments together; inner distal seta longer (about twice) than the cor-

responding outer one; dorsal seta about as long as the outer one; medial setae well developed, inner one approximately a third longer than outer one; lateral seta situated about at the middle of outer margin of caudal rami. Anal operculum without particular characteristics.

Male: Body length, excluding antennulae and furcal setae 0.9 to 1.1 mm (average of 3 specimens 1.0 mm). Furcal rami slightly shorter than in the female. Leg 6 with well developed inner spine and two setae, the inner about as long as the spine, the outer almost twice longer than the inner one. Other characteristics as in the female.

#### Affinities.-

Within the "*bicuspidatus*" complex, the new subspecies is closely related to the widespread (cosmopolitan) *D. bicuspoidatus odessanus* (Schmankevitch, 1875) due to the 14-segmented antennula and to the construction of all the swimming legs. From this subspecies, *D. bicuspoidatus lucanus* n.ssp. is easily distinguishable by the remarkable length of the caudal rami and by the length ratio between the innermost and the outermost distal furcal setae. From the other members of the same group, the present subspecies differs as follows: from *D. bicuspoidatus navus* (Herrick, 1882) (Canada, North America) in having a 14-segmented antennula in the female (versus a 17-segmented antennula) and longer caudal rami; from *D. bicuspoidatus thomasi* (Forbes, 1882) (North America) in having a shorter distal segment of the  $P_4$  endopod, and shorter spines on the same segment; from *D. bicuspoidatus limobius* Kiefer, 1978 (Lake of Constance) in having both longer caudal rami and a different length ratio between innermost and outermost terminal furcal setae; from the typeform (cosmopolitan) *D. bicuspoidatus lucanus* n.ssp. differs particularly in the number of segments of the female antennula and in the length of the caudal rami.

#### REFERENCES

- PESCE, G.L., in press. Ciclopidi ed Arpacticoidi di acque sotterranee freatiche della Basilicata (Crustacea/Copepoda).- Lav. Soc. Ital. Biogeogr.