

NOTES

A new species of freshwater cyclopoid copepod from Newfoundland¹

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Paracyclops yeatmani n. sp. is reported from three localities on the Avalon Peninsula, Newfoundland. The new species is described and figured, and is contrasted with *P. fimbriatus poppei* and *P. affinis*.

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Paracyclops yeatmani n. sp. provient de trois localités de la péninsule d'Avalon, Terre-Neuve. On trouvera ici la description illustrée de cette nouvelle espèce comparée à celles de *P. fimbriatus poppei* et de *P. affinis*.
[Traduit par le journal]

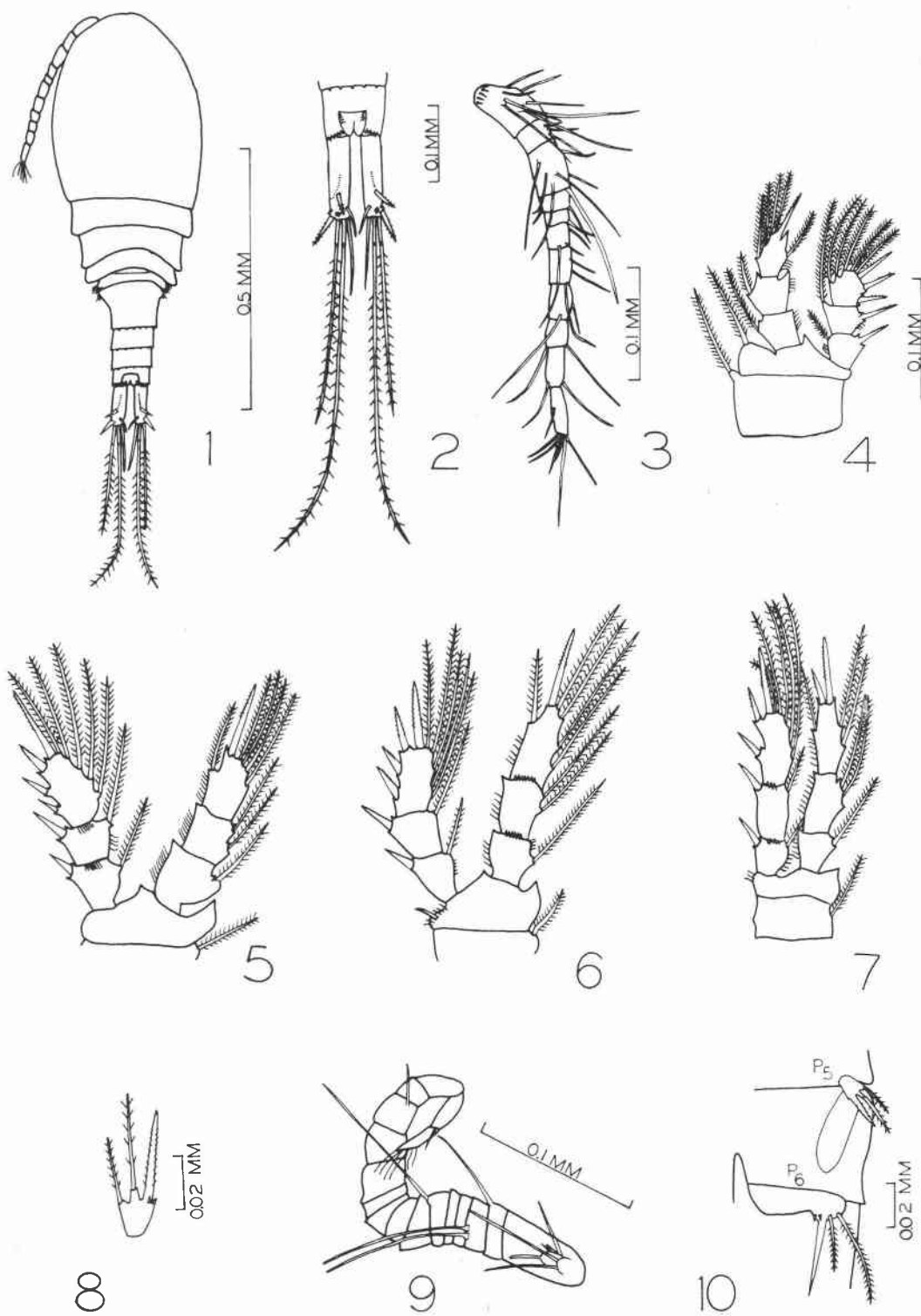
On August 14, 1972, several mature females of the genus, *Paracyclops*, were collected amongst *Sphagnum* in a slow-moving stream crossing Highway 5 between Bay Bulls and Witless Bay, Newfoundland. The locality can be found on the Canadian National Topographic Series map, sheet 1 N/7 W, grid reference 61.8 × 39.9. From qualitative seasonal data obtained from this locality, *P. yeatmani* was present all year with maximum numbers collected in April and May, 1973 (Daggett 1973). The characteristics of the specimens did not seem to fit the known species in the genus. Therefore, a sample containing mature females was sent to Dr. Harry C. Yeatman, who verified that they constituted a new species. The sample area, which is designated the type locality, also contained the following copepods: *Bryocamptus arcticus* Lilljeborg, *Cyclops vernalis* Fischer, *C. venustoides pilosus* Kiefer, and *Macrocyclus albidus* (Jurine). Subsequent sampling in July, 1973, has revealed the undescribed species from two *Sphagnum* pools at the Mobile Big Pond Biological Research Area of Memorial University (near Mobile, Newfoundland). The positions of the two localities are both shown on sheet 1 N/7 W, grid references 52.8 × 37.5 and 53.3 × 37.5.

Rylov (1948) recognized six species in the genus *Paracyclops*, and three variations of *P.*

fimbriatus Fischer. More recently, Kiefer (1968) described a new species, *P. timmsi*, from Australia. Of these, *P. fimbriatus* Fischer, *P. fimbriatus poppei* Rehberg (*P. poppei* according to Kiefer 1929; Rylov 1948), and *P. affinis* (Sars) have been reported from North America (Yeatman 1959). Although *P. fimbriatus* has been reported frequently in Canada (Klugh 1926; Carl 1940; Moore 1952; Wilson 1960), it is probable that most of the records refer to *P. fimbriatus poppei* (Yeatman, 1959). The only record of *P. affinis* in North America is from the leaves of a pitcher plant (*Sarracenia purpurea*) in Quebec (Willey 1934). Willey's identification was based upon 11-segmented antennae, the length-to-width ratio of the furcal rami, the fifth foot structure, and the number of setae and spines on the endopod segments.

However, the armature of the exopod segments of Willey's specimens differed from that known for *P. affinis*. Willey noted that the "numerical formula of the setae" for the terminal exopod segments (P₁-P₄) was "323," "423," "423," and "422." Since there are five setae on each terminal exopod segment in most cyclopoids, the spine formula would have been 3,4,4,3. This is in contradiction with the spine formula of *P. affinis*, which is 3,3,3,3 or 3,4,3,3. Unfortunately, Willey did not include figures so no comparison can be made between his specimens and those described in this paper.

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Paracyclops yeatmani n. sp.**Description**

About 25 females and four males of the undescribed species were examined. Type lot: holotype female, National Museum of Canada (NMC) 15439; paratype female, NMC 15440; paratype males, 15441 and 15442; paratype females, NMC 15443 in the National Museum of Natural Sciences, Ottawa, Ontario, Canada.

Female

The body length of the female varies from 0.75 to 0.86 mm. The body is markedly flattened dorsoventrally with no apparent constriction between the metasome and urosome (Fig. 1). Thoracic somite 5 with a lateral fringe of hairs. Body color in living specimens usually reddish-brown.

Furcal rami (Fig. 2) 3.8 to 4 times longer than wide. The lateral setae are attached about one-third of the distance from the posterior tip of the furcal ramus. A conspicuous dorsal row of spinules begins at the insertion of the lateral seta and runs to the anterior midportion of the ramus. There are no hairs on the inner and outer margins of the furcal rami. Relative lengths of the terminal furcal setae, innermost to outermost, vary closely around 2.5:9.8:6.0:1. Posterior margins of abdominal somites more conspicuously serrated ventrally than dorsally. Anal somite with minute spinules running obliquely from the posterior margin to the edge of the anal depression. Marginal surface of anal depression with hairs.

First antenna of the female (Fig. 3) with 11 segments. The antennae do not extend to the posterior margin of the first metasomal segment. The fifth segment from the base is distinctly short, and followed by six relatively long ones. Segment 1 with a short row of spinules near its base.

The swimming legs (Figs. 4-7) with three-segmented rami. The spine formula of the terminal exopod segments of legs 1-4 is 3,4,4,3. The setal formula of the same segments is 5,5,5,5.

The terminal endopod segment of leg 4 is 2.5 times longer than wide. The inner terminal spine

of this segment of leg 3 has one spine and five setae, while the endopod of leg 4 has two spines and three setae. The endopod of leg 2 is similar to that of leg 3.

The fifth foot (Fig. 8) is one-segmented. The segment bears a long inner spine and two outer setae. The spine is quite stout, with several minute spinules at its base. As can be seen in the figure, the outer seta is slightly shorter, and the inner seta is slightly longer than the spine.

The genital somite is slightly broader than long. The seminal receptacle is transversely oval.

Male

Body shape is similar to female except much smaller (0.56 to 0.68 mm) and the cephalothorax is more laterally compressed.

The first antennae (Fig. 9) are short and stout, consisting of 17 segments. As is characteristic of the other species in the genus, it is difficult to distinguish the rather compressed segments at the geniculation. The first segment is quite long with one cylindrical aesthetask and a seta swollen at its base. Segments 2 and 3 are one-fourth the length of segment 1. Two long setae originate between segments 3 and 4. Segments 4 through 10 are short, being one-eighth to one-fourth the length of segment 1. Segment 6 has a large seta swollen at its base. Segments 11 through 17 are rather long segments, about one-half the length of segment 1. There is a tendency for the last four segments to taper towards the tip of the antenna.

Leg 5 of the male (Fig. 10) is similar to that of the female, except that the outer seta is about the same length or slightly longer than the spine. Leg 6 (Fig. 10) has a long inner spine and two setae. The spine is long and stout with several spinules at its base. The outer seta is also stout and slightly longer than the spine. The inner seta is much shorter than the spine. The ratio of the lengths of the inner spine to the inner and outer setae is 1:0.7:1.3.

In summary, *P. yeatmani* resembles *P. fimbriatus poppei* in the armature of the swimming feet and fifth feet, the length-to-width ratio of the furcal rami, and the position of the dorsal longitudinal row of spinules on the furcal ramus. It

FIGS. 1-10. *Paracyclops yeatmani* n. sp., from Newfoundland. 1. Adult female (dorsal). 2. Furcal rami, female (dorsal). 3. First antenna, female (dorsal). 4. First swimming foot, female (left). 5. Second swimming foot, female (right). 6. Third swimming foot, female (right). 7. Fourth swimming foot, female (right). (Figs. 4-7 drawn to same scale.) 8. Fifth foot, female (right). 9. First antenna, male (dorsal-lateral). 10. Fifth and sixth foot, male (left). (All drawings were made with the aid of a camera lucida.)

differs from that species in the number of segments of the first antennae. *P. fimbriatus poppei* has 8 segments, while *P. yeatmani* and *P. affinis* have 11 in the female. Differences between *P. yeatmani* and *P. affinis* include the armature of the swimming legs, structure of the fifth feet, location of the dorsal row of spinules on the furcal rami, and the length-to-width ratio of the rami. *P. affinis* has a spine formula of 3,4,3,3 or 3,3,3,3. There is a transverse row of spinules in *P. affinis* which runs obliquely along the posterior half of the dorsal side of the furcal branch. The furcal rami of *P. affinis* are 2 to 2.5 times as long as wide, while in *P. yeatmani* the rami are about 4 times longer than wide. Also, in *P. affinis* there is a tendency for the lateral seta of leg 5 to be borne on a papilla.

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