

***Bryocamptus pilosus* n. sp. (Copepoda: Harpacticoida) from North America**

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Received 8 December 1987; accepted 28 April 1988

Key words: *Bryocamptus*, systematics, North America

Abstract

A new species of *Bryocamptus* from North America, *B. pilosus* n. sp., is described and illustrated. Some remarks are made on the occurrence of a specific piliform seta on the ventral side of the caudal ramus in the *vej dovskiyi* species group.

Introduction

The fauna of fresh-water harpacticoid copepods of North America is yet incompletely known. In her checklist of the known species Wilson (1956) states only thirty-six seemingly valid species, which is very few in respect of Gurney's (1932) list of thirty-two canthocamptids from Great Britain alone. That this is representative of only a portion of the number that may occur over the entire Continent is indicated by the fact that Wilson & Whipple list nine new species and that Flößner (1988a and 1989b) describes three new species in few samples from groundwater of Northern Canada additionally. It is therefore not surprising that in samples, taken from some lakes of western Montana, United States, sent for me for studying the cladoceran fauna by D. F. Brakke, was found a new species of the genus *Bryocamptus*. It is described below.

***Bryocamptus pilosus* n. sp.**

Etymology

From Lat. pilus, hair-like or piliform, masculine. Name for the piliform seta on the ventral surface of the caudal ramus.

Material examined

1. 35 specimens from Peterson Lake, Ravalli Co., Montana, United States, collected 20 August 1977 by D. F. Brakke.
2. 1 female from 3rd Jim Creek Lake, Missoula Co., Montana, United States, collected 3 September 1977 by D. F. Brakke.

Type locality

Peterson Lake, Ravalli Co., Montana, USA.

Type series

Sample from Peterson Lake, Ravalli Co., Montana.

Holotype

A mature female in alcohol, deposited in the Zoological Museum of Humboldt University Berlin, G. D. R. (catalog number 26788a).

Allotype

A mature male in alcohol in the Zoological Museum of Humboldt University Berlin, G. D. R. (catalog number 26788b).

Paratypes

One female and two males mounted on slides in glycerin jelly, 30 specimens in alcohol in the D. Flößner collection in Jena.

Diagnosis

Female. Anal operculum with about ten stout denticles. Caudal ramus about two times longer than wide; only middle apical seta well developed, basally enlarged, obliquely inserted; outer apical seta replaced by a pointed process, half as long as inner apical seta; inner-distal part of dorsal surface with a curved row of long, slender spines; on the ventral surface a long, very slender, piliform seta, with enlarged base. Segment 3 of exopod legs 2–4 with three spines on inner margin. Endopod of legs 1–3 three-segmented, of leg 4 two-segmented. Segment 3 of endopod leg 2 with four, of endopod leg 3 with five setae. Leg 5: basipod with six, exopod with five setae.

Male. Apical setae of caudal ramus normally developed; ventral surface without piliform seta. Endopod of leg 2 two-segmented, apical segment with four setae. Endopod of leg 3 three-segmented; basal segment with inner seta. Endopod of leg 4 two-segmented; basal segment unarmed; apical segment with four setae.

Description

Female. – Length 0.60–0.66 mm.

Fourth prosomal somite with lateral row of spinules, expanding somewhat dorsally. Genital-segment (Fig. 1) with two lateral rows of spinules,

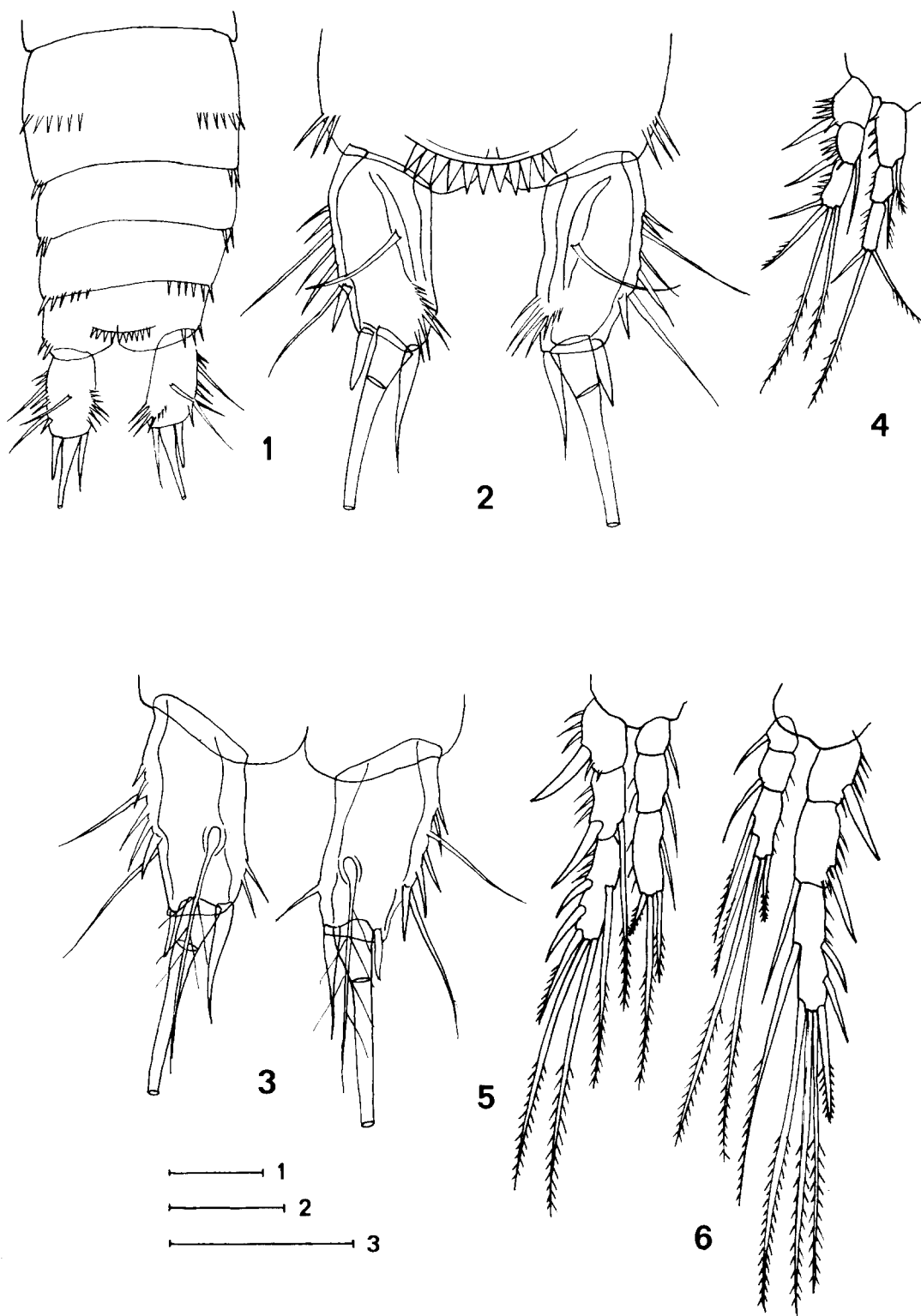
the anterior one expanding somewhat dorsally; urosomal somite 3 only with lateral spinules; urosomal somite 4 ventrally with continuous, dorsally with discontinuous row of spinules; anal somite with lateral spinules only. Anal operculum (Fig. 2) with 9–12 stout denticles, contiguous at their bases. Caudal ramus (Fig. 2) 1.9–2.2 times longer than wide; outer lateral setae placed at middle and near distal end of ramus, the proximal accompanied by 2 short spinules, the distal by 1 stout spine, moreover 2 long and slender spines between the lateral setae; dorsal face with a long chitinous ridge; beginning at its distal end a row of 7–8 long and slender spinules running to inner-distal margin; on the inner-distal part of the ventral side (Fig. 3 and 14) inserts a long, very slender, piliform seta on a circular, marginal thickened depression, basally bulb-like enlarged (Fig. 15), in the middle part sparsely long feathered; only middle apical seta well developed, obliquely inserted and basally slightly enlarged; outer apical seta replaced by a pointed process, half as long as inner apical seta, this seta basally slightly enlarged.

Antennule eight-segmented, with an esthetasc on the segment 4, reaching nearly to tip of apical segment. Palp of antenna two-segmented, with 1 seta on the basal and 3 setae on the apical segment. Mandible palp without endopod, with 4 setae.

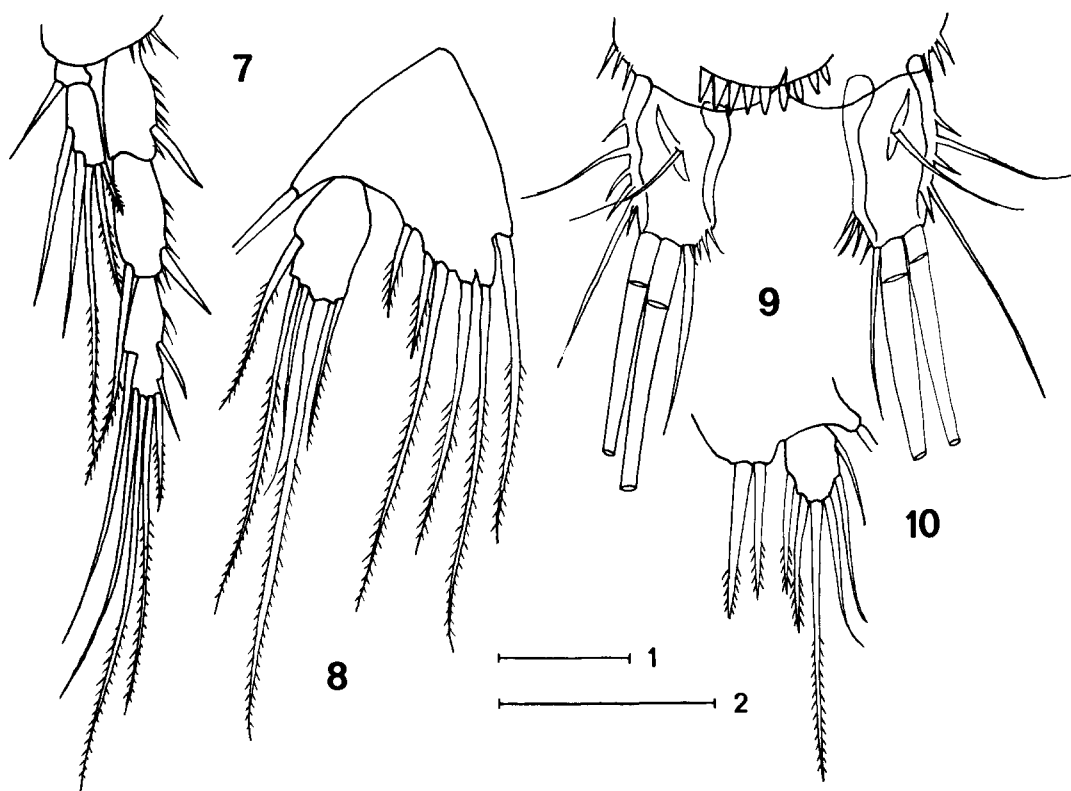
Leg 1 (Fig. 4). Segment 2 of exopod with inner seta; endopod three-segmented, slightly exceeding exopod by half the length of apical segment of endopod; segment 1 and 2 with inner seta.

Legs 2–3 (Fig. 5–6). Exopods three-segmented; segment 2 with inner seta; segment 3 with three outer spines; endopods three-segmented; that of leg 2 reaching to middle of exopod 3, that of leg 3 reaching to end of exopod 2; basal and middle segment with inner seta; apical segment of endopod leg 2 with 1 seta on inner margin, 2 setae at apex of segment and 1 spine-like seta sub-apically; armature of apical segment of endopod leg 3 as in leg 2, but inner margin with 2 setae.

Leg 4 (Fig. 7). Endopod as long as proximal



Figs. 1–6. *Bryocampus pilosus* n. sp., female. 1. urosome and caudal rami, dorsal view. 2. caudal rami, dorsal view. 3. caudal rami, ventral view. 4. Leg 1. 5. Leg 2. 6. Leg 3. Scale 1 for 1; 2 for 4–6; 3 for 2–3. All scales = 50 μ m.



Figs. 7–10. *Bryocamptus pilosus* n. sp. 7. Leg 4 ♀. 8. Leg 5 ♀. 9. caudal rami ♂. 10. Leg 5 ♂. Scale 1 for 7; 2 for 8–10. All scales = 50 μ m.

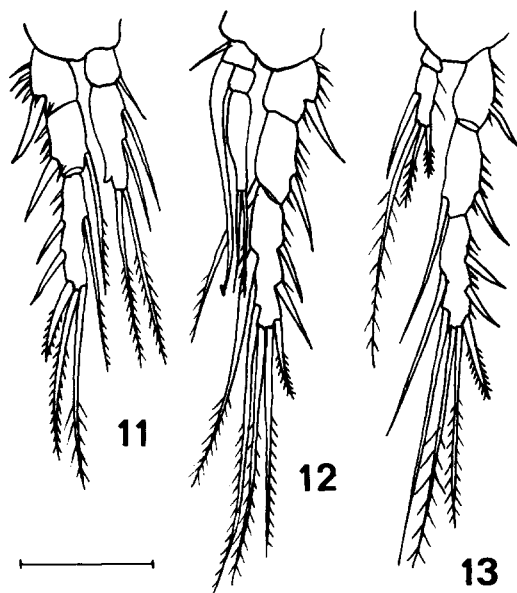


Fig. 11–13. *Bryocamptus pilosus* n. sp., male. 11. Leg 2. 12. Leg 3. 13. Leg 4. Scale = 50 μ m.

segment of exopod, armature on apical segment as in leg 3; exceptionally inner margin with three setae.

Leg 5 (Fig. 8). Exopod oblong, nearly two times longer than wide; with 5 setae, the apical-most one basally thickened; basipod reaching nearly to end of exopod; with 6 setae, the two outermost very short.

Male. – Length 0.53–0.58 mm. Urosomal somites 2–4 ventrally with continuous row of spinules extending on somites 2 and 4 somewhat dorsally. Anal operculum (Fig. 9) with 6–9, mostly 7 denticles, relatively stouter than in female.

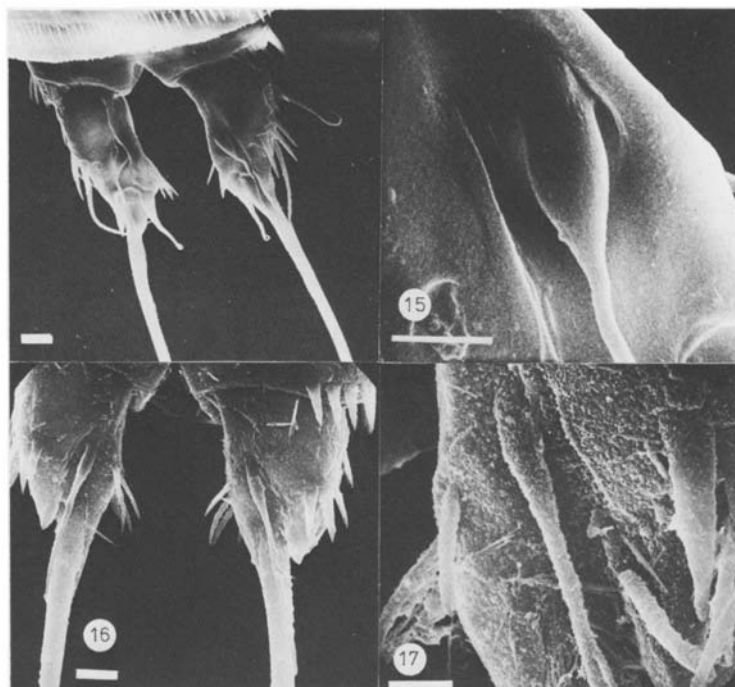
Caudal ramus (Fig. 9) 1.7–2.0 times longer than wide, slightly tapering distally; dorsal chitinous ridge shorter than in female; inner-distal margin with 4 spinules only; ventral side without long, piliform seta; apical setae normally developed, outer half as long as middle one, inner seta slender.

Leg 1 and exopods of legs 2–4 as in female. Endopod of leg 2 (Fig. 11) two-segmented; basal segment with inner seta, apical segment with 2 inner and 2 apical setae; outer-distal margin with a small outgrowth.

Endopod of leg 3 (Fig. 12) three-segmented, reaching to end of exopod 2; basal segment with inner seta; segment 2 with long hypophysis, twice as long as distal joint; apical segment with 2 setae of nearly equal length.

Endopod of leg 4 (Fig. 13) two-segmented, reaching to end of exopod 1; basal segment short, without inner seta; apical segment with 1 inner seta, 2 apical setae and 1 subapical spine-like seta.

Leg 5 (Fig. 10). Exopod oval, 1.2 times longer than wide, with 6 setae, basipod very short, not reaching middle of exopod, with 2 setae; the inner only slightly longer than the outer one. Leg 6 very small, with 3 setae.



Figs. 14–15. *Bryocamptus pilosus* n. sp., female. 14. caudal ramus, ventral-view. 15. caudal ramus, base of piliform seta.

Figs. 16–17. *Bryocamptus vej dovskiy* (Mrázek, 1893), female. 16. caudal rami, ventral view. 17. caudal ramus, base of piliform seta. The scale lines for Figures 14 and 16 represent 10 μ m, for Figures 15 and 17 5 μ m.

Setation formula of Legs 1–5

	Exopod			Endopod		
	1	2	3	1	2	3
Female						
Leg 1	01	11	022	10	10	111
Leg 2	01	11	123	10	10	121
Leg 3	01	11	223	10	10	221
Leg 4	01	11	223	–	10	221
Leg 5		5			6	
Male						
Leg 1	01	11	022	10	10	111
Leg 2	01	11	123	–	10	220
Leg 3	01	11	223	10	10	020
Leg 4	01	11	223	–	00	121
Leg 5		6			2	

Species relationships

The new species belongs into the *minutus* species group. Studying the North American fresh-water harpacticoids, already Wilson (1956) stated, that '... it now appears that the *minutus-hutchinsoni-vej dovskyi* group may represent a highly evolved and widely distributed complex of species or sub-species in North America'.

Bryocamptus pilosus n. sp. resembles *Bryocamptus vej dovskyi* (Mrázek) in replacing the outer apical seta of caudal ramus by a pointed process and in structure and setation of legs 1–4. It differs from *B. vej dovskyi* (Fig. 16) in the longer caudal ramus in both sexes, the longer outer pointed process of the caudal ramus, the basally enlarged middle and inner apical seta of the caudal ramus and the bulb-like enlarged piliform seta on the ventral side of the caudal ramus, inserting on a circular, marginal thickened depression.

By reexamination of *Bryocamptus vej dovskyi* of the Lilljeborg collection in Uppsala and of the Crustacean collection of the Zoological Museum of Humboldt University Berlin I could prove, that the piliform seta, a specific feature of the *vej dovskyi* species group, is present in all available specimens (n = 75). It differs from that in the American species *pilosus* by having only a very slight, not bulb-like swollen basal part, not

inserting on a special circular depression (Fig. 17). The seta have been overlooked by all former authors, which have described and figured the ventral side of the caudal ramus of *Bryocamptus vej dovskyi* (Mrázek 1893; van Douwe, 1909; Petkovski, 1959; Dussart, 1967). This error or misinterpretation is comprehensible, because the very slender seta is broken off frequently, which happens likely during copulation.

Acknowledgements

I thank Prof. D. F. Brakke, Bellingham, Washington, USA for donation of specimens as well as Dr. L. Wallin, Uppsala, and Dr. H.-E. Gruner, Berlin for loan of specimens of *Bryocamptus vej dovskyi*.

References

- Douwe, C. van, 1909. Copepoda, Ruderfußkrebse. I: Teil. Die Süßwasserfauna Deutschlands 11: 1–69 (Fischer, Jena).
- Dussart, B., 1967. Les Copépodes des eaux continentales d'Europe Occidentale. Tome I: Calanoides et Harpacticoides: 1–500 (Editions N. Boubee & Cie, Paris).
- Flößner, D., 1988a. New freshwater Canthocamptidae (Copepoda: Harpacticoida) from groundwater of Canada and Greenland. Stygologia (in press).
- , 1989b. Two new species of freshwater Canthocamptidae (Copepoda: Harpacticoida) from Canada. Hydrobiologia. (in press).
- Gurney, R., 1932. British freshwater Copepoda. II. Harpacticoida. The Ray Soc. London, 336 p.
- Mrázek, A., 1893. Prispěvky k poznání sladkovodních Copepodů. Vest. kral. české spol. nauk, tr. math.-přirod 8: 1–74.
- Petkovski, T., 1959. Beiträge zur Kenntnis der Entomostraken des Bojansko Blato in Bulgarien. Veröff. Forsch. inst. Hydrobiol. Naturwiss. Fak. Univ. Istanbul, Seri B, 4: 166–169.
- Wilson, M. S., 1956. North American Harpacticoid Copepods. 1. Comments on the known fresh-water species of the Canthocamptidae. 2. Canthocamptus oregonensis n. sp. from Oregon and California. Trans. Amer. Microscop. Soc. 75: 290–307.
- Wilson, M. S. & H. C. Yeatman, 1959. Harpacticoida. In: H. B. Ward & G. Ch. Whipple, Freshwater Biology. Secd. Ed. New York: 815–861.