

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/271690870>

Description of *Elaphoidella wilsonae* n. sp. (Canthocamptidae: Copepoda) from Colorado

Article in *Transactions of the American Microscopical Society* · April 1979

DOI: 10.2307/3226026

CITATIONS

2

READS

42

1 author:



Gary Hunt

Tulsa Community College, United States, Tulsa

7 PUBLICATIONS 140 CITATIONS

SEE PROFILE

DESCRIPTION OF *ELAPHOIDELLA WILSONAE* N. SP.
(CANTHOCAMPTIDAE: COPEPODA) FROM COLORADO¹

GARY W. HUNT

Environmental Division, Benham Blair and Affiliates, Inc.,
Oklahoma City, Oklahoma 73156

HUNT, G. W. 1979. Description of *Elaphoidella wilsonae* n. sp. (Canthocamptidae: Copepoda) from Colorado. *Trans. Amer. Micros. Soc.*, 98: 248-253. *Elaphoidella wilsonae* n. sp., a new harpacticoid species, was collected at two locations in northwestern Colorado. This species differs from related species in the form of the caudal ramus and the setation of legs 4 and 5. A key for the identification of North American *Elaphoidella* is included.

Wilson (1975) recently reviewed the occurrence and distribution of the harpacticoid copepod genus *Elaphoidella* in North America. In that review, five *Elaphoidella* species were recognized: *E. bidens coronata* (Sars), *E. subgracilis* (Wiley), *E. californica* Wilson, *E. reedi* Wilson, and *E. kodiakensis* Wilson. Of these five species, the latter four belong to the *gracilis* group as defined by Wilson (1975). This paper describes a new species of harpacticoid copepod (*E. wilsonae* n. sp.) which is also in the *gracilis* group, discusses its relationship to other members of the group, and presents notes on its ecology.

FAMILY CANTHOCAMPTIDAE

Elaphoidella wilsonae n. sp.

(Figs. 1-21)

Type-locality: Spring-fed pond beside highway U.S. 6, 3.2 km east of Rifle, Garfield County, Colorado, ca. 39°30'N; 107°45'W, elevation ca. 1615 m, 25 March 1975.

Type-material: Holotype 1 ♀ (1 slide), USNM 171432; paratypes 3 ♀, 4 ♂ (7 slides), USNM 171433; additional specimens (alcoholic), USNM 171434.

Etymology: This species is named in memory of Dr. M. S. Wilson in recognition of her contributions to the knowledge of North American harpacticoids, and specifically the *Elaphoidella*.

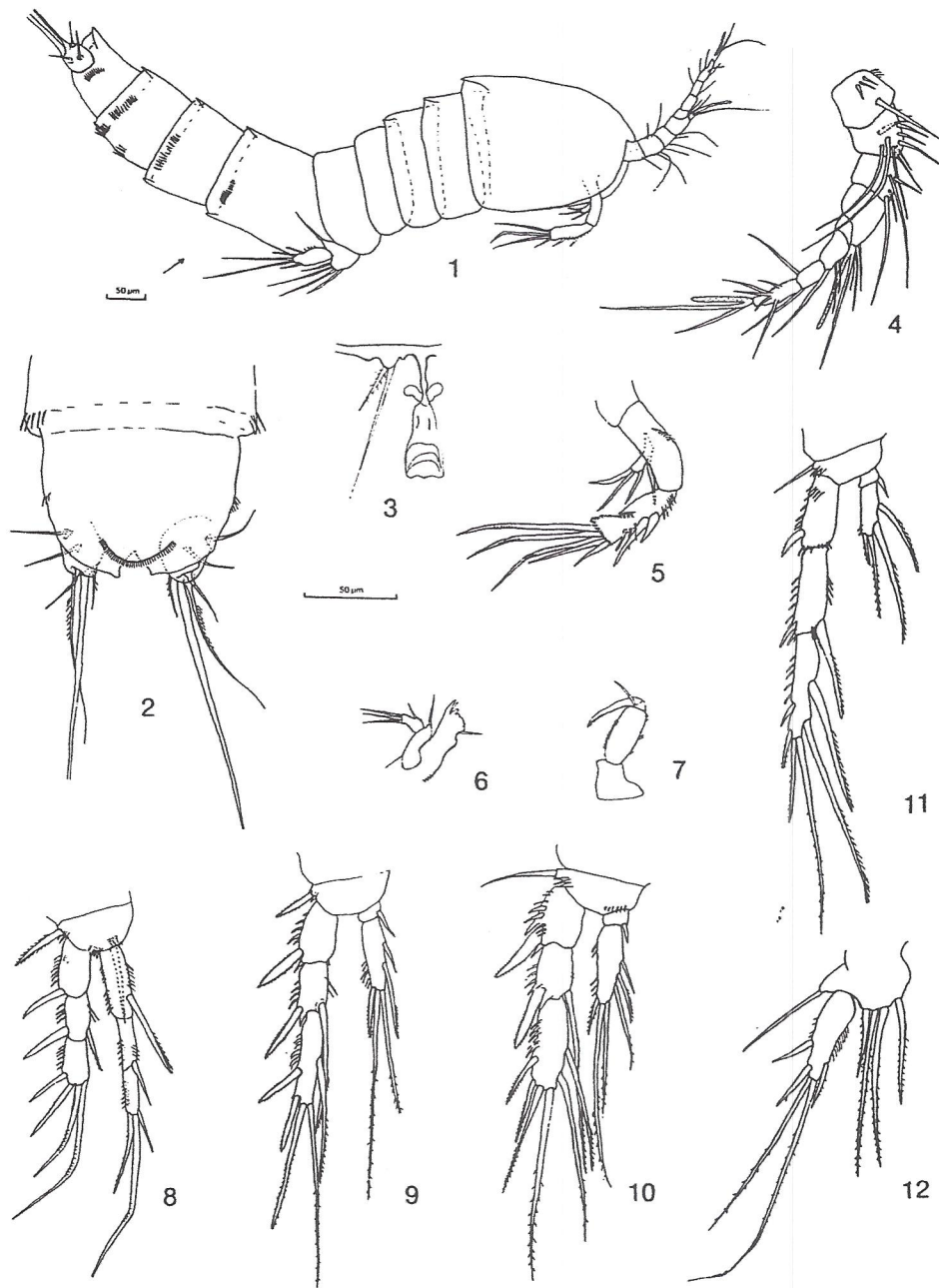
Occurrence: Type-lot: 10 ♀, 8 ♂, 25 March 1975. Occurring with *Bryocamptus hiemalis* Pearse and *Bryocamptus zschokkei* (Schmeil).

Repeated occurrence in spring-fed pool, Yellow Creek in Rio Blanco County, Colorado (ca. 40°N; 108°15'W), 1 ♀, 6 January 1975; 2 ♀, 25 November 1975; 9 ♀, 11 ♂, 9 April 1976; 2 ♀, 2 ♂, 25 May 1976; 16 ♀ (3 ovigerous), 6 ♂, 7 copepodites, 27 July 1976; 9 ♀, 16 ♂, 12 copepodites, 15 September 1976. Occurring with *Bryocamptus hiemalis* Pearse and *Moraria affinis* Chappuis.

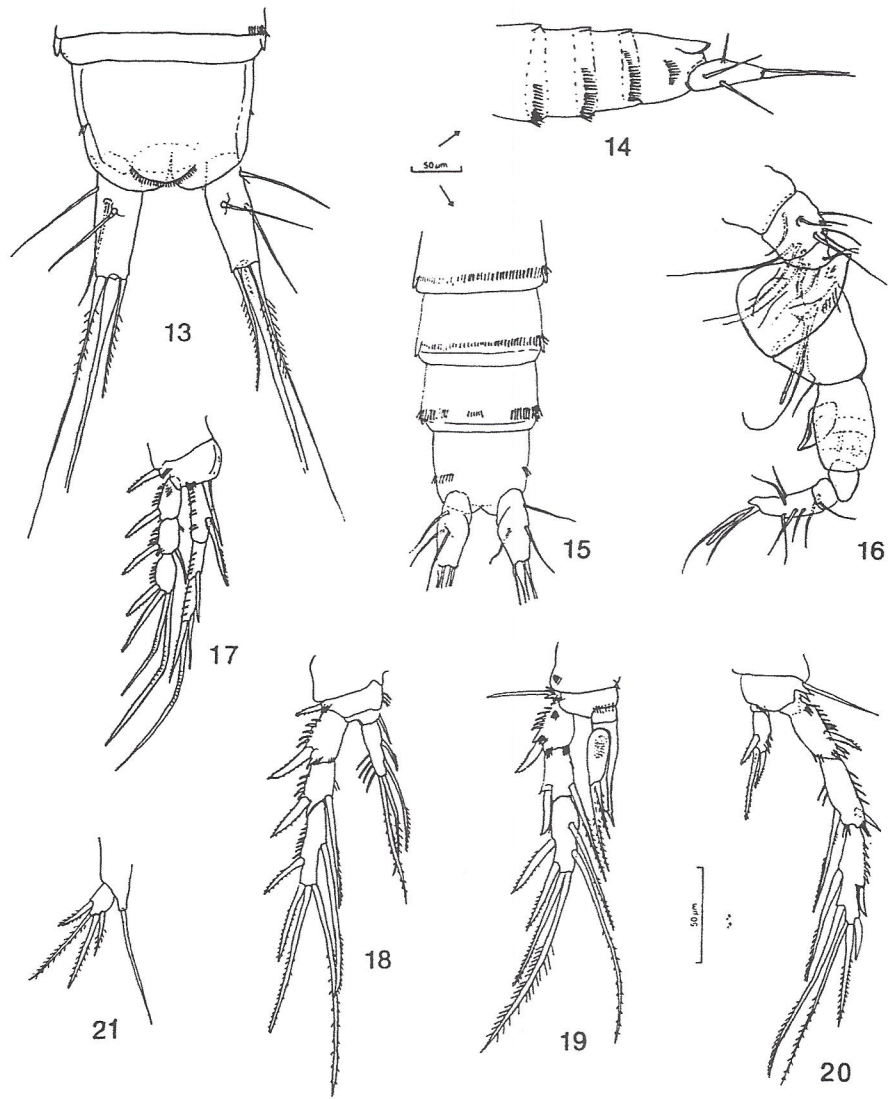
Description of Species

Female. Length, range of six specimens: 0.75-0.85 mm. Body form similar to other species of *gracilis* group, with leg 4 usually carried appressed to

¹ I wish to thank Dr. Harry Yeatman, University of the South, for verifying my identification and for his helpful suggestions. Also, I wish to thank Dr. Andrew Robertson, NOAA, Ann Arbor, and Mr. Douglas Spencer, NUS Corporation, for reviewing the manuscript.



FIGS. 1-12. *Elaphoidella wilsonae* n. sp., female. Fig. 1. Habitus, lateral. Fig. 2. Anal segment and caudal rami, dorsal. Fig. 3. Genital area and leg 6. Fig. 4. Antennule. Fig. 5. Antenna. Fig. 6. Mandible. Fig. 7. Maxilliped. Fig. 8. Leg 1. Fig. 9. Leg 2. Fig. 10. Leg 3. Fig. 11. Leg 4. Fig. 12. Leg 5.



FIGS. 13-21. *Elaphoidella wilsonae* n. sp., male. Fig. 13. Anal segment and caudal rami, dorsal. Fig. 14. Urosome and caudal ramus, lateral. Fig. 15. Same, ventral. Fig. 16. Antennule. Fig. 17. Leg 1. Fig. 18. Leg 2. Fig. 19. Leg 3. Fig. 20. Leg 4. Fig. 21. Leg 5.

body. Urosome spination: genital segment with lateral groups of spinules distally (Fig. 1); segment 2 similar to genital segment; segment 3 with distal groups of spinules laterally and additional groups on ventral surface at distal end and usually at midpoint; anal segment with lateral groups of spinules just proximal to base of ramus (Figs. 1, 2). Anal operculum a narrow membrane armed with numerous fine setules (Fig. 2). Caudal ramus arising somewhat ventrally from anal segment, just distal to middle of anal segment and extending slightly past end of that segment (Figs. 1, 2); length slightly greater

than greatest width; not laterally compressed; lateral and dorsal setae approximate length of ramus; one spine located near base of distal lateral seta; dorsal seta arising near apex of ramus. Three caudal setae (Figs. 1, 2) arising at apex of ramus; the middle caudal seta about same length as urosome, much stouter basally than the others; outer caudal seta ca. two and one-half times length of ramus and ca. one-fourth length of middle seta, with outer marginal spinules; inner seta shorter than ramus; outer and middle setae often broken off near apex of ramus.

Antennule 8 segmented (Fig. 4). Armature of each segment:

Segment	1	2	3	4	5	6	7	8
No. of setae	1	9	4	2	2	3	2	7
Aesthete				a				a

Seta of segment 1 and that at distal end of segment 2 not obviously plumose, but with few marginal spinules. Aesthete on segment 4 extending slightly beyond segment 7.

Antenna (Fig. 5), exopod with four setae; apical segment with stout lateral spines, five apical setae and lateral membranes.

Mandible (Fig. 6) coxa-basis 1-segmented, with one seta, endopod with four setae. Maxilliped (Fig. 7) basis naked; first endopod segment with spinules; second segment terminating in claw with seta.

Legs 1-4, exopods 3-segmented (Figs. 8-11); endopodite of leg 1 3-segmented, those of legs 2-4 2-segmented. Setae formula for legs 1-4 (includes appendages called spines; and setae counted from outer to inner margins):

	Endopod			Exopod		
	<u>1</u>	<u>2</u>	<u>3</u>	<u>1</u>	<u>2</u>	<u>3</u>
P.1	0.1	0.1	0.2.1	1.0	1.1	1.2.1
P.2	0.1	1.2.2		1.0	1.1	2.2.1
P.3	0.1	1.2.3		1.0	1.1	2.2.2
P.4	0.1	1.1.2		1.0	1.1	2.2.2

The total number of setae for endopod 2, legs 2-4: 5,6,4.

Leg 2 (Fig. 9) with two elongate, subequal apical setae on endopod.

Leg 3 (Fig. 10) with three inner setae on endopod segment 2, evenly spaced, the most proximal located approximately one-third the length of the segment from its base, the most distal seta about the same length as segment 2 of the endopod.

Leg 4 (Fig. 11) endopod approximate length of exopod segment 1. Proximal inner seta of endopod segment 2 placed at midpoint of segment. Distal inner seta extending well beyond inner apical seta.

Leg 5 (Fig. 12) exopod elongate, greatest width about one-fourth the distance from proximal end, two apical setae very long, inner $2\frac{1}{2}$ -3 times length of exopod, outer about twice length of exopod, proximal outer seta located distally to midpoint of segment; inner basal expansion with four setae, the two middle of approximately the same length and nearly twice the length of the exopod, the outer shorter than exopod and the inner about the same length as exopod.

Male. Length, range of four specimens: 0.85-0.9 mm. Urosome spination (Figs. 13-15): genital segment and segment 2 with spinules extending, ventrally, across distal end of segment; segment 3 with distal groups of spinules

laterally and medially on ventral side; anal segment as in female. Caudal rami (Figs. 13–15) not as in female, but slender, equal to, or slightly subequal to outer margin of anal segment; width about one-half length. Lateral setae about same length as ramus; dorsal seta not quite as long. Middle caudal seta longer than urosome, much stouter basally than other two caudal setae; outer caudal seta ca. 2.3 times length of ramus; inner seta about same length as ramus.

Antennule 9 segmented (Fig. 16), segments 4 and 5 expanded and overlapping, one edge with sharply pointed projections; segment 6 with large spine-like projection. Figure of extended antennule does not illustrate all setae.

Antenna as in female (not figured).

Leg 1 (Fig. 17) as in female.

Leg 2 (Fig. 18) endopod segment 2 with four setae.

Leg 3 (Fig. 19) endopod modified into copulatory organ; process on segment 2 about two times length of distal segment; spines of exopod segments 1 and 2 stout, that of segment 2 outcurved at tip.

Leg 4 (Fig. 20) endopod exceedingly reduced with three apical setae.

Leg 5 (Fig. 21) exopod less than two times its width, the inner and outermost setae approximately the same length as exopod; basal expansion not produced, without inner seta.

Ecology and Occurrence

Elaphoidella wilsonae n. sp. apparently is an inhabitant of highly alkaline waters. Both locations at which this species was found were spring-fed ponds, highly alkaline and choked with heavy growths of *Chara*. Mature forms were collected during the three seasons that collections were made (spring, summer, and fall); however, ovigerous females and immature copepodites were observed only in late July. The three ovigerous females observed carried single egg sacs containing 4, 6, and 6 eggs, respectively.

Taxonomic Remarks

Elaphoidella wilsonae n. sp. quite clearly belongs to the *gracilis* group of the *Elaphoidella* as described by Wilson (1975). It exhibits all the characteristics of this grouping except the setae on segments 1 and 2 of the female antennule are nonplumose. Within the *gracilis* group, *E. wilsonae* is most closely related to *E. reedi* and *E. kodiakensis*, due to the presence on the female of three inner setae on the endopod of leg 3 and the long narrow exopod of leg 5. However, this species has been deemed worthy of specific ranking in regard to three characters: (1) the short caudal rami of *E. wilsonae* females as opposed to the long, narrow rami of related species; (2) the inner subapical setae of segment 2 of the endopod, leg 4, in *E. wilsonae* females extending beyond the inner apical setae of that segment, whereas in related species the subapical setae does not reach the end of the apical seta; and (3) the outer seta on the expansion of the basal segment of leg 5 is shorter than the exopod in *E. wilsonae* females but longer than the exopod in other species.

The short rami of *E. wilsonae* female is unique among the *gracilis* group of *Elaphoidella*, as all known forms, both male and female (including the *E. wilsonae* male), exhibit the long narrow ramus. The long narrow ramus condition was also characteristic of the immature female copepodites, including

the fifth stage, of *E. wilsonae*. Apparently, the change in proportions of the rami occurs during the last moult before the adult (6th) stage.

Elaphoidella bidens coronata also has a relatively short ramus; however, it differs from *E. wilsonae* in that the body segments of the former are serrated and a prominent dorsal hook occurs on the ramus.

A key distinguishing the known North American species of *Elaphoidella* follows:

KEY TO FEMALES OF THE NORTH AMERICAN *ELAPHOIDEA* CHAPPUIS

- | | | |
|---|----------------------------------|---|
| 1a. Posterior margin of body segments serrate, caudal ramus with prominent dorsal hook..... | <i>E. bidens coronata</i> (Sars) | |
| 1b. Posterior margin of body segments not serrate, caudal ramus without prominent dorsal hook | | 2 |
| 2a. Exopod, leg 5, with four setae; endopod, second segment, leg 2, with four setae..... | <i>E. subgracilis</i> (Willey) | |
| 2b. Exopod, leg 5, with five setae; endopod, second segment, leg 2, with five setae | | 3 |
| 3a. Endopod, segment 2, leg 3, with five setae..... | <i>E. californica</i> Wilson | |
| 3b. Endopod, segment 2, leg 3, with six setae | | 4 |
| 4a. Caudal ramus, length ca. equal to width, extending slightly past distal end of anal segment | <i>E. wilsonae</i> n. sp. | |
| 4b. Caudal ramus, 2 to 3 times longer than wide | | 5 |
| 5a. Apex of ramus with three processes, two of which are digitiform and flexible..... | <i>E. kodiakensis</i> Wilson | |
| 5b. Apex of ramus without digitiform processes | <i>E. reedi</i> Wilson | |

LITERATURE CITED

- WILSON, M. S. 1975. North American harpacticoid copepods. II. New records and species of *Elaphoidella* (Canthocamptidae) from the United States and Canada. *Crustaceana*, 28: 125-138.