

STRUCTURAL ABNORMALITIES IN COPEPODA.

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[REPRINTED FROM VOLUME XVII, PART I, OF THE TRANSACTIONS OF THE
WISCONSIN ACADEMY OF SCIENCES, ARTS, AND LETTERS.]

[*Issued November, 1911*]

ON A NEW SPECIES OF DIAPTOMUS FROM COLORADO.

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DIAPTOMUS COLORADENSIS SP. NOV.

Plate X, figs. 7, 8 and 9.

Of medium size. The suture between the first and second cephalothoracic segments is quite distinct, and these two, forming the first apparent segment, are together somewhat shorter than the three following segments. The last cephalothoracic segment is expanded into large lateral processes, each side being armed with two small spines.

The first segment of the female abdomen (Plate X, fig. 8) slightly exceeds in length the rest of the abdomen. It is broad, dilated ventrally, and moderately dilated laterally. The lateral processes bear large spines which are turned towards the posterior end of the animal. The second segment is shorter than the third and the two together are considerably longer than the furca. The furcal rami are stout and ciliate on both the inner and the outer margins. The antennae reach beyond the end of the furca. The antepenultimate segment of the right male antenna is without any special appendage.

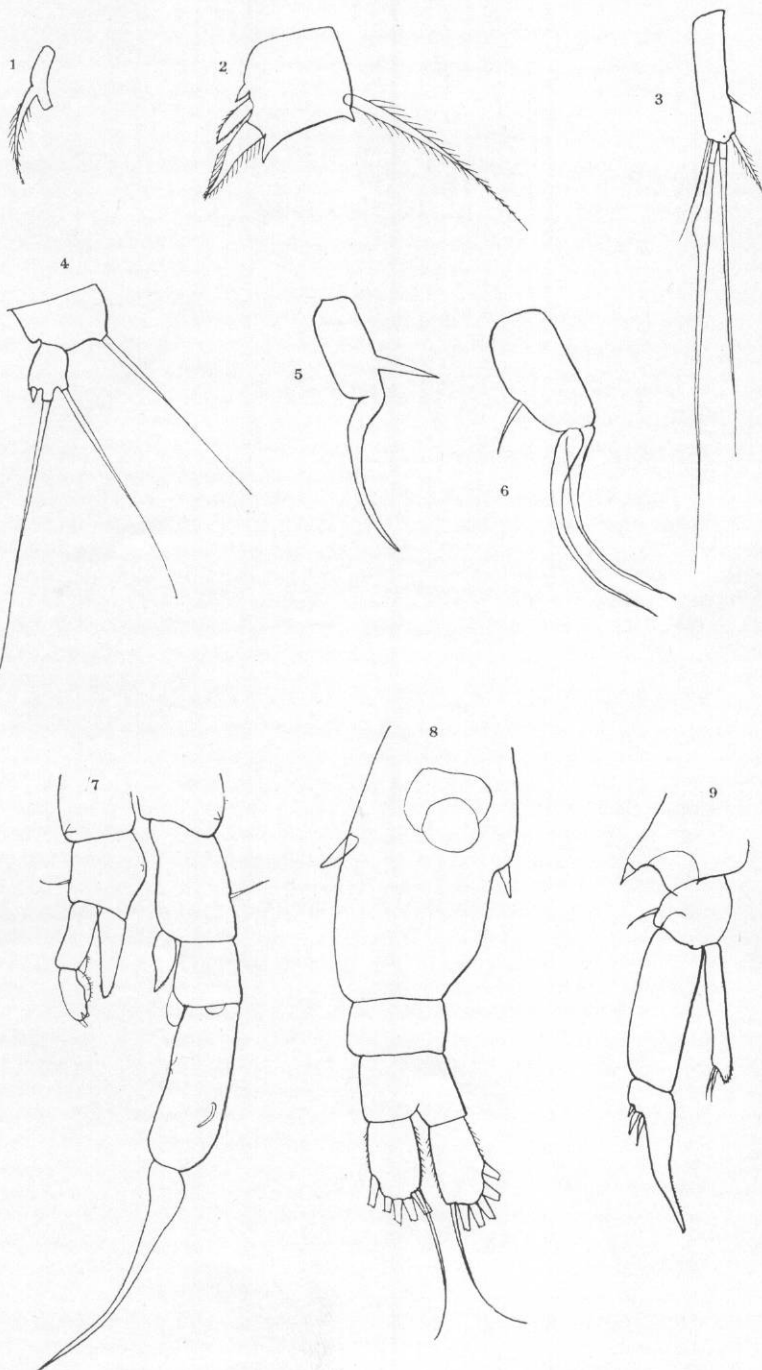
The fifth feet of the female (Plate X, fig. 9) are slender. The spines of the first basal segments are large and prominent. The lateral hairs of the second basal segments are of moderate length. The first segment of the exopodite is more than twice as long as wide. The second segment is long and slender, exceeding in length the first segment. The hook is slightly curved and denticulate on the inner margin. It is armed with three spines of which the inner is the longest. The two inner spines represent the third segment. The endopodite is slender and

somewhat shorter than the first segment of the exopodite. It is setose at the tip, and armed with two long terminal spines which are inserted well back from the end of the endopodite.

In the male fifth foot, (Plate X, fig. 7) the spines of the first basal segment are rather prominent and acute. The second basal segment of the right foot is about twice as long as broad; the lateral hair is situated a little beyond the middle of the segment. The first segment of the exopodite is quadrate, slightly longer than broad, and bears two curved hyaline processes, one, which is quite prominent, on the inner distal angle, and the other, much smaller, on the distal posterior edge. The second segment is more than twice as long as broad, is nearly straight, and is of about the same width throughout. The lateral spine is small, curved, and situated distad of the middle. Near the inner margin on the posterior surface is a small spine reminding one of the similar structure in the *oregonensis* group, although less pronounced. The terminal hook is rather stout, slightly curved, and, in length, exceeds, a little, the rest of the exopodite. It is finely denticulate on the inner margin. The right endopodite nearly equals in length the first segment of the exopodite. It is somewhat variable in shape, but is ordinarily rather broad and pointed at the tip. The end is armed with minute setae. The left foot reaches to the end of the first segment of the right exopodite. The second basal segment is as long as wide. The inner margin is strongly convex, and near this margin, about midway of the segment, is a small blunt spine. The lateral hair is situated near the distal end of the segment. The first segment of the left exopodite is longer than wide, its length in some cases being more than twice its width. The second segment is about two-thirds as long as the first, and has upon its inner surface a convex setose pad; the segment is terminated with two digitiform processes, of which the outer is the longer. The endopodite is slender, one-segmented, more or less pointed, and reaches to about the middle of the second segment of the exopodite. The tip is distinctly setose.

Length of female 1.38 mm. Length of male 1.32 mm.

This has been found at Corona, Kremmling, Tolland, and Mount Carbon, Colorado.



This species is closely connected with *Tyrelli* and was at first thought to be identical with it. The differences, however, are constant and are of sufficient importance to justify a specific separation. The principal points of difference are as follows:

In the female fifth foot, the spines of the first basal segments are large instead of small as in *Tyrelli*. The endopodite is shorter than the first segment of the exopodite, while in *Tyrelli* it is longer. In the male fifth foot the distal margin of the first segment of the right exopodite has two hyaline processes, the one at the inner angle being quite large, while *Tyrelli* has one inconspicuous process on the inner distal angle. The lateral spine of the second segment of the right exopodite is rather strongly curved instead of nearly straight as in *Tyrelli*, and the blunt spine of the dorsal surface of this segment I have never seen in *Tyrelli*. The right endopodite is nearly as long as the first segment of the exopodite while in *Tyrelli* it is much shorter. The left endopodite of the male fifth foot is much stouter than in *Tyrelli*.

D. coloradensis is interesting as indicating a possibility of bridging over between the *oregonensis* and *tenuicaudatus* groups. In the Revision of the North American Species of *Diaptomus* the author stated* that *Tyrelli* apparently was most closely related to the *tenuicaudatus* group although not having any appendage of the antepenultimate segment of the right male antenna as in that group. The presence of the small blunt spine on the dorsal surface of the second segment of the exopodite of the male fifth foot in *coloradensis* is evidence of relationship to the *oregonensis* group. While, in the light of our present knowledge we can only make a guess at the phylogeny of *Tyrelli* and *coloradensis* it seems probable that they should be classed with the *oregonensis* group.

* Trans. Wis. Acad. Sci., Letters, and Arts, XV, p. 396.