

First Record on Occurrence of *Parachaetocladius* (Diptera: Chironomidae) in Missouri

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Abstract: We report first record on occurrence of the midge genus *Parachaetocladius* in Missouri based on aquatic macroinvertebrate community samples collected during September 2004 from a reach of Sinking Creek in Dent County in the Ozark Highlands. Select water quality characteristics from the reach are also provided.

Key Words: Missouri, wadeable streams, Chironomidae, *Parachaetocladius*

The chironomid genus *Parachaetocladius* has a Holarctic distribution (Cranston et al. 1983, Barton et al. 1987) and has been reported to occur in springs and spring-influenced streams in Europe (Lindegaard 1995, Paasivirta 2007) and North America (Epler 2001). Although *Parachaetocladius* is noted to have a northern distribution in North America (Coffman and Ferrington 1996), it has been reported to occur as far south as Florida (Hudson et al. 1990, Caldwell et al. 1997, Epler 2001). We identified 10 larval specimens of *Parachaetocladius* from macroinvertebrate community samples collected 29 September 2004 from a reach of Sinking Creek, a spring-influenced, 3rd order, wadeable stream in Dent County in the Ozark Highlands Ecological Section of Missouri (Cleland et al. 1997, Nigh and Schroeder 2002) (Fig. 1). Discharge of the reach we sampled at Sinking Creek was 0.003 m³/s, mean depth was 21 cm, and the dominant substrate was coarse gravel with 51.4 % of particles being 16–64 mm.

We collected macroinvertebrate community samples from Sinking Creek using 500 µm mesh aquatic kick nets in riffles, pools, and submerged rootmat habitats according to methods outlined by Sarver et al. (2002). The *Parachaetocladius* specimens we collected from Sinking Creek were found in a riffle habitat sample. Barton et al. (1987) reported larval *Parachaetocladius abnoeaeus* (Wülker) were collected in southern Ontario near the banks of a stream during the months of May to November and near the middle of the same stream during the months of December to May. Also, Ferrington (1987)

reported dense root-systems of watercress (*Nasturtium officinale* Brown) and monkey flower (*Mimulus glabratus* Kunth) with associated concentrations of fine particles of organic matter to be a preferred microhabitat of larval *Parachaetocladius* in Big Springs in western Kansas. Watercress was present near bank margins of riffle habitat where we collected larvae of *Parachaetocladius* at Sinking Creek.

Because little information is available on water quality characteristics associated with *Parachaetocladius*, select physical and water quality characteristics from the reach of Sinking

Figure 1. Location of the reach of Sinking Creek where larvae of *Parachaetocladius* were collected in Missouri 29 September 2004.

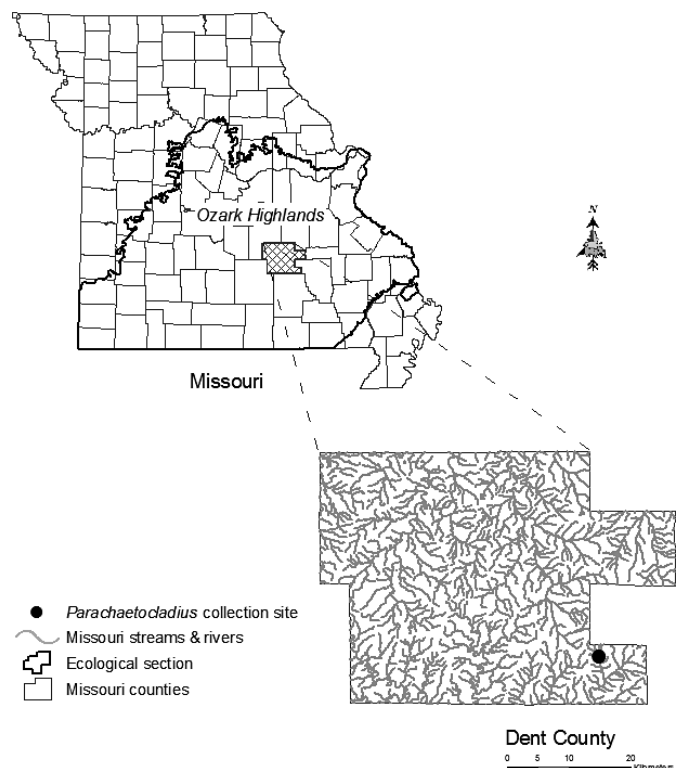


Table 1. Select physical and water quality characteristics from the reach of Sinking Creek where larvae of *Parachaetocladius* were collected 29 September 2004. WA = watershed area (km²), CW = mean channel width (m), Temp = water temperature (°C), DO = dissolved oxygen (ppm), Cond = conductivity (uS/cm), pH = standard units (pH), Chlor = total chlorophyll (µg/L).

WA	CW	Temp	DO	Cond	pH	Chlor
10.4	2.67	18.9	6.2	298	7.7	1.1

Creek where larvae of this midge were collected are presented in Table 1. Water temperature recorded for the reach where we collected *Parachaetocladius* was very near the upper limit of the range of water temperature associated with *Parachaetocladius* by Blackwood et al. (1995). According to Blackwood et al. (1995) *Parachaetocladius* was associated with a water temperature range of 15 to 19 °C in springs and spring-fed streams in the Nebraska Sand Hills.

We mounted chironomid larvae and pupae collected from Sinking Creek on glass-slides and examined the specimens with a compound light microscope. Taxonomic keys and descriptive information provided in Wiederholm (1983, 1986), Coffman and Ferrington (1996), and Epler (2001) were used to identify the specimens. Larvae of *Parachaetocladius* are distinguished by shape and structure of the antenna, mandible, mentum, maxilla, parapods, and procercus (for full description see Cranston et al. 1983). One seta on the procercus that is at least ¼ the length of the body, 4 pairs of lateral teeth on the mentum, and the one or two inner mandibular teeth of larval *Parachaetocladius* distinguish larvae of this genus from larvae of morphologically similar chironomids (Cranston et al. 1983, Epler 2001). Although the *Parachaetocladius* specimens we collected were not identified beyond genus, the specimens are probably *P. abnobaeus* (Wülker) because this species has been reported to occur in both Kansas (Ferrington et al. 1995) and Tennessee (Sæther and Sublette 1983, Hudson et al. 1990, Caldwell et al. 1997). The specimens we collected are retained in a reference collection at the Missouri Department of Conservation, Resource Science Center, Columbia, Missouri.

This report presents the first record on occurrence of *Parachaetocladius* in Missouri and adds to knowledge of the diversity of midge fauna inhabiting wadeable streams in the state. This report also contributes to knowledge of the distribution and habitat of *Parachaetocladius* in North America. Additional macroinvertebrate sampling in spring-influenced streams will likely increase knowledge about the distribution and habitat of *Parachaetocladius*.

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