

Stilocladius (Diptera: Chironomidae): A New Midge Record for Wadeable Streams in Missouri

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Abstract: We report first record on occurrence of the midge genus *Stilocladius* in Missouri based on aquatic macroinvertebrate community samples collected during December 2005 and January and February, 2007 from reaches of three wadeable streams in Reynolds County in the Ozark Highlands. Select water quality characteristics from the reaches are also provided.

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

There are two recognized species in the chironomid genus *Stilocladius* worldwide – *S. montanus* Rossaro in the Palearctic Region and *S. clinopecten* Sæther in the Nearctic Region (Sæther 1982, Rossaro 1984). A third, undescribed species morphologically similar to *S. montanus* is reported to occur in streams in Maryland and Pennsylvania (Epler 2001). *Stilocladius* is most often found in small streams (Epler 2001) and has been associated with springs and spring-influenced streams in Europe (Lindegaard 1995) and North America (Mattson et al. 1995, Ferrington 1998). We identified five larval specimens of *Stilocladius* from macroinvertebrate community samples collected 23 December 2005 and 5 January and 22 February, 2007 from wadeable reaches of three streams in Reynolds County in the Ozark Highlands Ecological Section of Missouri (Cleland et al. 1997, Nigh and Schroeder 2002) (Fig. 1). The streams ranged from 3rd to 4th order with watershed areas ranging from 57.1 to 226.9 km², and discharge ranging from 0.1003 to 2.899 m³/s. Mean wetted-width of the streams ranged from 10.7 to 37.15 m, and mean depth ranged from 42 to 117 cm. Dominant substrates ranged from cobble (64–250 mm) to fines (< 0.06 mm).

We collected macroinvertebrate community samples from reaches of Shut-In Creek, Taum Sauk Creek, and East Fork of the Black River in Reynolds County, Missouri with 500 µm mesh aquatic kick nets in riffles, pools, and submerged rootmat habitats according methods outlined by Sarver et al. (2002).

The five larval specimens of *Stilocladius* we collected were found in every habitat we sampled. However, the majority of the larvae (n = 3) were found in samples from submerged rootmat habitat.

Because little information is available on water quality characteristics associated with *Stilocladius*, means and ranges of select water quality characteristics from the streams where we collected larval *Stilocladius* are presented in Table 1. The

Figure 1. Locations of the reaches of streams where larvae of *Stilocladius* were collected in Missouri 23 December 2005 and 5 January and 22 February, 2007.

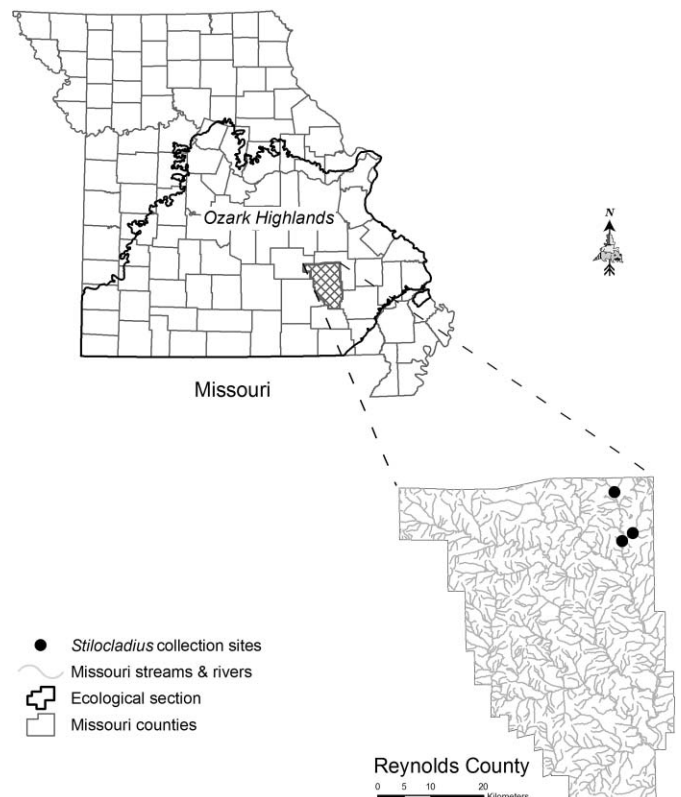


Table 1. Means and ranges of select water quality characteristics from reaches of streams where larvae of *Stilocladius* were collected 23 December 2005 and 5 January and 22 February, 2007. Temp = water temperature (°C), DO = dissolved oxygen (ppm), Cond = conductivity (uS/cm), pH = standard units (pH), Turb = turbidity (NTU), TP = total phosphorus (µg/L), TN = total nitrogen (mg/L), NVSS = nonvolatile suspended solids (mg/L), VSS = volatile suspended solids (mg/L), Chlor = total chlorophyll (µg/L).

Temp	DO	Cond	pH	Turb	TP	TN	NVSS	VSS	Chlor
7.1 (6.4–8.3)	12.4 (12.4–12.5)	91 (66–106)	7.4 (7.2–7.6)	20.3 (9.1–41.2)	7 (2–15)	0.11 (0.06–0.20)	0.32 (0.15–7.40)	0.48 (0.30–0.73)	0.4 (0.2–0.9)

range of water temperature recorded from the streams where we collected *Stilocladius* is well within the range of water temperature associated with larvae of *S. montanus* by Rossaro (1984). According to Rossaro (1984) larvae of *S. montanus* are not found in abundance and are cold-stenothermal, occurring in cold springs during the summer and extending into rhithral areas of streams during the winter in a water temperature range of 4 to 10 °C.

We mounted chironomid larvae and pupae collected from the streams 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 specimens. Larvae of *Stilocladius* are distinguished from those of other chironomids primarily by shape and structure of the mentum, ventromental plates, and characteristics of the SI (for full description see Cranston et al. 1983). Although the larval specimens of *Stilocladius* we found were not identified beyond genus, the specimens are probably *S. clinopecten* Sæther because Missouri is more proximate to where this species has been found in North Carolina (Sæther 1982, Hudson et al. 1990, Caldwell et al. 1997) than to Maryland and Pennsylvania where an undescribed species of *Stilocladius* has been found to occur (Epler 2001). The specimens we collected are retained in a reference collection at the Missouri Department of Conservation, Resource Science Center, Columbia, Missouri.

Although the genus *Stilocladius* is considered to have a widespread distribution in North America (Coffman and Ferrington 1996), this report presents the first record on occurrence of *Stilocladius* 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 habitat of *Stilocladius* in North America. Additional macroinvertebrate sampling in streams particularly during winter will likely increase knowledge about the distribution and habitat of *Stilocladius*.

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