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First Record on Occurrence of *Homoeoneuria* (Ephemeroptera: Oligoneuriidae) in a Wadeable Stream in Missouri

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Abstract: *We report the first record on occurrence of the mayfly genus* Homoeoneuria *(Eaton) in a wadeable stream in Missouri based on aquatic macroinvertebrate samples collected during September 2007 from a reach of North Cut Ditch in Scott County in the Mississippi River Alluvial Basin. Select physical and water-quality characteristics from the reach are also provided.*

Key Words: *Missouri, wadeable streams, Ephemeroptera,* Homoeoneuria

The mayfly family Oligoneuriidae is represented in North America by the genera *Lachlania* and *Homoeoneuria* (Waltz and Burian 2008). Nymphs of both genera occur in lotic habitats where *Lachlania* exhibits clinger and *Homoeoneuria* exhibits burrower nymphal habits (Edmunds et al. 1976). The genus *Lachlania* is represented in North America by three recognized species found in the west (Waltz and Burian 2008), whereas the genus *Homoeoneuria* is represented by five species found in the southwest north to Utah, southern Midwest north to Nebraska and Indiana, and in southeastern areas of the continent (Waltz and Burian 2008). We identified an early-instar nymph of *Homoeoneuria* from a macroinvertebrate community sample collected on 17 September 2007 from a reach of North Cut Ditch, a 4th order, wadeable stream in Scott County in the Mississippi River Alluvial Basin Ecological Section of Missouri (Cleland et al. 1997, Nigh and Schroeder 2002) (Fig. 1). Although specimens of *Homoeoneuria* have previously been collected in Missouri from the Missouri River and near confluence of some tributaries to the Missouri River (Dr. Barry Poulton, pers. comm. 2007), this report provides the first published record on occurrence of *Homoeoneuria* in a wadeable stream in the state. This report also adds to knowledge of the diversity of Ephemeroptera inhabiting wadeable streams in Missouri and to knowledge of the habitat of *Homoeoneuria* in North America.

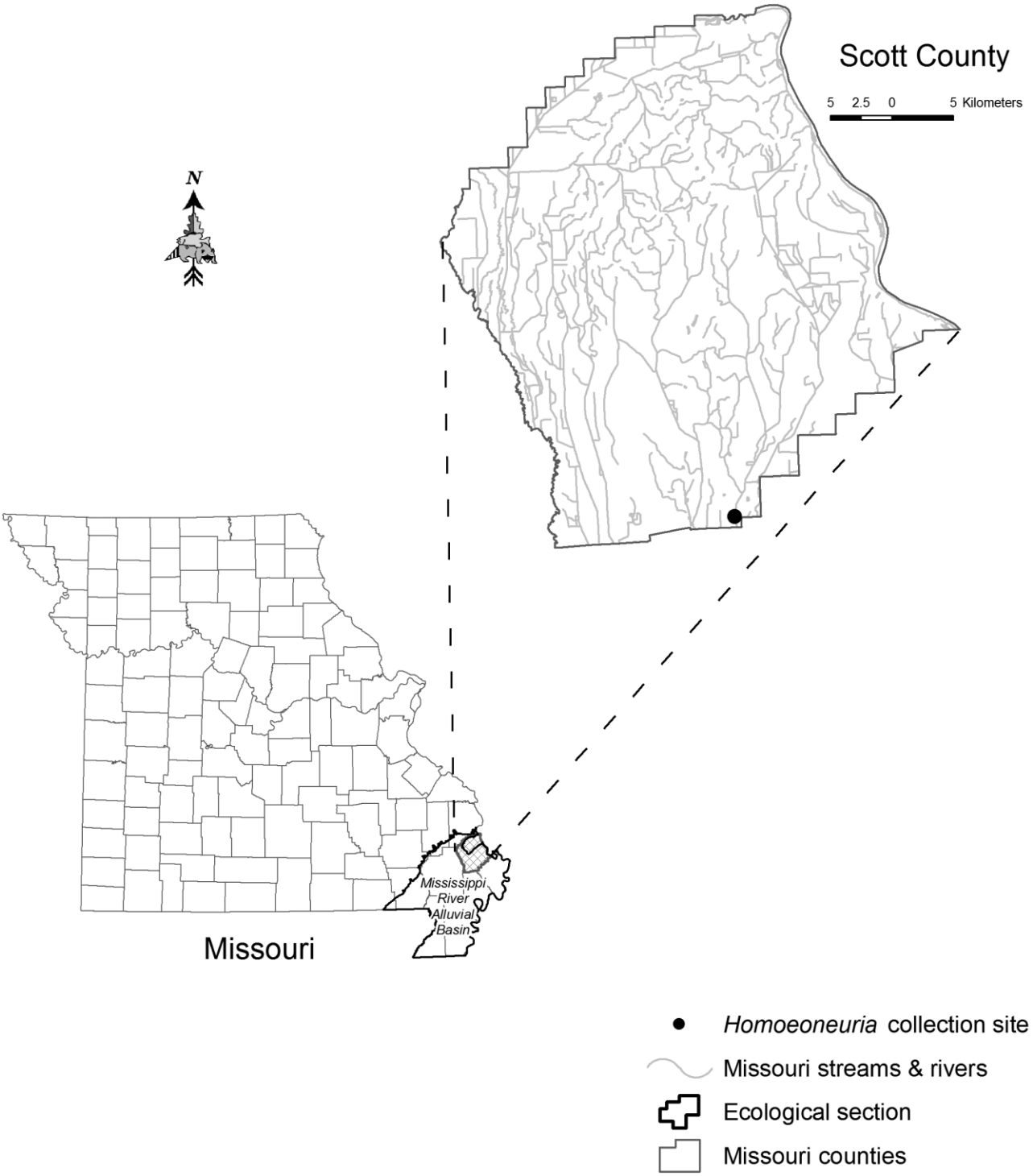
Watershed area of the reach we sampled at North Cut Ditch is 242.09 km² and discharge was 16.5 m³/s. Mean wetted-width of the reach was 22.5 m and mean depth was 58.1 cm. The dominant substrate was sand with 64.8 % of the particles being 0.06–2.0 mm. Because little information is available on water-quality characteristics associated with *Homoeoneuria*, water-quality characteristics from the reach where the specimen was collected were: water temperature 22 °C, conductivity 230 µS/cm, pH 7.7, turbidity 36 NTU, dissolved oxygen 6.6 ppm, total phosphorus 326 µg/L, total nitrogen 0.58 mg/L, nitrate-nitrite 0.18 mg/L, ammonia 0.04 mg/L, non-volatile suspended solids 28.4 mg/L, volatile suspended solids 4.6 mg/L, and total chlorophyll 3.8 µg/L.

Macroinvertebrate community samples were collected from North Cut Ditch using long-handle, rectangular frame, 500 µm mesh, aquatic dip nets in pools and submerged rootmat habitats and by brushing submerged woody debris into 500 µm mesh bags according to methods outlined by Sarver et al. (2002). The *Homoeoneuria* specimen we found was in a pool habitat sample.

We examined mayfly nymphs collected from North Cut Ditch using a dissection microscope. Low magnification of a compound light microscope was also used to view fine details of some specimens. Taxonomic keys and descriptive information provided in Burks (1953), McCafferty (1975), Edmunds et al. (1976), Provonsha (1990), and Waltz and Burian (2008) were used to identify mayfly specimens. Nymphs of *Homoeoneuria* can be distinguished by the slender and elongate shape of gill plates on segments 2–7, absence of claws on the forelegs, and the number of caudal filaments (Edmunds et al. 1976, Waltz and Burian 2008).

The single, early-instar specimen we found was not identified beyond genus and additional sampling efforts with collection of late-instar specimens are needed for a species level identification. However, we speculate the specimen we

Figure 1. Location of the reach of North Cut Ditch where *Homoeoneuria* was collected in Missouri on 17 September 2007.



collected is *Homoeoneuria ammophila* based upon the distribution outlined for *H. ammophila* by Pescador and Peters (1980). The specimen we collected is retained in a reference collection at the Missouri Department of Conservation, Resource Science Center, Columbia, Missouri.

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