

Some Notable Records of Mayflies (Insecta: Ephemeroptera) from Big Rivers in Indiana

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Data note

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Abstract

Objectives:

Mayflies (Insecta: Ephemeroptera) were collected from the Ohio River, White River and Wabash River in Indiana during July and August 2019, with the goals of confirming the continued existence of historic populations of species and discovering previously undocumented populations.

Data description:

Notable new data for *Ephoron album* (Say) (Polymitarcyidae), *Heptagenia elegantula* (Eaton) (Heptageniidae), *Pentagenia vittigera* (Walsh) (Palingeniidae), and *Tortopsis primus* (McDunnough) (Polymitarcyidae) are reported.

Objective

I conducted the first field phase of a multi-year project that will evaluate the diversity and distribution of mayfly species (Insecta: Ephemeroptera) requiring large riverine habitats in southern Indiana during July and August 2019, with the goals of confirming the continued existence of historic populations of species and discovering previously undocumented populations. Previous records of mayfly species from these habitats have been reviewed thoroughly [1,2]. The broader study's scheduled completion is in question due to travel restrictions imposed as part of the response to the global Covid-19 pandemic. The most notable records of species from my 2019 fieldwork, in terms of informing conservation and environmental review efforts in the state of Indiana, are detailed below.

Data Description

This section is organized alphabetically by genus name. All data are associated with specimens stored in 70% ethanol in glass vials, deposited in the Purdue University Entomological Research Collection, West Lafayette, Indiana, USA (PERC). PERC catalog numbers are given in the text and in the associated data files listed in table 1.

Ephoron album (Say) (Polymitarcyidae)

A long series of alate individuals (PERC 0120503) was collected from a white sheet, over which an ultraviolet (UV) light had been suspended, at a site on the bank of the Ohio River near Hanover, Jefferson County (38.70977°N, 85.45239°W; 9 August 2019). The light was on from dusk until about 11pm Eastern Daylight Time. This species is known from elsewhere in Indiana [1], but these new records from the Ohio

River are the first from the Ohio River in Indiana. The species is mainly a western North American species that probably reaches its eastern limits in this area [1,3].

Heptagenia elegantula (Eaton) (Heptageniidae)

One larva (PERC 0120499) was collected from the East Fork of White River at Hindostan Falls, Martin County, near the east boat launch (38.62254°N, 86.84736°W; 1 August 2019), using a D-frame dipnet. The specimen was collected together with a series of *H. flavescens* (Walsh). *Heptagenia elegantula* has been reported previously from a few Indiana locations, but only one other place in the White River system (Pike County: Rogers). The previous White River record was from 1936 [1]. These new data represent the first report of the species from White River in 86 years.

Pentagenia vittigera (Walsh) (Palingeniidae)

A single larva (PERC 0120500) was collected from the Wabash River at the Old Dam, Posey County, just south of New Harmony (38.10510°N, 87.95394°W; 31 July 2019) by heavy disturbance of substrate into a D-frame dipnet. A short series of larvae [PERC 0120501] were collected from a steep clay bank of White River, near the cut to Long Pond in Gibson County (38.44115°N, 87.63387°W; 31 July 2019), using a shovel to dislodge bank material into a sieved bucket; clay soil was carefully washed away to reveal the larvae that had been burrowing inside. This species probably is more common than indicated by historical records, due to the usual difficulty of obtaining larval specimens [1]. Other populations have been discovered recently in White River in Knox and Martin Counties [2].

Tortopsis primus (McDunnough) (Polymitarcyidae)

A long series of alate individuals [PERC 0120502] was collected from a white sheet, over which a UV light had been suspended, at a site on the bank of the Wabash River at the Old Dam, Posey County, just south of New Harmony (38.10510°N, 87.95394°W; 31 July 2019). The light was on from dusk until about 11pm Eastern Daylight Time. These new data represent the first time the species has been collected in Indiana since 1974 and confirm the continued existence of the only known Indiana population [4].

Table 1: Overview of data files/data sets.

Label	Name of data file/data set	File types (file extension)	Data repository and identifier (DOI or accession number)
<i>Data file 1</i>	<i>Indiana_Big_Rivers_Note_2019</i>	<i>comma-separated values file (.csv)</i>	<i>https://zenodo.org/record/3885369</i>
<i>Data file 2</i>	<i>Indiana_Big_Rivers_Note_2019_methodology</i>	<i>comma-separated values file (.csv)</i>	<i>https://zenodo.org/record/3885416</i>

Limitations

- All sampling was conducted by just one person.
- Aquatic sampling was restricted to habitat depths of 2 meters or less, with a bias towards edge habitat.
- In some instances, field work was done after heavy rainfall, which may have led to greater dispersion of individuals in lotic habitats.
- Identifications were based on the experience of the author, using the morphological species concept.

Abbreviations

PERC

Purdue University Entomological Research Collection, West Lafayette, Indiana, USA

UV

ultraviolet

Declarations

Ethics approval and consent to participate

Not applicable.

Consent to publish

Not applicable.

Availability of data and materials

The data described in this Data note can be freely and openly accessed on Zenodo [5,6]. Please see table 1 for details and links to the data. All materials will be deposited in the Purdue University Entomological

Competing interests

None declared.

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Authors' contributions

LMJ was the sole contributor to this work.

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Norm Brameier (Hanover, Indiana) provided access to the Ohio River at Hanover; Brian Gall (Hanover College, Hanover, Indiana) facilitated fieldwork at this location. Byron Bingham & son and William "Chic" Bugher & son (Patoka, Indiana) provided access to White River near Long Pond; Duane Englert (Law Enforcement Division, Indiana Department of Natural Resources) facilitated fieldwork at this location. The Old Dam campground (New Harmony, Indiana) provided free access to a campsite along the Wabash River, south of New Harmony. Teresa Clark and Ron Hellmich (Indiana Natural Heritage Data Center, Indiana Department of Natural Resources) encouraged and facilitated this project.

References

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