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**A REVIEW OF THE STONEFLIES OF THE ROCK RIVER, ILLINOIS**

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**TECHNICAL REPORT 2002 (11)  
ILLINOIS NATURAL HISTORY SURVEY  
CENTER FOR BIODIVERSITY**

**PREPARED FOR  
Division of Natural Heritage  
Office of Resource Conservation  
Illinois Department of Natural Resources  
One Natural Resources Way  
Springfield, IL 62702**

## Abstract

During the 1990's, collecting was done along the Rock River in an effort to collect winter stoneflies (those species emerging from December through March). In 1997, collecting was done in and around Rock Island in an effort to collect *Alloperla roberti*. During April, May, and June of 2002, collecting for spring emerging stoneflies was conducted at nine sites along the Rock River from Rock Island to Rockton.

Historically, 25 species of stoneflies (Insecta: Plecoptera) have been reported from the Rock River. Based on collecting from 1990-2002 eleven species (*Acroneuria abnormis*, *Allocapnia granulata*, *Allocapnia vivipara*, *Isoperla bilineata*, *Isoperla richardsoni*, *Perlesta golconda*, *Perlesta decipiens*, *Perlinella ephyre*, *Pteronarcys pictetii*, *Taeniopteryx burksi*, *Taeniopteryx nivalis*) remain established within the Rock River. *Acroneuria abnormis* was previously very abundant along the length of the Rock River, but now is considered very rare. *Allocapnia vivipara*, the most common species of stonefly in Illinois and primarily a small stream species, appears to have been replaced by *Allocapnia granulata* in the Rock River. Ten species (*Agnentina capitata*, *Agnentina flavescens*, *Allocapnia mystica*, *Attenuria ruralis*, *Hydroperla fugitans*, *Isogenoides varians*, *Neoperla clymene*, *Perlinella drymo*, *Shipsa rotunda*, *Strophopteryx fasciata*) still occur within Illinois but are no longer found within the Rock River. *Agnentina capitata* and *Attenuria ruralis* were historically very abundant along the entire length of the Rock River, but for unknown reasons are now not found within this river. Four species (*Alloperla roberti*, *Isoperla conspicua*, *Isoperla marlynia*, *Taeniopteryx parvula*) previously reported from the Rock River are now considered extirpated from Illinois.

## A REVIEW OF THE STONEFLIES OF THE ROCK RIVER, ILLINOIS

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The Rock River (Page *et al.* 1992) drains an area of 13,838 sq. km and runs from the Wisconsin border north of Rockford to the Mississippi River at Rock Islands. The river is predominately a gravel bottomed stream interspersed with sand, rubble, and silt. The creation of channel dams has significantly altered the current and depth of this river. The principal land use is row crops and pasture leading to extensive siltation. This river has also had a history of domestic and industrial pollution, especially below Rockford and Sterling. Phosphorus, siltation and channel modifications have adversely affected this river and its tributaries (IEPA 1996).

Over the past century (1900-2000), 25 species, *Acroneuria abnormis*, *Agnatina capitata*, *Agnatina flavescens*, *Allocapnia granulata*, *Allocapnia mystica*, *Allocapnia vivipara*, *Alloperla roberti*, *Attenuria ruralis*, *Hydroperla fugitans*, *Isogenoides varians*, *Isoperla bilineata*, *Isoperla conspicua*, *Isoperla marlynia*, *Isoperla richardsoni*, *Neoperla clymene*, *Perlesta decipiens*, *Perlesta golconda*, *Perlinella drymo*, *Perlinella ephyre*, *Pteronarcys pictetii*, *Shipsa rotunda*, *Strophopteryx fasciata*, *Taeniopteryx burksi*, *Taeniopteryx nivalis*, and *Taeniopteryx parvula*, have been collected along the Rock River proper.

During the 1990's, collecting was done along the Rock River for winter stoneflies (Webb 2002) (those species which emerge from December through March). In 1997, Webb and DeWalt (1997) collected in and around Rock Island. During this study, collections were made during April, May, and June, 2002 to evaluate the current status of the spring emerging species of stoneflies. Nine collecting sites were established along the length of the river. Specimens were collected utilizing kick-nets, sweep nets, blacklighting, and hand picking of exuvia from trees and cement abutments.

### Collecting Sites

Rock Island County, Vandruff Island, Rock Island. *Isoperla bilineata* has been collected abundantly at this site by sweeping herbaceous vegetation and by blacklighting.

Whiteside County, 1 mile north of Prophetstown. Adults of *Isoperla bilineata* were swept from herbaceous alongside the Rock River.

Whiteside County, Caloma. Larvae of *Isoperla bilineata* were collected abundantly from a shallow riffle in the Rock River and nymphal exuvia were collected from trees along the stream edge. In 2002, a male of *Acroneuria abnormis* was collected on the Sterling shoreline of the river.

Ogle County, Grand Detour. Adults of *Isoperla bilineata* were swept from herbaceous alongside the Rock River. Nymphal exuvia of *Pteronarcys pictetii* were collected from trees along the stream edge.

Ogle County, Castle Rock State Park. Adults of *Isoperla bilineata* and *I. richarsoni* were swept from herbaceous alongside the Rock River along with *Perlestes decipiens* and *P. golconda*.

Ogle County, Oregon. Adults of *Isoperla bilineata* and *I. richarsoni* were swept from herbaceous alongside the Rock River. Nymphal exuvia of *Pteronarcys pictetii* were collected from trees along the stream edge.

Ogle County, Lowden State Park. Adults of *Isoperla bilineata* were swept from herbaceous alongside the Rock River.

Rockford County, along Rock River south of Blackhawk Island. Adults of *Isoperla bilineata* and *I. richarsoni* were swept from herbaceous alongside the Rock River. Nymphal exuvia of *Pteronarcys pictetii* were collected from trees along the stream edge.

Rockford County, Hononegah Forest Preserve. Adults of *Isoperla bilineata* and *I. richarsoni* were swept from herbaceous alongside the Rock River along with *Perlestes decipiens* and *P. golconda*. Nymphal exuvia of *Pteronarcys pictetii* were collected from trees along the stream edge.

The following list up-dates the current status of each species of stonefly historically reported from the Rock River.

## Capniidae

### *Allocapnia granulata* (Claassen)

*Allocapnia granulata* is considered an environmentally tolerant species and for many years in Illinois it ranged from Hardin County in southern Illinois to the Wisconsin border in five of the Natural Division of Illinois and 11 of the drainage systems. Over the past 25 years, its distribution pattern has been reduced to three Natural Divisions and the Rock River Hill Country

drainage system, with a single disjunct collection found at Morris, on the Illinois River (Webb 2002). Although broadly distributed within the Rock River Hill Country drainage, *A. granulata* appears to be disappearing from the remainder of the state.

#### ***Allocapnia mystica* Frison**

Prior to 1946, *Allocapnia mystica* had been collected across the Shawnee Hills Natural Division of southern Illinois, the Wabash Border Division and the Rock River Hill Country Division (Grand Detour, Ogle County). Current records indicate that this species is still well established across the Shawnee Hills Natural Division, but has disappeared from the northern three-fourths of the state (Webb 2002).

#### ***Allocapnia vivipara* (Claassen)**

*Allocapnia vivipara* is the most widespread and commonest species of winter stonefly in Illinois. It also is the most environmentally tolerant species; being collected from pristine streams to those heavily impacted with livestock waste. During the resurvey of Illinois, it was collected in all natural divisions, except the Illinois/Mississippi River Sand Areas. Historically (1900-2000), it has been collected from all drainage basins within the state. Prior to 1945, *A. vivipara* was reported from the Rock River at Rock Island. Since that time, it has not been collected from the Rock River proper (Webb 2002) but this species is primarily as small stream species. Currently along the Rock River, it appears to have been replaced by *Allocapnia granulata*.

### **Chloroperlidae**

#### ***Alloperla roberti* Surdick**

In 1860, B. D. Walsh collected two adult male stoneflies which Frison (1942) included as paratypes of *Alloperla banksi*. During revisionary work on the family Chloroperlidae, Surdick (1981) removed these specimens from *A. banksi* and described them as a distinct species, *A. roberti*. The original description by Walsh did not indicate whether these specimens were collected along the Mississippi River at west side of Rock Island or along the Rock River along the south side of Rock Island. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study. *Alloperla roberti* has not been collected in Illinois since 1860 and is currently considered extirpated from the state.

#### ***Hydroperla fugitans* (Needham and Claassen)**

In 1931 and 1932, *Hydroperla fugitans* was collected along the Rock River at Vandruff Island, Rock Island. Webb and DeWalt collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

## Nemouridae

### *Shipsa rotunda* (Claassen)

This is a rare species in Illinois with a single female collected on the Rock River at Rockford in 1926 and since that time, only a single male has been collected in the state on the Apple River, Jo Daviess County in 1992. No specimens of the species were collected during this study.

## Perlidae

### *Acroneuria abnormis* (Newman)

This species was collected abundantly as adults along the Rock River from Winnebago County to Rock Island County from 1928 to 1940. Only a single male specimen collected along the Rock River at Sterling has been collected since that time. Webb and DeWalt collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study. It is now considered a rare species within the Rock River.

### *Agnentina capitata* (Pictet)

This species was collected abundantly throughout the length of the Rock River in Illinois from 1917 to 1934, and collected from the upper reaches of the Rock River (Rockton and Roscoe) in 1948. Since that time, no specimens of *Agnentina capitata* have been collected along the Rock River. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

### *Agnentina flavescens* (Walsh)

Stark (1986) placed *Perla flavescens* Walsh in the genus *Agnentina*. The only specimen reported for Illinois is the lectotype female (Museum of Comparative Zoology #10127) from Rock Island, Illinois. The original description by Walsh did not indicate whether this specimen was collected along the Mississippi River at west side of Rock Island or along the Rock River along the south side of Rock Island. Webb and DeWalt collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study. *Agnentina flavescens* has not been collected in Illinois since 1862 and is currently considered extirpated from the state.

### *Attenuria ruralis* (Hagen)

This species was collected throughout the length of the Rock River in Illinois from 1928 to 1944. Since that time, no specimens of *Attenuria ruralis* have been collected along the Rock River. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

### ***Perlesta decipiens* (Walsh)**

Prior to a revision of *Perlesta* by Stark (1989), this genus was considered to have only one species *P. placida* (Hagen). Since Stark's revision, all records of *P. placida* in Illinois were re-identified as *P. decipiens*. In the 1920's and 1930's, *P. decipiens* was collected along the Rock River at Rock Island, Oregon, Rockford and Rockton (DeWalt *et al.* 2001). In 1992, specimens were collected at Rockford and Hononegah Forest Preserve, Winnebago County. During this study, specimens were collected along the Rock River at Grand Detour (Ogle County), Castle Rock State Park (Ogle County), and Hononegah Forest Preserve (Winnebago County). Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected.

### ***Perlesta golconda* DeWalt and Stark**

This species was described from southern Illinois in 1998 and its distribution in Illinois updated in DeWalt *et al.* (2001). Two adults were collected at Prophetstown in 1927. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. During this studies, specimens were collected along the Rock River at Castle Rock State Park (Ogle County) and Hononegah Forest Preserve (Winnebago County).

### ***Perlinella drymo* (Newman)**

This species is not uncommon in Illinois, but has not been collected abundantly. In 1928 and 1940, specimens were collected at Rock Island and along the Rock River in Ogle County. Since that time, no specimens of *Perlinella drymo* have been collected along the Rock River. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

### ***Perlinella ephyre* (Newman)**

This species was collected occasionally along the Rock River at Rock Island, Grand Detour, Byron, and Rockford from 1927 to 1931. Since that time, few specimens of *Perlinella ephyre* have been collected along the Rock River. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. A single specimen was collected at Rockford in 1994. No specimens were collected during this study.

### ***Neoperla clymene* (Newman)**

This species was collected in 1931 from the Rock River at Rock Island. Since that time, no specimens have been collected from the Rock River proper. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

## Perlodidae

### *Hydroperla fugitans* (Needham and Claassen)

This species was collected at Rock Island in 1931 and 1932 but has not been collected in the Rock River since that time. No specimens of *Hydroperla fugitans* were collected during this study.

### *Isogenoides varians* (Walsh)

This species was collected at Rock Island in 1863. Since that time, no specimens of *Isogenoides varians* have been collected along the Rock River. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

### *Isoperla bilineata* (Say)

This species was collected throughout the Rock River in the 1920's and 1930's. It continues to be the most common stonefly in the Rock River and during this study was collected abundantly from Rock Island to Rockton. Webb and DeWalt (1997) collected in and around Rock Island in 1997 and this species was abundantly collected at Rock Island.

### *Isoperla conspicua* Frison

A single female of this species was collected along the Rock River at Rock Island in 1931. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

### *Isoperla marlynia* (Needham and Claassen)

This species is rare in Illinois and was collected along the Rock River at Rock Island from 1938 to 1932. Webb and DeWalt (1997) collected in and around Rock Island in 1997 but no specimens of this species were collected. No specimens were collected during this study.

### *Isoperla richardsoni* Frison

This species was collected in the upper reaches of the Rock River from 1925 to 1932. This species occurs abundantly in the upper reaches of the Rock River from Oregon to Rockton.

## Pteronarcyidae

### *Pteronarcys pictetii* Hagen

This species is moderately common in Illinois and was collected along the length of the Rock River in Illinois from 1926 to 1940. This species is still present in the Rock River at Dixon,

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Rockford, and Rockton, although not in great abundance. Currently, this species appears to be restricted to the upper reaches of the Rock River.

### **Taeniopterygidae**

#### ***Strophopteryx fasciata* (Burmeister)**

Prior to 1945, this species was collected along the length of the Rock River. Since that time, no specimens have been collected along the Rock River, although collecting of winter stoneflies was done during the 1990's (Webb 2002).

#### ***Taeniopteryx burksi* Ricker & Ross**

Prior to 1945, this species was collected at several localities along the length of the Rock River. Again in the 1990's, this species of winter stoneflies was found to be abundant and common along the length of the Rock River (Webb 2002).

#### ***Taeniopteryx nivalis* (Fitch)**

Ricker and Ross (1969) reported that none of the specimens of *Taeniopteryx nivalis* listed in Frison (1929, 1935) were this species, but rather are specimens of *T. burksi*. They cited only three localities for *T. nivalis* from the Fox River drainage. *Taeniopteryx nivalis* is a northern species, and during the 1990's was collected at 32 localities in northern Illinois (Webb 2002). This species has become common and well establish in northern Illinois and appears to be broadening its distribution in Illinois. It is now found in the upper reaches of the Rock River in Ogle and Winnebago counties.

#### ***Taeniopteryx parvula* Banks**

Frison (1929, 1935) reported this species from the Rock River drainage. Since 1928, it has not been collected in Illinois and is now considered extirpated from the state.

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