

Occurrence of the Little Spectaclecase *Villosa lienosa* (Conrad, 1834) (Mollusca: Unionidae) Downstream of the Wabash and Ohio River Confluence in Illinois

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ABSTRACT

Live and fresh-dead specimens of little spectaclecase, *Villosa lienosa* (Conrad, 1834), were discovered in the upper Cache River system near Mt. Pleasant, in Union County, Illinois, during the summers of 2009 and 2013 and deposited in the Illinois Natural History Survey Mollusk Collection, Champaign. Although reported from elsewhere in Illinois, these specimens represent a documented range connection for the little spectaclecase between the eastern third of Illinois and the little spectaclecase populations in the bootheel of southeastern Missouri. A reevaluation of the species' status in Illinois is applicable due to the documented range connection and additional records of the little spectaclecase.

The little spectaclecase, *Villosa lienosa* (Conrad, 1834), is a freshwater mussel (Mollusca: Unionidae) with a thin to moderately thick sub-elliptical to elongate oval shaped shell. The species attains lengths up to 75 mm and is moderately (male) to greatly (female) inflated (Parmalee and Bogan, 1998; Williams et al., 2008). The periostracum is green to dark brown and darkens to black with age. Sub-adults often have green rays and the nacre is usually white, tinged with salmon and purple, iridescent posteriorly (Cummings and Mayer, 1992; Parmalee and Bogan, 1998; Williams et al., 2008; Watters et al., 2009). *Villosa lienosa* inhabits small creeks to medium-sized rivers and is found in stable sand, sandy mud or gravel substrates in slow to moderate current but may also inhabit rocky substrates in moderate to swift current (Cicerello and Schuster, 2003; Williams et al., 2008). The species is often reported as the only mussel found in small coolwater and headwater streams (Williams et al., 2008; Watters et al., 2009).

Villosa lienosa is found in the Cumberland and Ohio River drainages and in the Mississippi River basin from central Illinois to the Gulf Coast, where it occurs from the Suwannee River drainage in Florida to the San Jacinto River drainage in Texas (Cicerello et al., 1991; Cummings and Mayer, 1992; Williams et al., 2008; Williams et al., 2014). In Illinois, the species was first reported in 1906 from the Saline River, a pond in Perry County and the Little Vermilion River (Baker, 1906). The first vouchered specimens in Illinois were provided by J. Zetek in 1908

from the Salt Fork Vermilion River near Urbana (FMNH 68045). Since that time, populations have been recorded in several other Wabash River tributaries (Ohio River drainage) including the Vermilion, Little Wabash, and Embarras Rivers along with many of their tributaries (Cummings and Mayer, 1997; Tiemann et al., 2007).

Baker (1906) made reference to *Villosa lienosa* in the Saline River and a pond in Perry County; however, there were no vouchered specimens from the Saline River, Perry County, Bay and Lusk Creeks (Ohio River tributaries) or the Cache River until 2000. Since 2000, the species has been recorded in three Ohio River tributaries in the southern portion of the state: Big Grand Pierre, Saline, and Cache Rivers. Fresh dead specimens were collected by John E. Schwegman in Big Grand Pierre near Heron, in Pope County, Illinois on eight sampling occasions since 2000. Relict shells were collected in 2005 in the North Fork Saline River near Norris City, in Hamilton County, Illinois by Jeremy S. Tiemann. Live specimens were recorded in 2009 and 2013 in the Upper Cache River near Buncombe and Anna, in Union County, Illinois by the authors (Figure 1).

The newly discovered specimens described in this paper represent the first vouchered *V. lienosa* records in direct Ohio River tributaries downstream of the confluence of the Ohio and Wabash Rivers in Illinois (Figure 2). The specimens from these locations were deposited in the Illinois Natural History Survey Mollusk Collection, Cham-



Figure 1. Little spectaclecase *Villosa lienosa* from the Cache River near Mt. Pleasant, Union County, Illinois. Female (left) and male (right).

paign, IL (INHS 25205, 27658, 27665, 28986, 31117, 31392, 32652, 40138 [Big Grand Pierre], INHS 31082 [North Fork Saline] and INHS 35063, 35070, and 45481 [Cache River]).

The reported host fishes for *V. lienosa* are centrarchids and include *Lepomis cyanelus* (Green Sunfish), *Lepomis humilis* (Orangespotted Sunfish), *Lepomis macrochirus* (Bluegill), *Lepomis megalotis* (Longear Sunfish), *Lepomis microlophus* (Redear Sunfish), and *Micropterus salmoides* (Largemouth Bass) (Keller and Ruessler, 1997; Daniel and Brown, 2012), which are common in Illinois. Although one ictalurid, *Ictalurus punctatus* (Channel Catfish), has been trialed with one transformation resulting in a single juvenile, ictalurids appear to be poor or unsuitable hosts for *V. lienosa* (Keller and Ruessler, 1997; Daniel and Brown, 2012).

In Illinois, *V. lienosa* is currently listed as

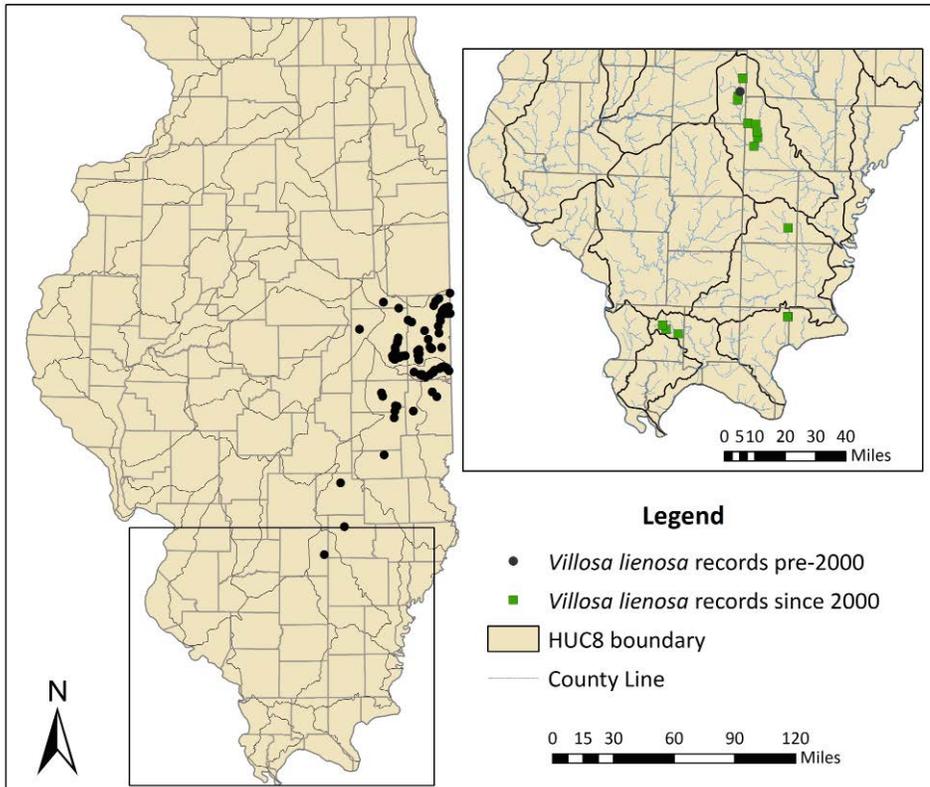


Figure 2. Previous records for Illinois and newly recorded records from survey conducted since 2000.

State Threatened due to limited range and small population size within the range. Prior to 1976, *V. lienos* had 33 known unique locations, primarily in Champaign and Vermilion counties. As mussel sampling efforts increased between 1977 and 1999, the number of unique locations increased to 99 (including the original 33), and the species was recorded alive in several other east central Illinois counties including Coles, Douglas, Edgar, and Iroquois. Since 2000, an additional 83 unique locations have been recorded increasing the total of unique locations to 182 across the state with new populations being located in the southern Illinois counties of Hamilton, Marion, Pope, Union, and Wayne. Thirty-two of these locations were recorded since 2009 due to an intensive mussel survey (1050 sampled sites) that was conducted across the state of Illinois from 2009 to 2013. The increased sampling effort has revealed more unique locations; therefore, it appears that *V. lienos* is more common than earlier assumed. Illinois is at the northern limit of the species' range and *V. lienos* is currently described as stable throughout its range

(Williams et al., 1993). Given the additional records, we recommend *Villosa lienos* be downgraded from State Threatened to Species in Greatest Need of Conservation in Illinois.

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