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Abstract

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Keywords

freshwater mussels, unionids, Texas, threatened, rare species

Disciplines

Agriculture | Natural Resources Management and Policy | Population Biology | Terrestrial and Aquatic Ecology

Comments

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RESEARCH NOTE

False spike, *Quadrula mitchelli* (Bivalvia: Unionidae), is not extinct: First account of a live population in over 30 years

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Abstract. During a recent survey a small population of *Quadrula mitchelli* (Simpson, 1895), a species thought to have been extinct, was discovered in Texas. In total, 7 live individuals were collected from the Guadalupe River near Gonzales, Gonzales County, Texas. Our finding represents the only known population for this species in Texas and the first record of live specimens in over 30 y, which is significant because this species is currently under review for protection under the Endangered Species Act.

Key words: freshwater mussels, unionids, Texas, threatened, rare species

Quadrula mitchelli (Simpson, 1895), false spike, is a rare central- and west- Texas endemic unionid mussel species that historically inhabited the Rio Grande, Guadalupe, San Antonio, Colorado and Brazos River basins. In central Texas, living specimens have not been observed since the late 1970s, and in the Rio Grande drainage recent accounts come from subfossil and fossil specimens (Howells 2003). Until recently, the only evidence that this species was not extinct came from a recent collection of a fresh-dead individual from the San Saba River, a major tributary of the Colorado River (Randklev *et al.* in press).

During a recent survey in October 2011, an apparently small population of *Quadrula mitchelli* represented by 7 live individuals (Fig. 1) was discovered in the Guadalupe River near Gonzales, Gonzales County, Texas. All of the individuals collected are consistent with taxonomic descriptions provided by Howells (2010). Juveniles were not observed at the site, but given that we used timed tactile and visual searches their presence cannot be ruled out. Shell length ranged from 47.0–54.6 mm, with a median length of 50.6 mm. Other species were collected at the same locality, including *Amblema plicata* (Say, 1817), threeridge; *Cyrtonaias tampicoensis* (I. Lea, 1838), Tampico pearlymussel; *Lampsilis teres* (Rafinesque, 1820), yellow sandshell; *Lampsilis hydiana* (I. Lea, 1838), Louisiana fatmucket; *Megaloniaias nervosa* (Rafinesque, 1820), washboard;

Pyganodon grandis (Say, 1829), giant floater; *Quadrula aurea* (I. Lea, 1859), golden orb; *Quadrula petrina* (Gould, 1855), Texas pimpleback; and *Toxolasma texasense* (I. Lea, 1857), Texas lilliput. Of these species, *Q. aurea* and *Q. petrina* are considered to be state threatened and candidates for protection under the Endangered Species Act (TPWD 2009, USFWS 2011).

The site where these individuals were collected is characterized by steep banks with a small riparian buffer. The adjacent land uses are a golf course and range land. Water velocity and depth were not measured, but appeared to be lower than normal because of the ongoing exceptional drought within the region. *Quadrula mitchelli* was collected primarily along the upstream edge of a point gravel bar in substrate consisting of gravel, coarse sand, and mud. Water current at this locality was slow to moderate and depth was less than 30 cm. A single individual was found at the head of a riffle, partially buried in gravel and sand substrate.

Our finding represents the only known population for this species in Texas and the first record of live specimens in over 30 y (Howells 2010). This find is significant because this species is currently under review for protection under the Endangered Species Act (USFWS 2009). Because of this, a more thorough study of this reach of the Guadalupe River



Figure 1. Live *Quadrula mitchelli* collected from the Guadalupe River, Gonzales County, Texas, in 2011.

and its tributaries, such as the San Marcos River is needed to determine the extent of its distribution within this drainage. Additionally, locating a surviving population of *Quadrula mitchelli* creates the potential to study the species' genetics, basic life history, reproductive biology, and habitat requirements, which are unknown or poorly understood.

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