

Researchers discover freshwater mussel species thought to be extinct

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This recently discovered fresh remains is of a false spike freshwater mussel, a species previously thought to be extinct. Credit: (Photo courtesy of Texas AgriLife Research)

Researchers from the Texas A&M Institute of Renewable Natural Resources have discovered fresh remains of a freshwater mussel species thought to be extinct in Texas, according to a research associate with the institute.

Dr. Charles Randklev said his research team found a single individual of false spike "*Quadrula mitchelli*" with tissue still in the shell — which indicates that the individual was recently alive — in the San Saba River in Central Texas. Mussel thought to be extinct found in Texas river.

"Based on this finding, it is likely that the false spike may not be extinct

and small populations may exist in the San Saba River," said Randklev, who holds a joint appointment with Texas AgriLife Research.

Randklev said this is the first hard evidence of the false spike found in the last 30 years. The only other recent evidence was in 2000 when two specimens without soft tissue were collected in the San Marcos River.

Historically, false spike inhabited the Rio Grande, Guadalupe, San Antonio, Colorado and Brazos river basins, according to Randklev.

The researchers also found significant populations of three threatened Texas freshwater mussel [species](#) — Texas pimpleback "Quadrula petrina," smooth pimpleback "Quadrula houstonensis" and Texas fawnsfoot "Truncilla macrodon" — in the San Saba River.

"We documented the largest known population for Texas pimpleback and the second largest population for Texas fawnsfoot in Texas," Randklev said. "We collected juveniles for all three species, indicating recent recruitment or reproduction."

All four species are on the Texas Parks and Wildlife Department's state-threatened list. Of the 15 on the state list, 11 are being considered for protection under the federal Endangered Species Act.

The researchers began surveying the San Saba after reports that populations of the Texas pimpleback, smooth pimpleback and Texas fawnsfoot had been seen in the river. Finding the remains of the false spike was an added surprise, Randklev said.

Identifying populations of rare mussel species is important for their long-term conservation, Randklev said.

"We have a good idea of where they occurred historically, but our

knowledge of their distribution within a given river drainage and, in some cases, the status of existing populations, is lacking," he said.

Randklev said that in general mussels are good indicators of water quality and stream health because they are sensitive to changes in the environment.

"In Texas, many streams and rivers are unable to support mussel populations at levels that existed in the past because of changes to their habitats and declining water quality," he said. false spike freshwater mussel, a species previously thought to be extinct.



Researchers with the Texas A&M Institute for Renewable Natural Resources recently found this false spike freshwater mussel in the San Saba River in Central Texas. The species was thought to be extinct, but the specimen had apparently only recently died and there was still tissue inside the shell. Credit: (Photo courtesy of Texas AgriLife Research)

Declining populations of mussels can have a huge impact on stream ecosystems, Randklev said.

"Freshwater mussels are a source of food for some fishes, birds and

small mammals," he said. "Their wastes are important for algal and macroinvertebrate production, and their shells can provide habitat for benthic (bottom dwelling) invertebrates. So when mussels start declining in a river or stream, it's going to impact other species that depend on them, whether it be for food or for habitat."

Julie Groce, Texas AgriLife Extension Service program specialist with the institute, said the surveys on the San Saba River are part of a larger project the institute is working on for the Texas Department of Transportation. The department wants to know more about the current distribution, basic biology and habitat requirements of the 15 state-listed species. The researchers have conducted previous surveys in the Brazos and Colorado rivers and their tributaries.

"Now that the species are state-listed, the Texas Department of Transportation needs to take these species into consideration when it does any construction or development that might affect these species and their habitats," said Groce, who manages the mussel project.

If any state-listed species live within planned construction or maintenance, the department must come up with a plan to avoid, minimize or compensate for any loss of the species or its habitat, she said.

Prior to the surveys, the institute created a database of all mussel specimens collected in museums in Texas and other parts of the country in the last 150 years. From the database, a digitized map of where the mussels occurred historically was produced.

The next step, Randklev and Groce said, is working with The University of Texas at Tyler to develop a model that will predict the probability of the 15 species occurring across the state.

Not only will that involve collecting mussel location information during the field surveys, but the researchers will gather information on mussel habitat use, water quality, land use, river morphology and discharge of the surveyed areas to input into the statewide model, Groce said.

"What the transportation department would like is a model that will allow it to focus its mussel survey efforts in areas where there is a high probability for these species to occur," Randklev said.

"Observations made in the field regarding mussel behavior and habitat preferences will provide a foundation for drafting recovery plans and help in the development of proper management strategies for populations of threatened mussel species," said Dr. Neal Wilkins, the institute's director.

Provided by Texas A&M AgriLife Communications

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