

Eastern Rainbow

Villosa modioliformis

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DESCRIPTION

Taxonomy and Basic Description

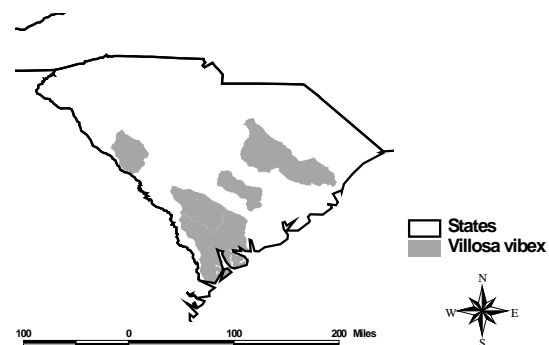
The shell of the Eastern Rainbow is elliptical to an elongate egg-shape with the anterior and posterior margins evenly rounded and the dorsal margin straight. The ventral margin is straight to slightly curved in males and often more strongly curved in females. The posterior ridge is broadly rounded. The outer surface of the Eastern Rainbow's shell is greenish-yellow to olive brown with broad unbroken to slightly wavy dark green rays. These rays are occasionally absent or restricted to the posterior portion of the shell. The inner surface of the shell is bluish-white and often iridescent posteriorly. The shell length averages 60 mm (2.4 in.) but may be up to 100 mm (4 in.). This species may actually be a species complex and is in need of further taxonomic work (NatureServe 2011).

Status

NatureServe (2011) currently identifies the Eastern Rainbow as having a global ranking of secure (G5Q) and a state ranking of imperiled (S2) in South Carolina.

POPULATION SIZE AND DISTRIBUTION

The Eastern Rainbow is found primarily in the Gulf Coast area and ranges from the Cape Fear Basin in North Carolina, south to peninsular Florida and west to the Pearl River in the Mississippi drainage. In South Carolina, this mussel is found in the Steven's Creek sub-basin of the Savannah River; the Salkahatchee, Coosawatchee, and Pocatigo Rivers; as well as Four-Hole Swamp. Even when found in South Carolina, the Eastern Rainbow is never very abundant. Although the Eastern Rainbow is more abundant in Georgia, the individuals collected have a different appearance, which, to some researchers, indicates that the South Carolina and Georgia populations are actually different species (Taxonomic Expertise Committee 2004).



HABITAT AND NATURAL COMMUNITY REQUIREMENTS

The Eastern Rainbow is found in sandy runs of small to medium-sized creeks and small rivers. This mussel is sometimes found in rocky portions of the same types of rivers (Taxonomic Expertise Committee 2004). In the Conasaugua River in Tennessee, the Eastern Rainbow has been reported to live in stretches with moderate current at depths of less than 0.9 m (3 ft.) (Bogan and Alderman 2004, 2008).

CHALLENGES

The same challenges that apply to most mussels are also likely to apply to the Eastern Rainbow, although its susceptibility to specific actions has not been thoroughly examined. Observations suggest that this species is also sensitive to channel modification, pollution, sedimentation, and low oxygen levels, but we do not know how the relative sensitivity of this species to these challenges compares to other species (Taxonomic Expertise Committee 2004).

CONSERVATION ACCOMPLISHMENTS

Preliminary genetic analyses have been conducted on some populations of the Eastern Rainbow. However, more genetic work is needed to determine if populations from different parts of its range represent distinct species.

CONSERVATION RECOMMENDATIONS

- Conduct additional genetic analyses across the range of the Eastern Rainbow.
- Conduct additional surveys for the Eastern Rainbow in the Lower Coastal Plain of South Carolina, particularly in the Edisto River Basin.
- Explore the need to list the Eastern Rainbow within South Carolina, based on survey results.
- Protect critical habitats for the Eastern Rainbow from future development and further habitat degradation by following Best Management Practices and protecting and purchasing riparian areas.
- Promote land stewardship practices through educational programs both within critical habitats with healthy populations and in other areas that contain available habitat for the Eastern Rainbow.
- Encourage responsible land use planning.
- Consider this species' needs when participating in the environmental permit review process.
- Educate off-road motor vehicle operators of the negative effects of crossing streams at multiple locations and using stream bottoms as trails.
- Conduct further research to determine the degree of sensitivity of the Eastern Rainbow to various point and non-point sources of pollution and land use impacts.

MEASURES OF SUCCESS

Resolving genetic issues across the range of the Eastern Rainbow will represent a measure of success. Persistence of known populations and an increase in numbers of rare species will indicate the success of management activities.

LITERATURE CITED

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>.

Bogan, A.E. and J.M. Alderman. 2004. Workbook and key to the freshwater bivalves of South Carolina. i-ii + 1-64 pp. + 5 pls.

Bogan, A.E. and J.M. Alderman. 2008. Workbook and key to the freshwater bivalves of South Carolina (Revised Second Edition). i-ii + 1-66 pp. + 5 pls.