

## Southern Rainbow

*Villosa vibex*

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### DESCRIPTION

#### Taxonomy and Basic Description

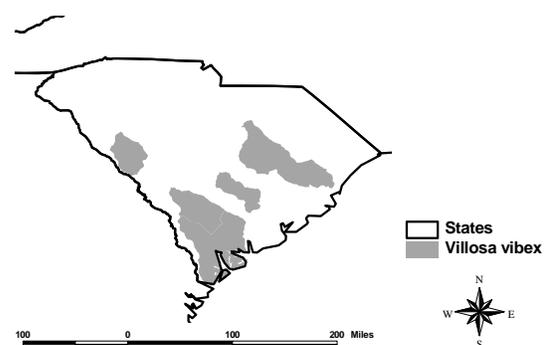
The shell of the southern rainbow is elliptical to elongate egg-shaped with the anterior and posterior margins evenly rounded and the dorsal margin straight. The ventral margin is straight to slightly curved in males and often more strongly curved in females. The posterior ridge is broadly rounded. The outer surface of the southern 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 inches) but may be up to 100 mm (4 inches). This species may actually be a species complex and is in need of further taxonomic work (NatureServe 2005).

#### Status

NatureServe (2005) currently identifies the southern rainbow as having a global ranking of apparently secure (G4). It is not currently ranked in South Carolina, but is a species of state special concern in this state.

#### POPULATION DISTRIBUTION AND SIZE

The southern 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 southern rainbow is never very abundant. Although the southern 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 southern rainbow is found in sandy runs of small to medium 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 southern rainbow has been reported to live in stretches with moderate current at depths of less than three feet (Bogan and Alderman 2004).

## CHALLENGES

The same challenges that apply to most mussels are also likely to apply to the southern 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 southern 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 southern rainbow and attempt to determine if more than one species are currently combined as *Villosa vibex*.
- Conduct additional surveys for the southern rainbow in the lower coastal plain of South Carolina, particularly in the Edisto River basin.
- Explore the need to list the southern rainbow within South Carolina, based on survey results.
- Protect critical habitats for the southern 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 other areas that contain available habitat for the southern rainbow.
- Encourage responsible land use planning.
- Consider species needs when participating in the environmental permit review process.
- Educate off-road motor vehicle operators of the negative affects of crossing streams at multiple locations and using stream bottoms as trails.
- Conduct further research to determine the degree of sensitivity of the southern rainbow to various point and non-point source pollution sources and land use impacts.

## MEASURES OF SUCCESS

Resolving genetic issues across the range of the southern 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.