

## Eastern Elliptio

### *Elliptio complanata* complex

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#### DESCRIPTION

#### Taxonomy and Basic Description



This is a large, widespread complex including many potential species that were synonymized by Johnson (1970). *E. errans*, a former synonym of *E. complanata*, is currently recognized by some, but not all taxonomists. The taxonomy of all species in this complex is somewhat uncertain, so they will be treated together here. Some of the genetic studies that have been conducted so far have suggested that several species exist within the complex, but the results are quite complicated, and the complex is definitely in need of further study (A. Bogan pers. comm.).

The Eastern Elliptio has a trapezoidal, rhomboid, or subelliptical shell shape which varies greatly in shell thickness. The anterior margin of the shell is rounded with the dorsal and ventral margins parallel, the ventral margin usually straight, and the posterior margin broadly rounded. The Eastern Elliptio has a broad, double posterior ridge. The exterior surface is yellowish to brown or blackish. Young specimens have indistinct greenish rays that disappear with age. The inner shell surface color varies from white to pink, salmon, or purple (Bogan and Alderman 2004, 2008).

#### Status

As currently classified, the Eastern Elliptio is one of the more common freshwater mussel species. However, because populations of multiple species may actually be combined under one name, as has been suggested by preliminary genetic results and by many morphological studies (A. Bogan, pers. comm.), the distributions of these separate species are likely to be more restricted. Further, some of the synonymized species may actually be rare. Populations thought to be *Elliptio errans* appear to be rare and restricted to South Carolina and Georgia (NatureServe 2011), but taxonomic difficulties make the status of this possible species difficult to determine. NatureServe (2011) currently identifies the Eastern Elliptio as having a global ranking of secure (G5) and state ranking of secure (S5) in South Carolina.

#### POPULATION SIZE AND DISTRIBUTION

The global distribution of the Eastern Elliptio ranges from the Altamaha River Basin in Georgia, north to the St. Lawrence River Basin, and west to Lake Superior and the Hudson Bay (Johnson 1970). The Eastern Elliptio appears to be widespread within South Carolina.

## HABITAT AND NATURAL COMMUNITY REQUIREMENTS

The Eastern *Elliptio* has been reported from a variety of habitats including large rivers, canals, reservoirs, and headwater streams. It does not seem to exhibit a preference for fast or slow flowing waters or for any particular substrate. Further, this species reportedly uses a variety of fish host species (Bogan and Alderman 2004, 2008).

## CHALLENGES

Little is known about potential challenges to the Eastern *Elliptio*. Once taxonomic questions are resolved, specific threats to species within the complex may be identified. The same activities that challenge all species of mussels are likely to also affect members of the *Elliptio complanata* complex. Observations suggest that members of this complex are sensitive to channel modification, pollution, sedimentation, and low oxygen conditions, but we do not know how the relative sensitivity of members of this complex compares to other species.

## CONSERVATION ACCOMPLISHMENTS

Some preliminary genetic analysis has been done on members of the *Elliptio complanata* complex, but many more individuals need to be studied in order to resolve these taxonomic questions (A. Bogan, pers. comm., e-mail message March 29, 2005). The breeding season of *E. complanata* has been studied in the Broad River (Price and Eads 2011).

## CONSERVATION RECOMMENDATIONS

- Conduct genetic studies across the range of the Eastern *Elliptio* to determine if multiple species exist within this complex, and attempt to identify morphological characters that can be used to distinguish between the species.
- If multiple species within the complex exist, conduct surveys to determine the ranges and habitat requirements of each.
- Protect critical habitats for the Eastern *Elliptio* from future development and further habitat degradation by following Best Management Practices (BMP) 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 *Elliptio*.
- Encourage responsible land use planning.
- Consider this species' needs when participating in the environmental permit review process.
- Conduct further research to determine the degree of sensitivity of members of the Eastern *Elliptio* complex to various point and non-point sources of pollution and land use impacts.

## MEASURES OF SUCCESS

Resolving taxonomic issues regarding the Eastern *Elliptio* complex will be the primary measure of success.

## LITERATURE CITED

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