

Species: Rayed Bean (*Villosa fabalis*)
Global Rank: G2
State Rank: S1
State Wildlife Action Plan Priority: Immediate Concern Species
CCVI Rank: Highly Vulnerable
Confidence: Moderate

Habitat:

Rayed beans occur in fine sand in the shallow areas of medium-sized to large rivers (Spoo 2008). Rayed beans were historically known from 106 streams, lakes, and some man-made canals in 10 states and 3 service regions. The species occurred in parts of the upper and lower Great Lakes system, and throughout most of the Ohio and Tennessee River systems (NatureServe 2010).

Current Threats:

Major threats leading to the decline of rayed beans include habitat degradation and loss due to dam construction and stream channelization, siltation, pollution, and introduction of exotic zebra mussels (NatureServe 2010).

Main Factors Contributing to Vulnerability Rank:

Distribution relative to anthropogenic barriers: Dams are located upstream of some locations of this species that could hinder the establishment of new populations upstream from known occurrences.

Predicted impact of land use changes designed to mitigate against climate change: Natural gas extraction in this region may alter water quality.

Dispersal and movements: As adults, rayed beans are mostly non-migratory with only limited vertical movement and possibly passive movement due to flood events (NYNHP 2010)

Predicted macro sensitivity to changes in precipitation, hydrology, or moisture regime: Considering the range of the mean annual precipitation across the species' range in Pennsylvania, the species has experienced a small precipitation variation in the past 50 years.

Dependence on specific disturbance regime likely to be impacted by climate change: More intense flooding events, likely associated with climate change in Pennsylvania, may affect rayed bean populations by altering water/habitat quality (e.g., increased siltation)

Dependence on other species for propagule dispersal: Rayed beans depend on a few fish (darter species) to serve as glochidial hosts (Spoo 2008).

References:

NatureServe. 2010. NatureServe Central Databases. Arlington, Virginia. USA.

New York Natural Heritage Program. 2010. NYNHP Conservation Guide – Eastern Pearlshell.

Spoor, A. 2008. The pearly mussels of Pennsylvania. Coachwhip Publications. Landisville, Pennsylvania. 210pp.