Pennsylvania Field Office

Northeast Region

Wednesday,
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Northern Riffleshell
Life History and Biology

Epioblasma torulosa rangiana

STATUS: Endangered

DESCRIPTION: The northern riffleshell is a small to medium size mussel, up to three inches long. The shell exterior is brownish yellow to yellowish green with fine green rays. The shell interior is typically white. The species is sexually dimorphic; male shells are irregular ovate in outline, with a wide shallow sulcus just anterior to the posterior ridge. Female shells are obovate in outline, and greatly expanded post ventrally.

The adult northern riffleshell is a sedentary filter feeder, obtaining oxygen and food directly from the water column or from water flowing through the substrate.

The breeding season appears to be initiated by seasonal changes, such as water temperature. Reproduction requires a stable, undisturbed habitat and a sufficient population of fish hosts to complete the mussel's larval development. When the male discharges sperm into the current, females downstream siphon in the sperm in to fertilize their eggs, which they store in their gill pouches until the larvae hatch. The females then expel the larvae. Those larvae which manage to attach themselves by

Fact Sheet

Recovery Plan
(pdf 5.52MB)

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means of tiny clasping valves to the gills of a host fish, grow into juveniles with shells of their own. At that point they detach from the host fish and settle into the streambed, ready for a long (possibly up to 50 years) life as an adult mussel.

RANGE: Of the 54 streams once known to be occupied by this species, six still support populations of the northern riffleshell, and only three of these populations show evidence of reproduction two in the Allegheny River system (Allegheny River and French Creek, Pennsylvania), and one in the Sydenham River (Ontario, Canada).

HABITAT: The northern riffleshell occurs in clean, firmly packed, coarse sand and gravel in riffles and runs of small and large streams.

REASONS FOR CURRENT STATUS: Dams and reservoirs have flooded most of this mussel's habitat, reducing its gravel and sand habitat and probably affecting the distribution of its fish hosts. Reservoirs act as barriers that isolate upstream populations from downstream ones.

Erosion caused by strip mining, logging and farming adds silt to many rivers, which can clog the mussel's feeding siphons and even smother it. Other threats include pollution from agricultural and industrial runoff. These chemicals and toxic metals become concentrated in the body tissues of such filter-feeding mussels as the northern riffleshell, eventually poisoning it to death.

Zebra mussels, an exotic (non-native) species which is spreading rapidly throughout the eastern U.S., also pose a threat. By attaching in great numbers to native mussels such as the northern riffleshell, zebra mussels suffocate and kill the native species.

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