

Freshwater Mussels in the Waccamaw and Pee Dee Rivers

WACCAMAW RIVER VOLUNTEER MONITORING DATA CONFERENCE

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DAVE FUSS, HORRY COUNTY STORMWATER MANAGEMENT

Historic Abundance

- ▶ Historically abundant in most permanent rivers and streams in North America
- ▶ Harvested for pearls and use of shells for buttons
- ▶ Habitat degradation – sedimentation, polluted runoff
- ▶ Sensitive to pollutants
- ▶ 70 species listed as threatened or endangered



Habitat Type and Quality

- ▶ Sandy to muddy
- ▶ Shallow to deep (1 foot to 20 feet)
- ▶ Pools and riffles
- ▶ Woody debris and floodplain connectivity
- ▶ Sinuosity and canopy cover is ideal
- ▶ Moderated temps and oxygen levels



Species

- ▶ 27 species reported to occur in Pee Dee Basin (includes Waccamaw)
- ▶ TNC 2006 Report – 10 species over 12 sites from Waccamaw River (upstream of junction with ICW to above Hwy 9 near Worthams Ferry)
- ▶ Four species of state special concern – Carolina slabshell, Waccamaw spike, Pod lance, Rayed pink fatmucket
- ▶ SC DNR wade-able streams assessment (Crabtree Canal) – Savannah Lilliput (state threatened)
- ▶ US FWS survey in Crabtree/Kingston Lake Swamps – 3 *Elliptio* species

ELLIPTIO
CORBICULIDAE
Elliptio
Corbicula fluminea
pro (Müller, 1776)

(C) Asian Clam

18: South Carolina

At **Distribution:** This

Sp introduced species is

Sou widespread in all rivers,

Ca most reservoirs, and

Ca many lakes.

spr **Description:** The shell is fairly small, seldom

Sav exceeding 50 mm in length, very solid,

inc ovate when young, and triangular in outline

De directly below the umbos in each valve. The

cor periostracum is a light yellowish-olive to cream f

nea colored in immature clams, changing with age

pos to tan, olive, and finally, dark brown to black in old individuals. Very young individuals possess

pos a characteristic dark stripe or band on the

she anterior slope of the valves. The nacre is white

gro to a shiny light purple.

or **Status:** INTRODUCED; The Asian clam

Nac appears to have been introduced into North

Sta America sometime during or before the 1920s.



Density

- ▶ Up to 2500 mussels in 4 person hours of search time in Waccamaw survey (2006)
- ▶ Crabtree – 10 mussels in 48 minutes
- ▶ Kingston Lake Swamp – 55 mussels in 90 minutes

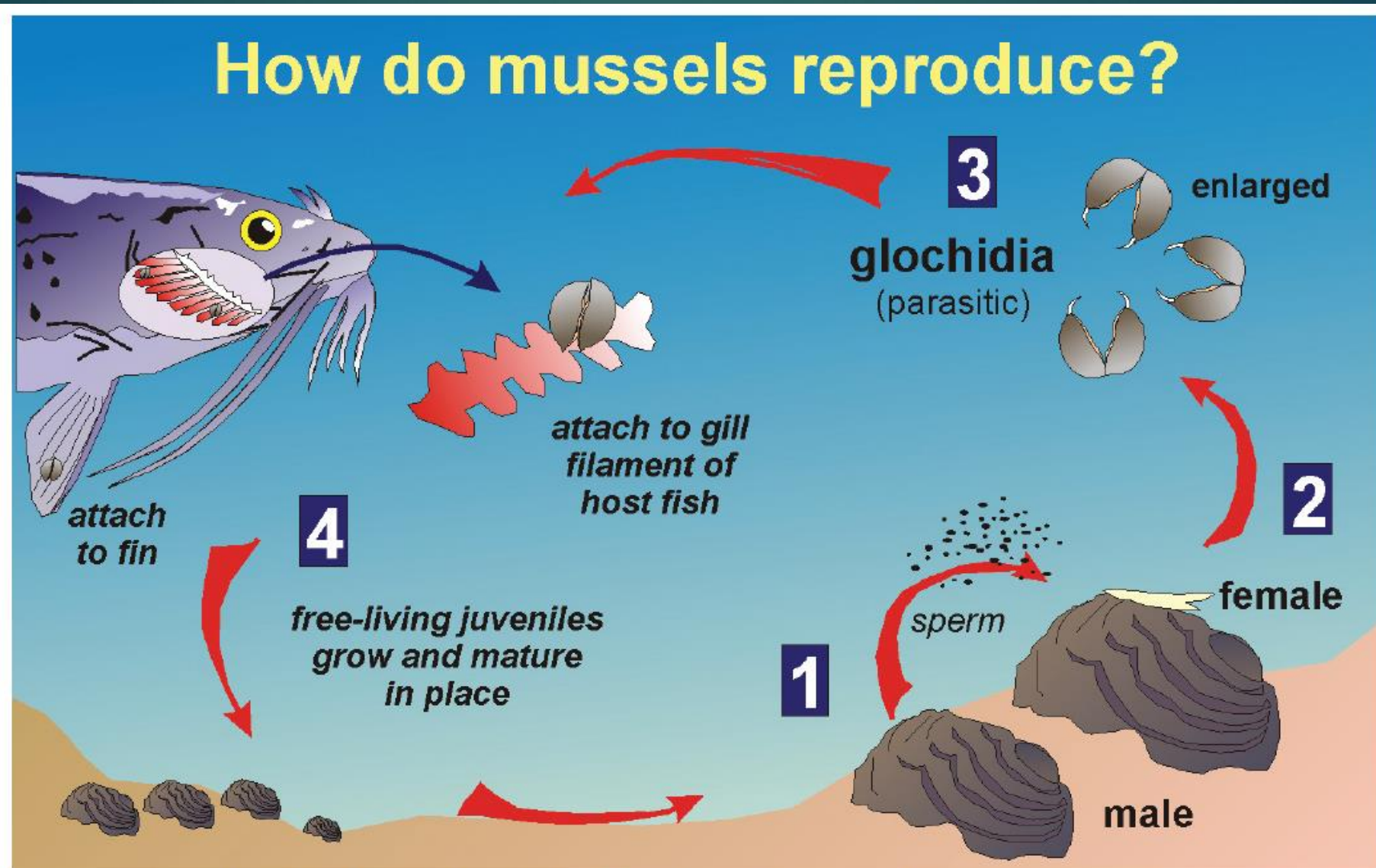


Importance

- ▶ Filter feeders – algae, bacteria, particulate organic matter
- ▶ Can improve water quality
- ▶ Food source for other species
- ▶ Empty mussel shells as fish egg deposition sites
- ▶ Indicators of habitat quality



Life Cycle



Photograph courtesy of Karl J. Scheidegger, a fisheries biologist for the Wisconsin Department of Natural Resources.

Recommendations

- ▶ Maintain/restore riparian vegetation and floodplain connectivity
- ▶ Reduce erosion potential from high energy flows (e.g. stormwater runoff)
- ▶ Habitat complexity (pools/riffles, sinuosity, woody debris)
- ▶ Healthy fish populations for host species
- ▶ Continued monitoring/assessment

Fish Populations

- ▶ SC DNR Fish Species Composition Survey in the Waccamaw River
- ▶ Curious about effects of historically low oxygen levels and fluctuations during warm weather on fish species composition
- ▶ Less dramatic DO swings near NC; more dramatic DO swings near Conway
- ▶ Preliminary results – higher catch rates than expected in lower Waccamaw
- ▶ Saltwater species found far upstream during drought conditions



Crabtree Swamp Restoration

- ▶ Two half-mile reaches of streambank/floodplain restored
 - ▶ 60-70% planting survival
 - ▶ Trees maturing nicely at Oak St site (planted in 2009)
 - ▶ Water level logging shows flood attenuation
- ▶ Two low-head rock weirs
 - ▶ Accumulating sediment
 - ▶ Improving oxygenation
 - ▶ Need to anticipate possible erosion
- ▶ Sediment bar accumulation
 - ▶ Improving bank stability, stream sinuosity and habitat complexity



Questions?

