Restoring Aquatic Habitat:
Freshwater Mussels

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Conservation Challenges in Agriculture

• Sediment Pollution
• Riparian Buffer Loss
• Floodplain Access Loss
• Point Source Pollution
  • Cattle Access
  • Waste Management
Sediment Pollution
Problem: Sediment Pollution

- Streambank Erosion
- Sheet, rill, and gully erosion
Problem: Sediment Pollution

• Effects on mussels
  • Destabilized streambed
  • Suspended sediment “clogging up the filters”
  • Decreased food availability
  • Disrupting the mussel-host relationship
Solutions: Sediment Pollution

- Living roots in the ground year-round
  - Cover Crops
  - No/reduced till
  - Grassed Waterways
- Field Borders
  - Filter Strips
  - Riparian Forest Buffers
Problem: Riparian Buffer Loss

• Algal blooms
  • Reduced oxygen availability
  • Increased pH

• Water Temperature
  • Increased ammonia concentrations
Solutions: Riparian Buffer Loss

• Simple!
  • Plant riparian forest buffers
  • The wider the better
  • General rule of thumb – riparian forest should be at least 1.5 times bankfull width on both sides
  • Anything is better than nothing
Problem: Floodplain Access Loss

- Stream power
  - Destabilized stream bed

- Sedimentation
  - Reduced area of “slack water” during floods for sediment to deposit
Solutions: Floodplain Access Loss

- Berm removal
  - Allow floodplain access
- Wetland Restoration
  - Sediment retention
- Bankfull benches
  - Ok, if full access not possible
- Riparian Forest
  - Increase “roughness” to reduce impact of flood flows
Problem: Point Source Pollution

- Cattle Access
  - Sedimentation
  - Increased Nutrients
  - Potential pathogen inputs
- Waste Management
  - CAFOs
- Fertilizers
  - Manure spreading
  - Traditional fertilizers
Problem: Point Source Pollution

- Nutrient effects on Mussels
  - More algal blooms leading to lower dissolved oxygen
  - Increased ammonia concentrations
Solutions: Point Source Pollution

- Cattle Access
  - Fencing
  - Riparian Forest Buffer
- Waste Management
  - Comprehensive Nutrient Management Plans
- Fertilizers
  - Nutrient Management
  - Riparian Forest Buffers, Filter Strips, Constructed Wetlands
NRCS for Tribes

- Technical Assistance
- Financial Assistance
  - Tribal member eligible for 90% cost-share (historically underserved)
- Regional Conservation Partnership Program (RCPP)?
Questions

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