

# Questions for SRST Expert Panel

## 1. What information requires clarification?

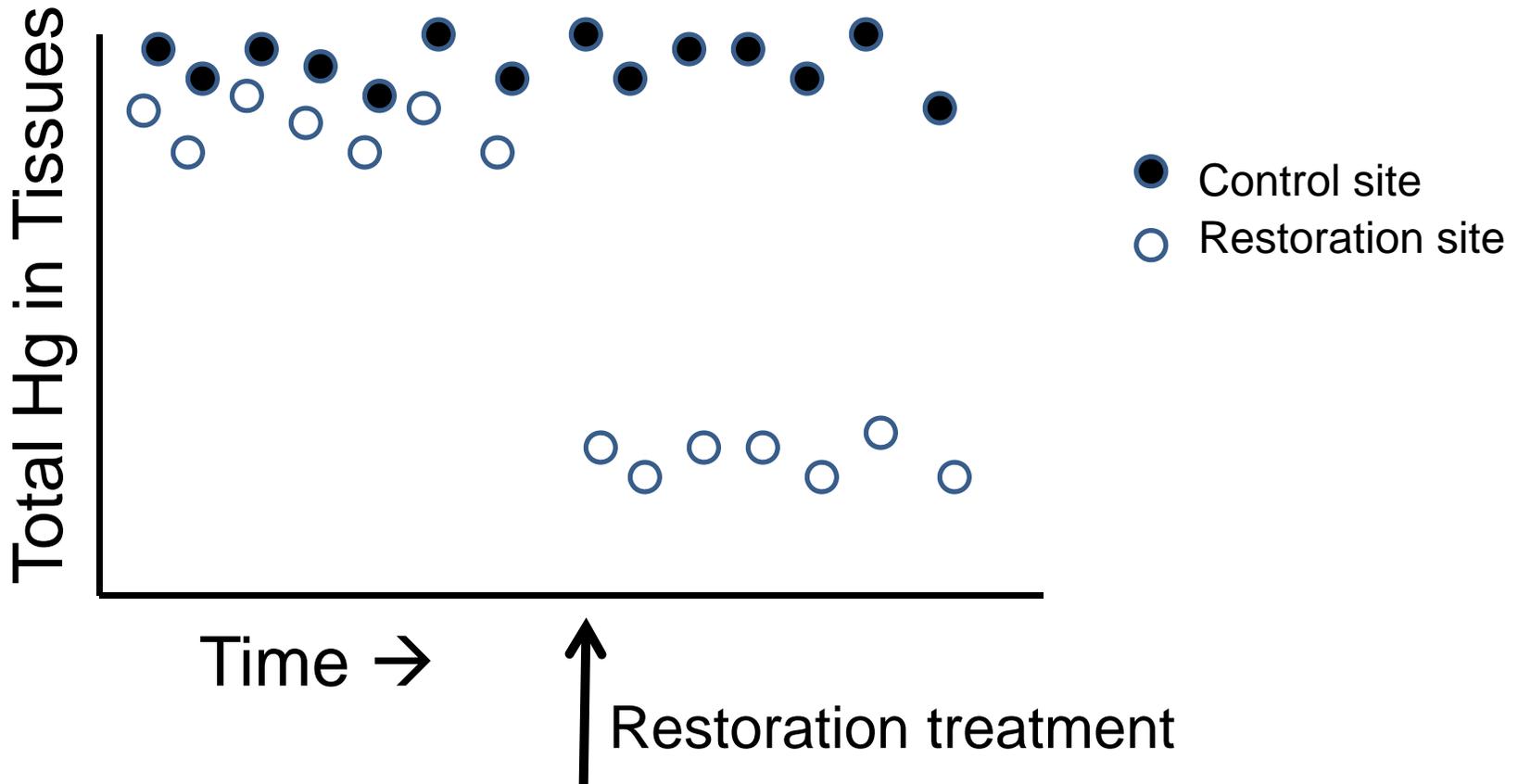
- A plan for integration of restoration monitoring, adaptive management and regional risk models
- Provide a hypothetical example describing how relative risk assessment will be integrated into the monitoring plans and be used to improve adaptive management
- Will risk reduction targets be set for each region?

## 2. Strengths, weaknesses & suggestions for the ROPs program

- Excellent connection among conceptual model, ROPs and individual projects
- Engage SRST in the design, implementation and assessment of monitoring plans
- Identify endpoints that have the greatest potential to respond to restoration
  - Low variability & high sensitivity
  - Sufficient background data
- Can you “pilot” a remedy such as bank stabilization for eventual whole river application? Do responses in a few linear segments reveal probable whole river response?
- Tie SR monitoring protocols to Chesapeake Bay Program for crediting watershed restoration practices

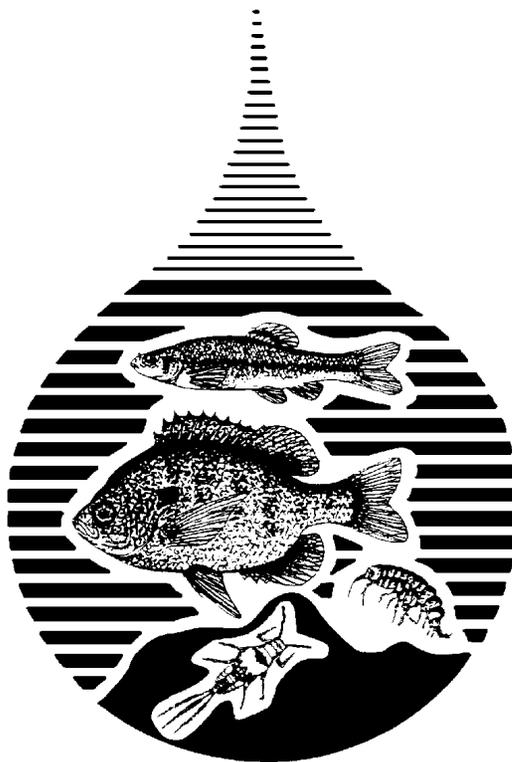
Sample control & restoration sites multiple times before and after treatment

### “Ideal” BACI Design



# Quantitative assessment of habitat quality

## Rapid Bioassessment Protocols For Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish Second Edition



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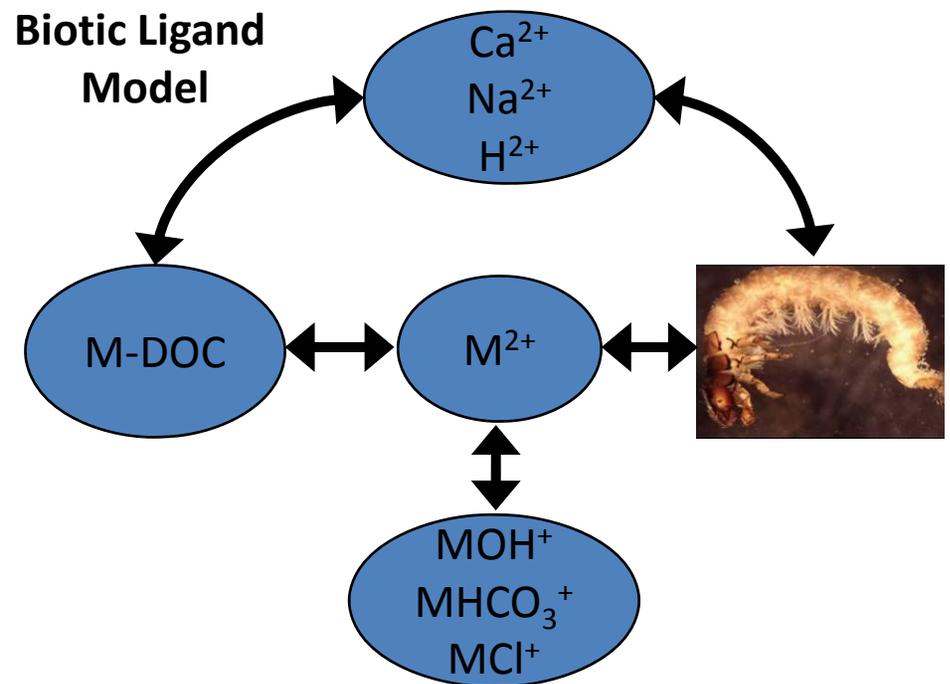
### 3. What critical research required for remedy selection

Consider effect of upstream flood controls on erosion →  
e.g., will dam removal influence bank erosion?

### 4. Critical data gaps to address unintended consequences associated with the Phase 1

- Results of the 2 pilot studies are very promising  
But, somewhat equivocal due to initial variation, seasonal/annual effects, other actions in the watershed
- **Less concerned about unintended consequences than possible failure to achieve fish tissue reductions**
- Bank stabilization- many other positive benefits
- Biochar studies- continue to address indirect effects

- Uncertainties in our understanding of the dynamics of Hg uptake by benthic organisms
- Hg uptake and depuration studies with *Corbicula*  
Long-term monitoring studies w/ *Corbicula*
- Advantages of assessing resident macroinvertebrates
- Initiate a long-term monitoring program with an indigenous species (hydrpsychid caddisflies)



## 5. How can we improve the adaptive management (AM) approach for the river remedy?

- Transparent and well defined link between specific monitoring endpoints and AM
- Performance of restoration alternatives influenced by: 1) objectives; 2) cost; and 3) uncertainty of the contaminant loading model
  - Identify major these sources of uncertainty
- Weight interim/early measures that implement one action more than combined measures (don't combine bank stabilization and with biochar)
- Account for possible increases due to disturbance (e.g., bank grading) that may be short-lived

## 6. What does remediation success look like based on your experience at other sites?

Not simply removal of contaminated sediment

- Often achieve reductions in water, sediment but not fish/biota

Consider multiple parameters that are weighted:

- Hg in fish, other receptors (highest weight)
- TMDL water quality: TN, TP, TSS, others
- TMDL land use changes: buffers
- Habitat/fishery
- Regulatory
- Community: recreation, health
- Partnerships: City, research, local groups, etc.
- Risk scores to certain # per region?

## 7. In what areas is stakeholder acceptance at risk and how do we gain the necessary buy in?

Getting private landowners on board

demonstrate success in the upper 2-3 miles!

- Get early involvement; establish citizen's working group; review experiences with these groups at other sites
- Farmers are riled up about Chesapeake Bay TMDL (hazard of being associated with broader restoration)
- Big challenge for farmers will be overcoming desired "clean" look to stream banks. Insisting on maintenance agreements may be a "deal killer"
- In order for Waynesboro to account for pollutant removal credits for its MS4 permit (stream restoration, BMPs, retrofits, etc.), certain protocols must be followed

## 8. How can we reduce the potential for unintended adverse effects to ecosystem?

- Few unintended consequences of bank stabilization
- Continue with Biochar studies conducted under realistic conditions
  - functional measures (detrital processing)
  - field and microcosm experiments
- Consider conducting a “failure analysis”, i.e., identify assumptions that if wrong will lead to inability to achieve targets.
- Consider “test” for not disturbing banks or instream areas that are currently stable or for which disturbance will likely not lead to net gain

## Additional Questions for the SRST

- What are the remaining sources of uncertainty with respect to our understanding of the system?
- Are the proposed short- and long-term monitoring plans adequate to assess restoration success?
- How well do we understand the effects of long-term changes in climate on stream hydrology, temperature, etc.
  - how will these relate to Hg dynamics
- Is there a downside to trying multiple remedies (e.g., stabilization w/ and w/out biochar) in Phase 1?
  - Yes, possible loss of learning opportunity with mixed remedies